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THE PREDICTABILITY OF INTERNATIONAL MUTUAL FUNDS

A Dissertation

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in
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by

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DEDICATION

In memory of my beloved mother
K. Anwara Islam

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ABSTRACT

The predictability of the US-based international mutual fund returns has received renewed consideration in recent academic studies. This dissertation extends recent research by exploring the 2,479 daily return observations covering the period from January 4, 1993 to October 31, 2002 for all categories of international mutual funds. This exploration splits the sample, uses the initial sub-sample to investigate return patterns of international mutual funds and develops trading rules based on the predictable return patterns, and tests those rules on the holdout sample. The empirical findings suggest that smart investors may earn higher risk-adjusted returns by following daily dynamic trading strategies. The excess returns earned by investors are statistically and economically significant, irrespective of load or no-load mutual funds and even in the presence of various exchange restrictions and regulations.

CHAPTER 1

INTRODUCTION

The US-based international open-end mutual fund (hereafter, international fund) has become a popular investment channel for both individual and institutional investors in the USA. About 90% of the mutual funds are held by households and the rest by institutional investors. Therefore households' decision to invest in new cash or to redeem shares from mutual funds affects stock prices significantly. International funds mostly invest in equities of firms and companies domiciled in countries outside the USA. However financial institutions (especially banks) and individual investors also invest in international bond funds. The integration of international markets made it possible for international funds to grow at an increasing rate, especially after 1990. Assets of mutual funds are now higher than the assets of any other financial institutions and financial intermediaries. Mutual funds' assets have increased to $6.975 trillion in 2001 from $1 trillion in 1990 and the number of mutual funds has increased by three-fold during this period. However, the assets decreased to $6.392 trillion in 2002, mostly due to the bear market in equity shares; but the assets increased to $7.414 trillion in 2003.[1]

The price of mutual fund is its net asset value (NAV); in other words, NAV is the market (dollar) value of a mutual fund share (similar to bid prices of stocks). Mutual fund companies compute NAV after the close of the exchanges each trading day by taking the closing market value of all underlying securities of a fund plus other assets (usually cash) and subtracting all

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[1] Mutual Fund Fact Book 2004, 44th Edition, May 2004, The Investment Company Institute (ICI).

liabilities of the fund, and dividing the total net assets of the fund by total number of outstanding shares. Total net assets and the number of outstanding shares of a fund may vary because of inflows (purchases of fund by investors) and outflows (redemptions of fund by investors) of money from the fund.

Mutual funds or similar kind of investments such as retirement accounts or variable annuities determine their portfolios as of 4 PM Eastern Time (ET) when the New York Stock Exchange (NYSE) closes. Most of the European and Asian stock markets respectively close 5-7 hours and 12-17 hours before the NYSE closes.[2] This causes the last closing prices of the underlying shares of international funds to be stale. Speculators could take advantage of time differences between overseas and the US markets by buying international funds at one point in time today (before the NYSE closes) following a rising US market and selling them one day later. The current NAV pricing provides opportunity to short-term speculators to take advantage of stale pricing that causes international funds to be predictable.

Since the US fund investors get to invest on prices that are many hours old, this suggests the amount of exploitable information is large for those investing in international funds. Those who can figure out which news will move Eurasian markets should be able to profit by trading international funds. Much of this news (such as after closing hours business announcements, evening news statements by politicians, post-closing Government actions, war, litigations, natural disasters, revolutions, fluctuations in the US stock exchanges) requires knowing the news and how the news should affect prices when the markets next open. Such knowledge is in theory not exploitable in the local markets since the opening prices in the home markets should reflect the information. However, trades made in the US-based international funds get the prices before the news. Some fraction of the news relevant to foreign markets also affects the prices of

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[2] Table A-2 of appendix shows the time differences between the US market and major world markets.

international fund and is reflected in the level of the US indices. This includes the psychological facts of the US being up or down, as well as information about the state of the US economy or the profitability of the US firms. Trading rules based on the US stock indices should exist that can produce profits by trading the US-based international funds; the underlying shares of which are located in other world markets that lead the US market in terms of time. The internet and modern communications make it more likely that investors in i-shares, financial futures, and closed-end country funds (whose prices, in theory, should reflect informed valuations of foreign events) know of overseas news (plus of course they know the US news and what the US markets are doing).[3]

Most stock markets abroad are not as liquid as the NYSE.[4] It is desirable that mutual funds should keep liquid securities in their portfolios to meet the redemption requests by fund shareholders. However, some foreign markets are illiquid and it is difficult to sell securities quickly in those markets. This could cause a nonsynchronous trading problem for some international funds. Nonsynchronous trading is also responsible for stale pricing in some domestic mutual funds in which the underlying stocks are from small companies that traded infrequently. In cases of nonsynchronous trading, mutual funds may exhibit return autocorrelations because the underlying securities are traded at different times and security prices are only updated on a systematic basis. Thus prices may not always reflect recent information.

There has been extensive work on the predictability of stock returns over a period of few days to a few weeks. Theory predicts that these returns would be a random walk with the returns being unpredictable. But past studies document that there is a certain degree of predictability.

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[3] According to mutual fund fact book 2002 by ICI, 82% of fund investors used the internet to trade mutual funds during 2001. Details about internet trading of mutual funds are also discussed in Ciccotello, Edelen, Green and Hodges (2002).

[4] Foreign stock markets are subject to currency risk, fee structure risk, domestic government restrictions, political risk and other risks such as delays in transaction settlement, inadequate regulations etc.

The previous day's returns, returns in related markets, seasonal effects etc. are some of the variables which have been shown to have predictive power. However, the magnitude of most of these effects is such that efforts to exploit them would not be profitable after transactions costs (commissions and spreads). Standard theory suggests that investors would trade against any effect that exceeds the transactions costs. Their trading would reduce the effect to a level where continued trading would not be profitable.

There seems to be another potential use for such information. This is for moving between investment funds within a retirement plan such as 401(k) or 403(b) plans. Mutual funds (and separate accounts in retirement plans, variable annuities etc.) are priced as of the close of each day.[5] These assets have in common that most trades are based on the prices as of the close of trading on the NYSE at 4 PM ET. These investment accounts usually lack fees for transactions and at least some of them lack restrictions on the number or frequency of transactions. Thus transactions costs are essentially zero at most, and relatively minor regularities that would not be exploitable with individual stocks can be exploited with such accounts. In many cases, investors can transfer from one mutual fund to another free (as in many retirement plans and variable annuities), although fund families may eventually restrict the trading by investors who do it repeatedly. Transfers between accounts are typically permitted with no charges. These can be done with a telephone call, or at an internet site. Many mutual funds can be bought and sold through brokerages such as E-trade with no expenses (the mutual funds pay the brokerage houses). These institutional characteristics of mutual funds typically permit the employees to

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[5] 401 (k), 403 (b), and 457 are employer-sponsored retirement plans. 401(k) enables employees to make tax-deferred contributions from their salaries to the plan. Similarly 403 (b) enables employees of universities, public schools, and non-profit organizations and 457 enables employees of state, local governments, and other tax-exempt employers to make tax-deferred contributions from their salaries to the plan. Variable annuities are retirement accounts, which offer a large number of funds with essentially no charges for transfers between accounts. According to 2004 Mutual Fund Fact Book of ICI, mutual funds accounted for $2.7 trillion (approximately 22%) of the $12 trillion US retirement markets at year-end 2003. Pension funds, insurance companies, banks, and brokerage firms hold the remaining 78%. This $2.7 trillion is approximately one-third of mutual fund's total assets at year-end 2003.

transfer funds between different accounts such as money market funds, bond funds, and several stock funds. Knowledge of various regularities is potentially useful in raising the returns in such accounts, and in giving the retirees a higher standard of living upon retirement. Investors in such assets could use many of the small effects (predictabilities) that have been noted in the literature.

One major question is whether market indices can be used to predict the next day's mutual fund returns. Miller and Prather (2000), and Miller, Prather and Mazumder (2002) suggest that one type of mutual fund can be used to predict other type(s) of funds. The price movements of mutual funds tend to correlate more closely with the direction of the market (indices) than do individual stocks. If one can recognize market trends, then one can predict the mutual funds; but an important question is which specific category of mutual funds can be predicted from which indices. The conclusions from Miller and Prather (2000), and Miller, Prather and Mazumder (2002) can be tested directly by examining the power of various indices to predict the returns on various mutual funds (and possibly for retirement funds). Little has been done in literature to investigate which US indices predict which international funds. It is possible that the best US indices to forecast various international funds may differ. In other words, to time the market, investors may use different indices for different international funds. Using data on returns of mutual funds, this dissertation addresses this issue and show that profitable trading systems exist for international funds. For example, by timing the Wilshire 5000 index (i.e. using Wilshire 5000 index as a trading signal), investors may transform one dollar invested in the INVESCO European Inv fund (Ticker: FEURX) on December 1, 1997 into $20.96 on October 31, 2002. However, the buy-and-hold cumulative returns for FEURX were only $0.36 during the same time period.

Research on the predictability of international mutual funds is very new (most studies began in or after 2000). This dissertation attempts to broadly investigate the predictability using both the US and foreign indices and makes several contributions in recent studies on the predictability of international mutual funds.

There are two broad essays in this dissertation. The first essay, *Another Look at the Predictability of International Mutual Fund Returns*, investigates the predictability of international funds' returns on the basis of geographical locations of the underlying shares of the funds to test whether the time differences affect the magnitude of the predictability. Becker and Finnerty (1993) document that much more of the price changes in Tokyo and London occur overnight than had been reported for the US. They interpret this as being that much more of the information that moves markets comes in when these markets are closed. Since the investors of international funds get to invest on prices that are many hours old, this suggests the amount of exploitable information is large for those investing in international funds.

Varela (2002), Boudoukh, Richardson, Subrahmanyam and Whitelaw (2002), and Jares and Lavin (2004) focus on individual funds from the Asia-Pacific (especially Japanese funds) and Europe regions. On the other hand, Chalmers, Edelen and Kadlec (2001), Goetzmann, Ivkovic and Rouwenhorst (2001), Greene and Hodges (2002), and Zitzewitz (2003a) focus on aggregate fund level (equally weighted portfolios). I extend the recent literature by investigating all categories of international stock, bond and hybrid mutual funds on individual and the aggregate fund levels.

To my knowledge, this is the first comprehensive study to investigate the predictability of international mutual funds separately on the aggregate fund level as well as individual fund level. On the aggregate level, equally weighted portfolios are similar to indices and indices offer the

advantage of having less residual variance (less idiosyncratic risk) and therefore yield more precise parameter estimates. This is useful in making inferences about possible exploitable patterns. Then, it would be interesting to examine whether these patterns exist for individual funds. I also explore the day-to-day predictability of international bond funds and international hybrid funds, which, so far, have not been investigated. Zitzewitz (2003a) shows some degrees of serial correlations in international bond funds by analyzing equal-weighted bond portfolios. I extend Zitzewitz (2003a) by investigating the predictability and exploitability of individual international bond and hybrid funds. Based on my empirical findings of the first essay, I suggest several trading strategies and evaluate these strategies using out-of-sample data to examine the exploitative potential in the market. I divide my sample approximately equally and test the hypotheses using the first sample and then evaluate the trading strategy on a holdout sample. This methodology reduces the existence of data snooping bias, if any.

The second essay, *The Weekend Trading Profitability from International Mutual Funds,* investigates the weekend predictability of foreign indices and based on the predictability several trading strategies are proposed for international funds. Recent studies on the weekend effect in international markets report low Monday returns abroad. Since the underlying securities of international funds are indexed to corresponding foreign indices, the second essay examines the day-of-the-week predictability of foreign indices. Based on the predictability of foreign indices, I propose several trading strategies for international funds to utilize the daily seasonal effect and evaluate the trading strategies on risk-adjusted basis.

The second essay extends the current literature on international mutual fund predictability in several ways. I focus mainly on investigating the day-of-the-week price changes in international mutual funds. To my knowledge, the variability of daily autocorrelation with the

day-of-the-week has not yet been investigated for international funds. This is the first study to examine the weekend predictability of international funds using the foreign indices. These are similar kind of foreign indices to extend Varela's (2002) study on the predictability of Asia-pacific funds' returns using local foreign market indices. If there are effects in most foreign markets similar to the effects in the US markets, they should show up in the form of the predictability of returns of international funds as a function of foreign indices (i.e. correlation with indices and with funds) varying with the day-of-the-week, with the predictability probably being greatest over the weekend (i.e. Fridays help predict Mondays). The second essay also extends Compton and Kunkel (1999), and Miller, Prather and Mazumder (2003) by examining the weekend trading opportunities for international funds.

Previous studies apparently do not allow for any returns from investing in other assets when investors are out of the markets. This dissertation allows for returns from investing in alternative assets (such as money market or bond funds) when an US investor is out of international funds. Most of the previous studies do not provide risk-adjusted returns. Doing so would probably make the system look better since investors are out of the markets for some period of time. These adjustments would be made in this dissertation. Risk-adjusted return seems interesting as a weekend effect might be expected to lower returns by keeping one out of the market more often. Suppose an investor had expected, in statistical term, 5% returns for some periods, and 15% for other periods from a security; thus the security provides an average 10% returns. If the high returns were earned half of the time by being in the market, and the risk free rate was 4%, a strategy using the predictability would provide a return of 9.5% (0.5*15% + 0.5*4%), which would be less than the 10% earned by a buy-and-hold strategy. However, risk adjusted, the strategy gives better returns (because of low risks associated with risk-free

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instruments). For an investor who could use margin, the strategy of being in the market with margin on a good day could give higher returns than buy-and-hold strategy given equal exposure to market risk.

An investor who could not use margin in a security (such as typical retirement account or mutual fund) still might find such a strategy useful if for risk control reasons he would normally hold substantial risk free assets (such as money market fund). Suppose his normal portfolio consists of 50% money market and 50% stocks and he buys and holds this portfolio 100% of the time with this equal portfolio composition. If the buy-and-hold return of this portfolio is replaced with a trading strategy that invests in stocks 50% of the time and in money market 50% of the time (i.e. timing the market) and has the same risk, but a higher return, it might be attractive.

Finally, the market timing models of Treynor and Mazuy (1966) and Henrikkson and Merton (1981) are also tested to examine the market timing ability of the proposed trading strategies of the second essay. The second essay also investigates the weekend predictability and profitable trading opportunities for the US-based international hybrid mutual funds since the predictability of hybrid funds has not been discussed extensively in literature.

This dissertation uses a unique mutual fund dataset that includes both dividend and capital gains distributions. Both distributions affect the NAVs of mutual funds. When a fund receives dividends, capital gains or interest incomes from its underlying shares, it distributes the amounts received to its shareholders. On an ex-dividend date, for equity funds, the NAV should drop by the exact amount of distributions paid to the investors. Recent studies (most of which use www.yahoo.com and www.TrimTabs.com data without cash dividends and capital gains distributions) show that the results may be underestimated in absence of distributions data (i.e.

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any serial correlation estimated from the data is downward biased).[6] Inclusion of mutual fund distribution data in this study should provide more accurate estimates and empirical results. Additionally, the time period covered in this study is longer than any other recent study on the predictability of international funds. I use almost 10 years of daily data so that trends can be detected more easily and reliably.

Finally, this dissertation may have some implications for both mutual fund managers and investors. Managers of mutual funds have an interest in keeping their turnover low and their NAV reported correctly to discourage any speculative trading and keeping the confidence of investors. The information developed for mutual funds in this study may also be applied to retirement accounts and variable annuities (because of no or very low trading fees and exchange restrictions) possibly helping individuals to have a more active and comfortable retirement. It would also benefit those investors who manage such funds. If this research produces findings useful to individual investors, it should be of interest to the households and fiduciaries that hold around 90% of the $7 trillion invested in mutual funds in the US.[7] Finally, this dissertation also emphasizes the need for revising the current pricing system of mutual fund.

The rest of the dissertation is organized as follows: Chapter 2 presents the motivation, literature review, data, methodology, empirical results, and conclusions of the first essay. Finally, Chapter 3 presents the motivation, literature review, data, methodology, empirical results, and conclusions of the second essay of this dissertation.

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[6] The result of the market timing strategy of Green and Hodges (2002) is understated by 1% to 4%. Similar downward bias is reported in Chalmers, Edelen and Kadlec (2001), Jares and Lavin (2004), and Zitzewitz (2003a).
[7] Household's holdings include individual retail accounts, employer sponsored pension plans, individual retirement accounts, and variable annuities.

CHAPTER 2

ANOTHER LOOK AT THE PREDICTABILITY OF INTERNATIONAL MUTUAL FUND RETURNS

Abstract

Using 2,479 daily return observations of all categories of international equity mutual funds, international bond mutual funds and international hybrid mutual funds this essay examines the potential exploitability of the return patterns of these funds. Regressions of mutual fund returns on indices, both the US and foreign, are presented showing the presence of statistically significant regularities, especially for international equity mutual funds. Calculations of potential returns are then presented to show that the returns are economically significant in magnitude, irrespective of load or no load funds, beating a buy-and-hold strategy significantly. The empirical findings are consistent across the funds even in the presence of different current exchange restrictions. The current mutual fund pricing has predictable and exploitable components and needs to be changed.

2.1. Introduction

The Security and Exchange Commission (SEC) regulates and governs the mutual fund industry in the USA by the Securities Act of 1933, the Securities Exchange Act of 1934, the Investment Company Act 1940, and the Investment Advisers Act of 1940.[8] Rule 22c - 1(b) of the Investment Company Act of 1940 requires open-end mutual funds to compute the current net asset value (NAV) no less frequently than once daily on each trading day (excluding holidays on which the NYSE is closed and days on which there is no purchase or sale orders received by the fund). The SEC Rule 22c-1(d) established under authority of this act requires fund managers to determine the time (usually 4 PM ET) to calculate fund's NAV. The deadline to submit the NAV prices to NASDAQ is 5:50 PM ET. NASDAQ then distributes the NAV data to media and news services, data vendors, and other interested parties. If investors place a trade order after 4 PM ET on Monday, they will receive the share price determined at the close of Tuesday (or next trading day). To calculate NAV, mutual funds value each of their underlying assets (stocks, bonds or other securities) at their latest sale price and if there is no sale on that day, funds value the security at the most recently quoted bid price. Nonsynchronous trading and time differences between the US and other foreign markets cause stale pricing problem of computing daily NAV of international funds.

This stale pricing provides investors with some knowledge of fund predictability especially for international funds, since these funds invest in foreign securities, most of which are not cross-listed in the US markets either as stocks or American Depository Receipts (ADRs).

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[8] Among other major things, the Investment Company Act of 1940 regulates the structure and operations of mutual funds; the Securities Act of 1933 requires federal registration of all public offerings of mutual funds shares; the Securities Exchange Act of 1934 regulates mutual fund principal underwriters and others who sell mutual funds shares and requires them to be registered with the SEC; the Investment Advisers Act of 1940 requires federal registration of all investment advisers of mutual funds. For details, see Fortune (1997) and Gremillion (2001).

Stale pricing is important only if there is information that helps predict security prices; however, the key information is that most of the stocks markets (where the international mutual funds invest) follow the USA. Direct purchases of stocks incur brokerage commissions and other transaction costs; however the institutional features of mutual fund shares allow investors to trade funds without paying transaction costs. Since the US is the last major global market to close, it is relatively easy for investors of international funds to take advantage of stale prices. This provides the US investors of European and Asia-Pacific (and Far-East) funds approximately 5-7 and 12-17 hour windows respectively to gather and process information and make profit-motivated trade decisions.[9]

For example, American Century International Fund (Ticker: TWIEX) consists of securities primarily traded in foreign countries.[10] TWIEX calculates its NAV at 4 PM ET on ordinary days (when there is no fair valuing). For underlying Japanese stocks it holds, TWIEX takes the closing prices from the Tokyo Stock Exchange (TSE) and converts these prices to their equivalent US dollars. But the TSE closes at 1 AM ET (8.30 hours before the NYSE opens). This NAV pricing rule allows the US investors to buy or sell TWIEX at prices determined 14-15 hours earlier. If there is favorable information after the close of the TSE but before the close of the NYSE, investors will trade on that information anticipating that information may be reflected in next day's stock prices at TSE (and hence on the NAV of TWIEX). In practice, the US-based international funds tend to invest disproportionately in either large or less multinational firms. Large multinational firms such as GlaxoSmithKline, Honda, Sony, GM, Ford, Nokia, Chrysler,

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[9] Table A-2 of appendix shows time differences between the US and other global markets. It is evident from Table A-2 that all Asian markets close before the US market opens (no overlapping) and there exists a short period (1 to 3 hours) of overlapping between the US and European markets.

[10] According to Morningstar Principia Pro CD, the approximate composition of assets of TWIEX is Cash (10%), US stocks (5%) and Non-US stocks (85%) as of October 31, 2002. The regional asset exposures of TWIEX are as follow: US and Canada, Europe, Japan, Latin America, Pacific Rim and other countries.

British Petroleum etc. often derive a significant fraction of profits from the US either because they have US operation or their products are exported to the US. Large multinational firms should be heavily affected by the US economy. Thus, their prices should reflect the US information with a lag. International funds also invest in less multinational foreign firms such as supermarket chains, department stores, small clothing firms, etc. Because the US is so important in the world economy, even such non-export oriented firms may be affected by the US developments. The above example partially explains why the Europe and Japan funds are related to the US economy. Another possibility that affects international fund's NAV tomorrow is the investors' psychology developed from the US economy today.

The NAV predictability may be higher when national holidays in Japan differ from the US. If Tuesday is a holiday in Japan, the last security price obtained from Japan is when the TSE last closed (i.e. Monday 3 PM Japan time or Monday 1 AM ET). TWIEX determines its NAV on Tuesday 4 PM ET time without any Tuesday closing quote for the underlying Japanese securities. Using Monday's quote to determine Tuesday's NAV violates the forward pricing rule because TWIEX would be traded on both Monday and Tuesday business hours at the NYSE but unfortunately at the closing (stale) prices as of 1 AM Monday ET.[11] Any Tuesday event may affect the Japanese securities (and hence TWIEX) but Tuesday information is not incorporated

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[11] Before the inception of the investment company act 1940, NAV was calculated at 4 PM on day t but effective at 10 AM on day t + 1 for public transactions. But insiders within mutual funds could buy and sell funds after 4 PM on day t at day (t-1)'s NAV (late trading or after-hour trading), even if they knew the NAV of day t (which is supposed to be executed for public transactions on day t+1). Additionally, insiders could sell funds at a discount to the NAV. These opportunities helped fund insiders to make (risk less) arbitrage profits. The backward pricing rule of the Investment Company Act 1940 was introduced in 1940 to eliminate the insider's profit opportunities. Under the provision of the backward pricing rule, mutual funds priced the NAV that remained in effect for the next 24 hours. However fund speculation and dilution components were higher under backward pricing rule because investors locked-in a low price in a bull market and higher price in a bear market (because purchase and sales orders could be executed at a price computed before the order was received by the fund companies). The backward pricing rule was removed in 1968 with the introduction of the forward pricing provision (Rule 22c-1 of Investment Company Act 1940). The forward pricing rule suggests that mutual funds execute investment orders after the receipt of any sales, redemptions or repurchase orders from investors at the next computed prices of its NAV (usually 4 PM ET). The main objective of forward pricing rule is to ensure fairness as it excludes any after-hour trades. [Source: Investment Company Act Release No. 5413 (June 25, 1968), SEC Investment Company Act Release No. 5519 (Oct. 16, 1968)].

into Japanese securities. This problem is also acute during the weekend or on days when foreign markets are closed due to any significant event; for example, the Taiwan Stock exchange was closed during September 21-24, 1999 because of a deadly earthquake, trading restrictions were imposed on the Malaysian stock exchange when the Government took massive currency reforms mostly by imposing exchange controls to counter speculative attacks on Ringgit in December 1998; and the Philippine Stock Exchange experienced an unscheduled closing in March 2000.[12] The NAV methodology is assumed not to be a serious problem when pricing underlying securities traded in the similar time zone with the USA (except in those cases where there is an inadequate volume which could lead to nonsynchronous trading).

The predictability of international stock funds' returns has enjoyed increased importance and consideration in recent academic studies. Most of these studies suggest that regionally focused international funds can be predictable. Some of these studies also find large and economically significant predictability for domestic stock funds. Recent academic research also paved the way for investors to exploit international funds because more investors knew about this predictability after these academic works were published. In this paper, I combine the ideas of Miller and Prather (2000) and Varela (2002). Miller and Prather (2000) deal with using the US indices to predict global fund prices. Varela (2002) predicts the US-based country funds (Japan, China, and New Zealand funds) using the same day's local indices (but lagged by 12-14 hours) and finds exploitable trading opportunities. Varela's (2002) theory relies on the fact that international funds can usually be bought up to 4:00 PM New York time at the last available NAVs. In turn, the last available prices are based on (stale) stock prices at the close of trading for the overseas markets, where most of the stocks in the international funds trade. In fact, one can

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[12] For details, 'Taipei Stocks Survive Quake's Impact', (http://www.iht.com/IHT/TC/99/tc092899.html); 'Asian Economic Crisis', (http://www.mtholyoke.edu/acad/intrel/asiacris.htm) and 'The Financial Crisis in Asia', (http://www.sealinks.de/asienkrise/adb99.htm).

profit from the serial correlations even with no stale prices, at least if intra-day quotes are available. The long period after the local close provides plenty of time to make smart decisions to trade or not to trade international funds. This essay investigates whether the US-based international funds' returns can be predicted from both the US and foreign indices. I use both predictors in one model and examine the extent to which foreign and the US stock returns can be used to predict returns on international funds. The US indices are the more powerful although statistically significant effects are expected for certain foreign indices.

Using 2,479 daily return observations from January 4, 1993 through October 31, 2002 from all categories of 117 international stock funds, I explore the pattern of returns and potential exploitability of those return patterns. The sample also includes 21 international bond funds and 6 international hybrid funds (the bond and hybrid funds were not investigated in previous studies). This study splits the sample, using the initial sub-sample to investigate return patterns and develops trading rules, and finally tests those trading rules on the holdout sample.

Regressions of mutual fund returns on indices, both the US and foreign, are presented showing the presence of statistically significant regularities, especially for international stock funds (as distinct from international bond and hybrid funds). Calculations of potential returns are then presented to show that the returns are of statistically and economically significant in magnitude. These effects are shown to be economically significant in that profits in excess of buying and holding the funds can be earned, at least for certain funds. Rational investors would use the predictabilities to be out of the funds at certain time, and are thus exposed to the risk of the funds only part of the time. Thus the relevant comparison is with a strategy that holds these funds along with a less risky investment vehicle (such as money market fund or index fund or bond fund, or those willing to accept more risks may choose to be in the US stock funds when

not in international funds). The empirical results suggest that both load and no load funds are subject to similar kind of exploitation by prudent investors. The empirical results also show that investors exploit international funds even at the presence of current trading and exchange restrictions.

The organization of the remainder of this paper is as follows. The next section discusses institutional arrangements of mutual fund's NAV pricing and argues about the fair valuation. Section three reviews previous academic literature. Section four and five explain the data and methodology respectively. Section six provides empirical results on return predictability, develops trading strategies to capitalize the predictability and tests these strategies using the holdout sample. Section six also discusses the size and style effects of mutual funds predictability and presents empirical results of a conservative trading strategy. Section seven provides recent widespread evidences of mutual fund returns exploitation. Section eight empirically tests a new proposal made by the Security and Exchange Commission to combat market timing trades. Finally, section nine concludes the paper.

2.2. NAV Pricing and Fair Valuation

The existence of NAV predictability has been known to the mutual fund industry for the last two decades. There were some attempts by Nomura Securities Foreign Inc. in 1979 and by Putnam Growth Fund and Putnam Foreign Equities fund Inc. in 1980 to make an amendment to Rule 22c-1, but the SEC took no-action in this regard.[13] Until today, there is no established rule to mitigate stale pricing problem of international funds. The Investment Company Act of 1940 allows mutual funds to value their security at a fair value when a significant event affects the

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[13] For details see Chapter 9 of Pozen (1998).

market or when there is no reliable market quotation for a security or if the underlying stock market is closed.[14] The SEC's position in this regard is stated in Scheidt's (1999, 2001) letter to the ICI. The SEC states that funds can't just rely on the last price of a security traded on a foreign exchange to determine NAV, especially on those days when a significant event occurs that affects the market. The SEC suggests that mutual funds should use across-the-board (top-down) adjustments when making any price adjustment. But it can be argued that the SEC's letters opted for subjective evaluation of fair value because the definition of significant event is very wide as it includes anything, anywhere that could affect the market.

Sahoo (2001a) argues that it is not clear from SEC's letters whether a fund should use fair value pricing if a significant event occurs immediately after 4 p.m and if a significant event occurs but its impact may not affect the fund's NAV. Sahoo (2001b) documents that one-third of the funds don't monitor for significant events that could force them to fair value their fund holdings; and even if they use fair value, more than 50% of the funds don't follow up to see how accurate their adjustments were and smaller funds are less compliant in using fair value method than larger funds do.

The objective of fair value pricing is to protect long-term investors from short-term traders. Fair value pricing mitigates part of stale pricing problem. But there is no uniform fair value method used by mutual fund managers. Rahl (2001) documents that mutual funds follow different fair value methods such as index futures, forward currency contracts, intra-day US returns, security prices in other markets, ADRs, any of a host of other predictors of the US.

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[14] According to rule 2(a)-41(B) of 1940 Investment Company Act, portfolio securities with respect to which market quotations are readily available shall be valued at *current market value* and other securities and assets shall be valued at *fair value* as determined in good faith by the board of directors of the registered company. Rule 2(a)-4 of the 1940 Investment Company Act also uses the above definition of fair value as a basis for computing periodically the current NAV of funds for the purpose of pricing their shares. For details also see Accounting Series Release No. 118 of references.

security prices such as exchange-traded funds etc. It might be possible that different funds holding similar securities could come out with different fair value for the same security. Rahl (2001) shows that on an average 13% of mutual funds use some kind of fair value adjustment. He also shows that 6.8% of funds use fair value because of liquidity concerns and 4.2% uses it to make time zone adjustments. There is also inconsistency in defining an illiquid security. For example, some funds treat an illiquid security for which there is only one market maker, some companies defines an illiquid security if the price of the security doesn't change for the last five business days. Some recent news articles argue that funds should follow a single fair value procedure.[15]

A recent SEC survey also reveals that one third of 960 funds surveyed in Fall 2003 did not use fair value pricing at all during the 20-months volatile period between February 2002 and September 2003. More than 50% of the surveyed funds that invested more than half of its portfolios in foreign markets used fair value pricing no more than 5 times during this volatile period. As a result investors in about 25% of the surveyed funds lost more than 4% of their assets to market-timers. The survey also documents that most funds subjectively estimate the fair value pricing of their portfolios; however they do not check the accuracy of these estimates the next day.[16]

International markets usually follow the performance of the US markets; however it may not work for a particular country or event and eventually may create a problem when mutual funds use fair value method. Morris (2002) stated, "*On July 24, for instance, steep losses in the Japanese market coupled with a U.S. rally led funds using fair-market pricing to mark up values*

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[15] For example, Gasparino (1997), Ogden and O'Hagan (1997), Wyatt (1997), Wax (1997), Sesit (1998), Berenson and Kapner (2001), Bullard (2001), Tolliver (2002), Segal (2002), and Stone (2002) etc.
[16] 'Fair Value Gets Short Shrift', Ian McDonald and Tom Lauricella, *Wall Street Journal*, March 24, 2004 and 'SEC Inspections Staff Refers Fund Cases Involving Fair Value Pricing to Enforcement', Daily Report for Executives, BNA Inc. April 27, 2004.

for a big jump in Japan the following day. But the Nikkei didn't surge as expected. And as a result the funds made sizable markdowns the next night, drastically under performing the Nikkei." This situation may occur due to after-hour news announcements by any big firm or industry. Besides, fair valuing an entire portfolio that does not resemble an index is complex and time-consuming. Some investors are arguing that *fair value* pricing isn't fair; rather it should be treated as *artificial pricing*.

Most of the funds are reluctant to use fair value (even if it necessary) because they do not want to loose investors' confidence on their funds or to avoid lawsuits. For example, 'Heartland Advisors' used fair value method to price three of its funds and more than a dozen lawsuits have been filed against it because the shareholders of these funds believed that their funds were not accurately priced. The NAVs of Heartland's funds decreased significantly because of fair valuation and investors charged Heartland for insufficient disclosures about fair valuation in its prospectus.[17]

Academic solutions to eliminate NAV predictability include both bottom-up and top-down fair value methods. Bottom-up methodology evaluates each security within a portfolio on a case-by-case basis and updates each stock's closing prices to reflect the relevant market information. In contrast, top-down methodology evaluates the broad asset classes first, then across industries within classes and finally across firms within the industries (i.e. it applies to any broad change across countries, sectors, industries, firms or portfolios). Bottom-up methodology is more appealing because there might be events that are relevant only to a certain country or industry or firm.

Ciampi and Zitzewitz (2001) of Interactive Data Corporation (IDC) and Madhavan (2003) of Investment Technology Group (ITG) Inc. recently provide commercial solutions for

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[17] 'Study: Inconsistent Valuation Practices Plague Industry', Daly, Gavin (2001), July 23, (www.ignites.com).

mutual funds' stale pricing problem. Both IDC and ITG use bottom-up methodology of fair value.[18] However, Madhavan (2003) argues that fair value pricing presents two problems: (1) it introduces tracking error for a fund relative to a public benchmark as the benchmark or index is computed using stale closing foreign prices and (2) it generates "flips" in daily return rankings relative to peers as not all fund companies are using fair value and some fund companies use no fair value at all. Madhavan also argues that the fair value pricing can only be introduced and expedited in the mutual fund industry if public benchmark providers were to produce fair value adjusted indexes. Singal (2004) documents that implementing fair value pricing is difficult because international funds invest in different markets and the correlation between a particular fund and a market is not constant, rather correlation may change continuously. Besides, some international indices suffer from stale pricing because of low trading volume as well as infrequent trading of their underlying securities.

In a recent investigation, the SEC found that Heartland Advisors Inc. mispriced two of its municipal bond funds by following IDC's fair value pricing method that reduces the value of these two funds by 44% and 70% in a single day. The SEC's lawsuit against Heartland alleged that Heartland fraudulently overstated the value of the underlying shares of its two municipal bond funds for several months before these write-downs by following IDC's fair value method

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[18] IDC provides a confidence interval for each security to identify the degree of certainty that the local close is not the liquid market price. Fund managers can use the confidence interval for any price adjustment. This is done by a multi-factor model that creates a price adjustment factor for each security (a multiplier applied to the local close to arrive at a fair market evaluation). For details see 'Fair value Information Service' at www.ftinteractivedata.com. This website also documents that after the introduction of IDC's fair value service in February 2002, the following funds subscribed the fair value service on a trial basis: Safeco mutual fund (August 2002); Delaware Investment (November 2002); ING Mutual Fund (May 2003); Eaton Vance Management and JPMorgan Fleming Asset Management (September 2003); Westcore Funds (October 2003) etc. However, the number of fair value subscribers increased to 43 by March 2004. ITG also uses a stock-specific multi-factor model. These factors capture the unobserved changes in overnight prices (from the close of the foreign market to the close of US market). T. Rowe Price Associates, Putnam Investments, and MFS Investment Management etc. are currently using ITG's fair value method. Source: www.itg.com.

even though Heartland knew that the fair value prices were too high. This evidence raises the questions of ethics, fairness and correctness of fair value service providers.[19]

The fair value pricing became questionable during the Asian financial crisis especially after what happened on Tuesday, October 28, 1997 in Hong Kong. The Hang Seng Index fell 14% on this day (Nikkei and FTSE declined by 4% and 9% respectively on October 28), mostly because of the worst decline in a decade on the NYSE on Monday, October 27, 1997 (the Dow decreased by 7.18%, the S&P 500 decreased by 6.87% and the Nasdaq decreased by 7.16%).[20] Hong Kong Market closes 13 hours before the NYSE closes. At the close of the NYSE on Tuesday, October 28 mutual funds took different views to price their foreign securities. For example, the T. Rowe Price Fund used neither the Tuesday Hong Kong closing prices nor the NYSE Tuesday closing prices. Instead, the T. Rowe Price used the Wednesday opening prices of Hong Kong. On the other hand, the Colonial Group did not use fair value pricing for the Colonial Newport Tiger Fund to avoid the risk of subjectively trying to predict the market. This cost them $1 in NAV, a decrease of approximately 11% from previous days' NAV. Investors earned one-day return of 8%-10% from most of the US-based Asian mutual funds, which did not use fair value pricing (for example, Investec China and Hong Kong Fund (ICHKX), U.S. Global China Region Opportunity (USCOX) etc.). The profit came directly out of the pockets of the buy-and-hold investors.

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[19] 'One Case Shows the Perils of Smoothing', Karen Damato, *Wall Street Journal*, March 24, 2004.

[20] The US markets mostly declined because of investors' concerns about potential impact on US corporate earnings of the growing market turmoil in Asia and the repercussions from the potential economic slowdowns and deflationary pressures. The fall of DOW on October 27 has been treated as the 10th largest decline since 1915. The cross-market trading halt circuit breaker procedures (imposing temporary trading halts following significant market declines) had been used first time on October 27 since their adoption in 1988. The DOW index declined by 350 points at 2.36 PM from the previous trading session closing value triggering a 30-minute trading halt on all US stock, options and index futures markets. The trading resumed at 3.06 PM; however the DOW fell drastically to the circuit breaker level (by 550 points) at 3.30 PM. Thus, the trading halted at 3.30 PM and the stock market was closed 30 minutes earlier than its regular closing time (for details see, "Trading Analysis of October 27 and 28, 1997", A Report by the Division of Market Regulation, U.S. Securities and Exchange Commission, at http://www.sec.gov/news/studies/tradrep.htm, 07/19/1999).

The Fidelity investments group believed that market timers (investors who time the markets) would seek to profit from depressed prices in foreign markets by buying international funds. Thus, the Fidelity valued the portfolios of its Hong Kong and China securities on the basis of Tuesday's NYSE closing prices which increased Fidelity's NAV by 2 cents to $ 10.88 on October 28 as opposed to the investors' belief that the NAV would drop. Traders invested an extra $20 million in one day in one of Fidelity's funds that invested heavily in Hong Kong in an attempt to make a profit. If Fidelity had used Tuesday's Hong Kong closing prices, these traders could have made an 18% profits. Hong Kong market actually rebounded on Wednesday as a result of a rebound in the NYSE on Tuesday, October 28, 1997 (the Dow, the S&P and the Nasdaq increased by 4.71%, 5.12% and 4.58% respectively from previous close and approximately 10% from their morning low).[21] Bullard (2000) estimated that the two-day volatile period in October 1997 accounted for 1-day loss of 1.28% to 2.56% of mutual funds' assets.

A situation like October 1997 was also observed on January 3, 2001 when the Federal Reserve Bank cut interest rates by 0.5%. This resulted in approximately 14% rise in the Nasdaq composite index, 4.9% increase in the S&P 500 index and approximately 5% increase in other major US indices (Bullard, 2001). On January 3, 2001 investors invested tens of millions dollars in several international funds assuming the foreign markets will follow the US rally on next day.[22] But the Vanguard implemented fair value method on January 3, 2001 to price its international funds (especially for Vanguard's international growth fund). The T. Rowe Price fair

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[21] For details, see Jares and Lavin (1999), Pozen (1997), Singal (2004), and Wyatt (1997).

[22] It may be mentioned that the Hang Seng Index of Hong Kong decreased by 2% on January 3, 2001 but increased by 4% on January 4, 2001; the KOSPI Composite index of Korea decreased by less than 0.5% on January 3, 2001 but increased by 7% on January 4, 2001; the FTSE 100 Index of UK decreased by 2.2% on January 3, 2001 but increased by 2.4% on January 4, 2001; the Straits Times Index of Singapore decreased by 1.9% on January 3, 2001 but increased by 3.1% on January 4, 2001; the Japanese markets were closed on January 3, 2001; however the Nikkei 225 decreased by 0.5% on January 4, 2001 from its previous (December 29, 2000) close.

valued its Japan fund on January 3, 2001 but didn't fair value its other foreign funds because they didn't have good proxies for those markets. However most of the other mutual funds didn't use fair value on January 3, 2001.

Zitzewitz (2003a) is extremely concerned because mutual funds do not update the fund prices either at all or effectively to mitigate stale pricing problem. He investigates the industry response to this arbitrage issue and the roles of fund governances. He finds that the industry response was very slow, except adopting short-term fees in 30% of all international funds especially during 2001-2002. He finds that the speed and efficacy of mutual fund's action to protect shareholders from dilution (i.e. wealth transferred from long-term mutual fund investors by market timers) is inversely related with fund's expense ratios and the share of insiders on its board (agency problem). Zitzewitz (2002) documented that most of the fund companies did not use fair value during the most recent period (May 2001 – July 2002) when markets were highly volatile.

Due to problems associated with implementing fair value pricing, few funds could credibly use it. Zitzewitz (2002, 2003a,b) and Jares and Lavin (2004) confirm this fact as they find significant profitable opportunities even using recent data. In particular Jares and Lavin (2004) identify much profitable opportunities using data up to December 2001. I extend the data to October 2002 and re-examine the industry's response to fair value pricing in recent years. If I find higher profit opportunities for the holdout sample it may be argued that the mutual fund industry is still far away from implementing a fair value method to price its funds. This paper may provide some new thoughts and suggestions in this regard.

2.3. Literature Review

Several studies examine the integration of the US and other global markets in terms of return correlations, spill-over effects, lead-lag relationship, weekend effect, contagious effects, and volatility etc.[23] By using different sets of financial data from the US and foreign markets most of these studies find that there is a spillover effect from the US to other markets. This transmission process is either contemporaneous (for markets situated in the same US time zone) or has a one-day lag from the US (for most of the Asian and part of European markets). The correlation of the US and other global markets is the strongest when the US market experiences a dramatic move. However, most of these studies conclude that it would be difficult to make abnormal profits from the observed correlations between the US and other global markets. By using stocks, Copeland and Copeland (1998) exploit the lead-lag relationships using a trading rule that involves futures contracts (open a one day long or short position on Hong Kong futures contracts on the basis of up or down US markets previous day). The proposed trading rule provides excess returns of up to 11.5 basis points over buy-and-hold returns. But none of these studies document the possibility of profiting by trading US mutual funds.

NAV Predictabilities of the US-based international funds received renewed interest in recent years. Bhargava, Bose and Dubofsky (1998) pioneered the studies on the profitability of trading international funds. They examine five no load international funds (Babson-Stweart Ivory, IAI, Ivy, Japan fund and Scudder Fund) from May 31, 1988 through December 31, 1995 using data from Barron's and 1990 Mutual fund sourcebook. The analysis is done for individual

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[23] Hillard (1979), Jaffe and Westerfield (1985a), Schollhammer and Sand (1987), Eun and Shim (1989), Becker, Finnerty and Gupta (1990), Hamao, Masulis and Ng (1990), King and Wadhwani (1990), Arshanapalli and Doukas (1993), Becker, Finnerty and Friedman (1993), Koch and Koch (1993), Lin, Engle and Ito (1994), Craig, Dravid and Richardson (1995), Karolyi and Stulz (1996), Copeland and Copeland (1998), Longin and Solnik (2001), Lee and Rui (2002) etc.

fund and equal-weighted portfolio using a hypothetical S&P 500 index fund. The sources of the profitability come from two facts: first, the US market leads foreign markets especially during extreme volatile periods and, second, international funds compute NAV using stale prices of their underlying securities. Accordingly they propose a trading strategy: buy international funds on day t when the S&P's return is 1.5 standard deviations higher than the mean returns of previous 40 days and switch to the S&P on the first day after the S&P subsequently declines. The proposed trading strategy provides an annual return of more than 800 basis points higher than a passive buy-and-hold strategy; for example, an investor with $10,000, invested equally in five sample funds ($ 2000 in each fund) on May 1, 1988, would receive $40,328 on December 31, 1995; while with the same $10,000 a buy-and-hold investor of the S&P500 index would receive $23,548. They recommend that the international funds, to compute their NAVs, should use today's closing values of ADRs and international stocks actively traded in the US or the next-day's opening prices (or average bid-ask quotes) of foreign stocks traded in foreign markets. Stanton (1999) shows that employees have an incentive to retire and liquidate their retirement or rollover plans if they find that their retirement annuities are priced on the basis of stale prices.

Miller and Prather (2000) did an analysis for the College Retirements Equity Fund (CREF) annuity accounts. At the fund level the portfolios behind the CREF annuity accounts are similar to mutual funds. The most striking patterns revealed in Miller and Prather (2000) is a tendency for returns on the CREF global fund to be predicted from one day lagged returns on their domestic funds, notably the index fund. However it could not be directly applied because the returns on the different funds are not known until after the market closes. But the results suggest a technique that could be applied because the returns on the CREF index fund are virtually identical to that on the index. They suggest very strongly that trading strategies that use

various indices would be useful in managing retirement funds. It may be possible to devise a strategy for switching between funds that produces appreciably higher returns than could be obtained from staying in any single fund. Their switching trading strategy is based on the movement of the Russell 3000 index and the switching strategy dominates the buy-and-hold strategy in terms of higher raw and risk-adjusted returns and lower risks.

Bhargava and Dubofsky (2001) investigate the possibility of timing the international funds and document the fact that profits can be earned from funds that do not use fair value. They examine three Vanguard international equity index funds of which the European and Pacific fund data is from July 18, 1990 through December 31, 1996 and the Emerging Market fund data is from May 4, 1994 through December 31, 1996. They propose a trading strategy: buy (sell) international funds and sell (buy) the S&P 500 on days when the S&P 500 is up (down) by 1.5 standard deviations from its past 40 days mean returns. The trading strategy earns significantly higher returns than the buy-and-hold returns in absence of any transactions costs (Vanguard has fees on trades within a month). They recommend that international funds should use fair value pricing more frequently especially when there is a big move in the US market. However, they argue that if there were 24 hours real-time trading for all securities in the world, the profitability strategy would disappear and the need for fair value pricing would also disappear.

Goetzmann, Ivkovic and Rouwenhorst (2001) examine NAV predictability from the fact that there is a close relationship between a fund's liquidity and stale prices of its underlying securities. They investigate 391 international funds from 8 Morningstar international fund categories for which at least 100 daily returns are available from January 2, 1990 through July 24, 1998. They obtain daily mutual fund data from the *Wall Street Web*. They use the returns of

Vanguard 500 Index Fund (VFINX) as a proxy for the S&P 500.Their sample of international funds exhibits higher correlation with the lagged S&P 500 returns. They find positive (negative) portfolio returns on days following an increase (decline) in the returns of S&P 500 index, especially for Diversified Pacific-Asia and Pacific-Asia ex. Japan funds. They propose a trading strategy: buy (sell) international fund at the end of the days when the S&P 500 is up (down); the alternative place to keep the money is cash. Their trading strategy returns outperform buy-and-hold strategy by approximately 20% per year (i.e. $1.1 billion worth of wealth is transferred to short-term traders annually) in absence of transactions costs. Finally they argue that mutual funds should use a top-down methodology of fair valuation (an econometric method that captures the public information of daily late-afternoon trade; for example, adjusting fund's NAV to reflect the predictable component of tomorrow's NAV by using today's S&P 500 returns). Using this top-down method, they show that trading strategy profits almost disappear. They also suggest imposing differential fee structures for short and long-term investors.

Chalmers, Edelen and Kadlec (2001) document that current NAV pricing by mutual funds creates economic distortions, inefficiencies and deadweight loss because NAV appears as if it is computed by intermediaries (third parties). They examine 943 mutual funds (484 domestic equity, 139 international equity and 295 domestic bond) from February 2, 1998 through March 31, 2000 using data from www.TrimTabs.com. They show that stocks funds can be predicted from S&P 500 index future and bond funds can be predicted from futures contract on 5-year T-note. Accordingly, they propose a trading strategy: buy mutual fund shares (exercise wildcard call) on days when the predicted next day fund return is positive and sell mutual fund shares (exercise wildcard put) on days when the predicted next day fund return is negative. A fund is bought (sold) if the index future return is large and positive (negative). The proposed wildcard

option trading strategy earns annualized excess returns of 2.8% for all the US equity funds and 10.4% for international equity funds with 6 round-trip trades per year. They stated, "…the *underlying asset of the mutual-fund wildcard option is the portfolio of assets held by the mutual fund. The exercise price of that wildcard option is the portfolio-weighted price of the last trade in each asset held by the fund. The option expires at 4:00 p.m. and it regenerates daily. Investors who currently hold fund shares possess both a wild card put and a wild card call, whereas all potential mutual fund investors possess a wild card call"* (p. 2278). They suggest two alternative adjustment to remove stale-pricing problems of mutual funds: (a) use midpoint of each stock's closing bid and ask quotes instead of closing prices of stocks to compute NAVs; or (b) use a bottom-up fair value pricing method that reflects the benchmark's returns (S&P 500 or Russell 2000 future contracts) over the interval from the time of last trade to closing value in each underlying security. These adjustments reduce their wildcard strategy profits by fifty percent.

Varela (2002) investigates the extent to which the closing foreign market indices can be used to predict the US-based Asian funds by examining seven Japan funds, six China funds, and one New Zealand fund. The beginning of his mutual fund data varies from as early as 31st December 1992 to October 21, 1994 and the data ends around first quarter of 1996. He finds predictable components in the underlying local indices and uses a filter rule to exploit the predictability. His filter rule (buy or sell a Japan, China or New Zealand fund after its underlying Asian-market index declines or rises) theoretically produces one-day returns, which are equivalent to the one-day return of a futures contract on corresponding mutual funds ("*A decline in the Asian market would result in a short contemporaneous theoretical futures position, but a long underlying mutual fund position a dozen or more hours later, although the reported daily return is the same in either case given opportunity costs*", pp. 778). The filter rule (in absence of

transactions costs, trading restriction, and fair value pricing) offers significantly higher (6 to 12 times) returns for Japan and New Zealand funds. For China funds, the results are mixed; however higher returns are found when Shanghai Stock Exchange B shares are used to implement his trading rule. He suggests that the NAVs of the US-based Asian mutual funds should be calculated on the basis of closing market value of Asia after the NYSE closes.[24]

Greene and Hodges (2002) examine how fund flows that are correlated with subsequent fund returns can impact the performance of open-end mutual fund through a dilution effect (short-lived shifts in the fund's cash position that dilutes the returns of the fund's risky assets). They investigate 833 mutual funds (204 Growth, 309 Bond, 211 domestic equity and 109 international equity) for the period of February 2, 1998 through March 31, 2000 using data from www.TrimTabs.com. They find significantly higher average correlation (0.3492) between the previous day's S&P 500 returns and today's international equity funds' returns. They also document positive correlation (0.0512) between yesterday's fund flows with today's international fund returns. This suggests that daily fund flows to international funds exhibit good market timing ability. They propose a trading strategy: buy-and-hold international funds on days when the S&P 500's return is positive and sell international funds and hold cash when the S&P 500 is down. They observe no significant dilution effect for domestic equity funds. However significant dilution effect (approximately 50 basis points) is observed for international funds that cost long-term investors approximately $1 billion a year. They suggest that the current exchange and pricing policies of international funds are critical to eliminate stale pricing problem.

Boudoukh, Richardson, Subrahmanyam and Whitelaw (2002) document the institutional features of mutual funds that generate NAV predictability. They examine this NAV

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[24] It may be mentioned here that the Kinetics Asia Technology and GAM Japan Capital funds have recently introduced a new pricing rule consistent with Varela's suggestions (Bullard, 2001).

predictability for 12 large international/European funds and 5 Pacific funds from January 1, 1997 through November 30, 2000. As a case study, they also include 3 different Vanguard funds (International growth, Pacific index and Europe index funds) in their sample. Their sample funds met the following criteria (1) no load funds, (2) permit exchanges, (3) charge no exchange fees and (4) offered mostly to individual investors by fund families. They propose a trading strategy: switch in between money market fund and international/European or Pacific funds depending on two market signals (index futures or the S&P 500 or both). For example, one can buy (sell) a Japan fund if the Nikkei 225 futures traded in Chicago Mercantile Exchange at 4 PM ET increases (decreases) compared to the closing value of Nikkei 225 at spot market in Japan (1 AM ET). For international/Europe funds they use intra-day S&P 500 returns as trading signal. They find higher trading strategy returns under both trading signals; but the returns increase when both signals are combined. On average their trading strategy produces 216% return over 34% buy-and-hold returns by staying less than 20% time in the stock market. They argue in favor of introducing or increasing redemption fees; however they do not opt for fair value pricing because of model and estimation risks associated with fair value pricing. In stead, they suggest that money invested on day t should go to mutual funds on day t+1, not on day t; this allows today's fund investors to own fund at tomorrow's NAV, not at today's NAV.

Miller, Prather and Mazumder (2002) investigate the possibility of predicting one mutual fund class by using another fund class. Using a time series of 2,739 daily returns for 641 mutual funds comprising 20 asset classes, they find low correlations between certain categories of international (both foreign and global) and domestic mutual funds. This suggests that international funds can indeed be used to reduce risk when combined with domestic US funds. Using Granger causality method, they show that the returns of domestic stock funds are useful in

predicting the returns of international funds along with the returns of several other categories of domestic stock funds. The instantaneous and cross correlation structure suggests that investors may be able to benefit from an asset reallocation strategy if observing the returns on one asset class could provide information about the future returns of another asset class. Accordingly they develop trading strategies and find higher risk-adjusted returns.

Zitzewitz (2003a) reviews the size and scope of the stale pricing problem using equal-weighted fund portfolios daily data for all categories of Morningstar mutual funds available in www.quote.yahoo.com from January 1, 1998 through October 31, 2001. He also uses flows of funds data for limited samples from www.TrimTabs.com. He finds substantial trading opportunities for 44 out of 48 Morningstar's fund categories (of which the most significant trading opportunities are observed for international stock funds, convertibles, high yield bonds, emerging market bond funds and sector funds). He suggests a profitable trading strategy: buy (sell) international and small-cap equity funds on days when the prices of related assets in the US market are rising (falling); buy European funds on days when the U.S. market is rising after the European close; buy Asian funds on days when the U.S. market is rising. However, transactions costs either prevent or reduce profit opportunities. By following his trading strategy, the daily arbitrageurs earn excess returns of 10%-20% from convertible and high-yield bond funds, 15-25% from domestic small-cap equity funds and 40%-70% from international funds. This suggests an annual average return dilution of 2% for regionally focused international funds, 81 bp for general international equity funds, 25 bp for specialty equity funds, and 9 bp for small and mid-cap US equity funds. Zitzewitz also estimates that the buy-and-hold investors of all categories of mutual funds lose $6.1 billion per year (of which $4.1 billion is lost only from international funds). Finally, he proposes a bottom-up fair value method that has recently been

initiated by the Financial Times (FT) Interactive Data under the supervision of Ciampi and Zitzewitz (2001).[25]

Jares and Lavin (2004) document that the US-based Japan funds can be predicted from the MSCI Japan i-share (an Exchange Traded Fund or ETF). They examine 8 US-based Japan mutual funds from March 21, 1996 through December 6, 2001 using data from www.finance.yahoo.com. They find higher correlation between Japan funds' returns on day t+1 and MSCI Japan i-shares' returns on day t. However, Greene and Hodges (2002) use i-shares as a trigger (as opposed to the S&P 500) in their trading strategy and find slightly lower returns but higher risk (table 1, panel C); it seems i-shares are not marked to market because these assets are less liquid. Zitzewitz (2003a) also reports that most of the i-shares are illiquid (except Japan i-shares) and may not correctly predict international funds. Jares and Lavin (2004) propose a general trading rule: buy mutual funds, if today's S&P 500 or ETF (i-shares) is up. However, depending on the alternative holding areas of investment for mutual fund investors, they propose six trading strategies: two domestic investor strategies (the holding area is the S&P 500); two international investor strategies (the holding area is ETF); and two cash strategies (the holding area is cash). They find that the average returns of all trading strategies are positive and higher than the buy-and-hold strategy in absence of transactions costs and trading restrictions. They

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[25] The FT interactive data uses the bottom-up approach over top-down approach because (i) different securities within a sector might be inversely related with significant event (i.e. rise in one security and fall in another security due to same significant event); (ii) the prices of some securities need not be adjusted as these are not at all affected by any significant event; (iii) when the composition of portfolios change, the correlation between a portfolio and an index or country loses accuracy. For details see the following news articles: (a) 'FT Interactive Data Introduces Fair Value Evaluation Service Designed to Help Mutual Fund Industry Address Guidance of SEC Staff's April 30, 2001 Letter', February 26, 2002 at http://www.ftinteractivedata.com/news/pr_20020226.htm; (b) 'FT Interactive Data Launches Fair Value Valuation Service: Mutual Fund Companies Show Growing Interest in the Groundbreaking Service', August 8, 2002 at http://www.ftinteractivedata.com/news/pr_20020808.htm; (c) 'New Fair Value Evaluation Service', Autumn 2002 at http://www.ftinteractivedata.com/news/connect_2002_au_fvs.htm; (d) 'Fair Value Information Service', 2002 at http://www.ftinteractivedata.com/pdf/FVS-5180-1202.pdf.

propose an objective approach (top-down) of computing mutual fund's NAV and suggest that fund companies should use ETFs to price mutual fund's NAV.

2.4. Data and Return Computation

Data for the analysis of this essay comes from several sources. Initially a sample of all international mutual funds (both equity and bonds) was sorted using both *Morningstar Principia Pro* and *CDA (Wiesenberger) Investment View* mutual fund databases at the end of the period (October 2002). To be included in this study, the fund must have been in continuous operation during the period January 4, 1993 through October 31, 2002.[26] Since open-end mutual funds are permitted to change the objective if shareholders approve the change, I consult both *Morningstar* and *CDA* to eliminate any international funds that changed objectives during the period of study. The purpose of eliminating these funds is to ensure, as much as possible, the homogeneity of funds representing each international fund category. This is important since I want to capture the uniqueness of the return properties of individual international fund in each investment category. Load and no load funds are segregated from one another to distinguish the differences (if any) of exploitable patterns. For multiple share classes within the same fund family, I use the share class, which was started (incepted) first. If the inception date is same for multiple share classes, I choose the share class alphabetically (usually A-share class).[27]

Once selected, I sort the international funds in terms of their *Morningstar* category. This allows me to use mutual fund samples from Far eastern to European and north/south American

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[26] The disappearance of some funds (survivorship bias) may not be a problem in this study. One reason for this belief is that disappearing funds would likely be poor performing funds.

[27] The sample includes funds that are closed to new investors (an indication of whether or not a security investment has eligible shares for issue to new investors). It is important because one objective of this study is to develop trading strategies where investors may switch funds without any purchase constraints or limited purchase constraints. These funds are interesting as the prevailing investors can still use them by switching most of their money from these funds and keeping a small fraction of investment in these funds.

markets. The final sample consists of 2,479 daily returns of 117 international equity (stock) funds from the following *Morningstar* categories: Diversified Emerging market fund (4), Diversified Pacific/Asia fund (7), Europe fund (11), Foreign fund (56), Japan fund (4), Pacific/Asia excluding Japan fund (5), Latin America fund (1) and World fund (29). The sample also includes 21 International Bond funds and 6 International Hybrid funds (funds with stock holdings of greater than 20% but less than 70% of the portfolios, where 40% of the stocks and bonds are from foreign markets).[28]

Daily NAVs and distributions (dividends or capital gains or both) data for each of the selected funds during the sample period are obtained from *Dial data*. The original source of NAV of *Dial data* is NASD quotes services. To ensure the quality of the data I follow the screening procedure of Busse (1999).[29]

Continuously compounded daily returns are computed for each fund by taking the natural logarithm of the change in daily NAV for each day in the sample. Daily mutual fund returns are calculated by using the following formula:

$$R_{i,t} = \ln \frac{value_{i,t}}{value_{i,t-1}} \qquad (1)$$

where $R_{i,t}$ is the return on fund i during the period t, $value_{i,t}$ is the value of an investment in fund i at time t, $value_{i,t-1}$ is the net asset value of an investment in fund i at time t-1.

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[28] When I screen the sample international funds, which were actively traded on or before January 4, 1993 I found more funds than my actual sample of this study. This is due to the difference between the inception dates and the data beginning dates of funds.

[29] Missing NAVs and errors in distributions dates account for less than 1% of our Dial Data sample. For example, distributions are sometimes recorded one day or two days before or after the actual distributions date (ex-dividend date). Following Busse (1999), I use *Moody's Dividend Record: Annual Cumulative Issue* to verify and correct the missing NAVs for which distributions records are found in Moody's Dividend Record.

After the returns for each international fund were computed, an equally weighted index return for each international fund category was computed by summing the returns of the individual funds (i) within the international fund category (c), and computing their average daily return using equation (2).

$$R_{c,t} = \frac{\sum_{i=1}^{n} R_{i,t}}{n} \qquad (2)$$

where $R_{c,t}$ is the average return on international fund category (c) during the period t. This resulted in developing equally weighted daily return indices (portfolio returns) for each international fund category.

It should be mentioned here that the NAV of equity mutual fund is reduced by the exact amount of dividends or capital gains distributions paid to the shareholders. When I calculate the returns of international equity mutual funds, I add the distributions back with the NAV of equity fund. However, for international bond mutual funds, distributions (or interest payments) are declared on a daily basis but are usually paid at the end of each month. However, the NAVs of international bond funds are not reduced by the amount distributions paid (i.e. the accrued interest is not included in calculating the NAVs of bond funds). The accrued interest is prorated over the month. Dial Data provides the distributions data of international bond funds on a particular day of each month when the bond fund distributes dividend income to its shareholders. I divide the amount of distributions paid in each month by the number of business days of that

month and accordingly adjust the NAVs and returns of international bond funds.[30] This

approximation spreads the monthly income distributions out over the month. This also eliminates

the impression that a dividend capture strategy would be highly profitable.

This study uses both the US and foreign indices. The following major US indices are

used to predict the US-based international mutual funds' returns: the S&P 500, the Russell 1000,

the Russell 2000, the Russell 3000, the Wilshire 5000, the Dow Jones Composite, the Dow Jones

industrial and the Nasdaq indices.

I choose the corresponding foreign indices on the basis of the approximate regional or

country composition of underlying shares of each sample international mutual fund. Funds for

which the major underlying shares are located in a single country I use the corresponding

country index. For example, I use the major Japanese indices (Nikkei 225, Topix 1st and 2nd

sections) as benchmark indices for the US-based Japan funds. But I use different categories of

the Morgan Stanley Capital International (MSCI) indices for most of the regional and diversified

funds because the MSCI indices represent many countries and these indices possibly are the

closest to the theoretical market index. The MSCI offers real-time data for the *MSCI indices* and

MSCI free indices. The difference between the MSCI indices and the MSCI free indices is that

the MSCI free indices are the most appropriate benchmarks for regional or diversified

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[30] The prospectus of PIMCO foreign bond fund states, '*Each fund intends to declare income dividends daily and distribute them monthly to shareholders of records'* (Page 40, date: 07-31-03). The prospectus also states that you begin earning dividends on fund shares the day after the Trust receives your purchase payment (page 40). I also talked to the industry people of some of the sample bond funds (for example, PIMCO, T. Rowe Price, Putnam, Credit Suisse etc.) and gathered that the international bond funds calculate dividend income (or interest) on a daily basis; but they do not pay interest everyday. Instead, the dividend income is accrued daily and usually paid at the end of the month. The accrued interest does not reduce the NAV of bond funds on ex-dividend date (when the distribution is actually paid). This makes the return calculation of bund mutual funds different from the returns calculation of equity mutual funds. However, the prospectuses of sample bond funds do not provide enough information about the common practices followed by the mutual fund industry in paying interest distributions. When I talked to the industry people, I understand that some funds follow business days and some funds follow calendar days to pay distributions. Even if they use calendar days, it is not clear whether they pay the three-days of accrued weekend interests on Friday or Monday. For simplicity, I use business days to divide the monthly distributions. Accordingly, the daily distribution is computed as a constant value and added with the NAV to calculate the return series of international bond funds.

international funds because the MSCI free indices exclude shares of companies that are not readily available for foreign investors. I use the *MSCI free indices* throughout this study and the MSCI free index data are obtained from DRI in terms of US dollars. The Japanese indices data are also obtained from DRI but in Japanese local currency.[31] Continuously compounded daily returns for each foreign index are computed by taking the natural logarithm of the change in daily price (prior day's close to today's close). Table A-1 of appendix lists the details about sample funds of this study. The summary statistics of sample funds and the US and foreign indices used in this study are presented in Table 1.

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[31] Fluctuations in currency exchange rates may distort the value of foreign securities (and hence the return of the fund) without a change in the intrinsic value of these securities. For example, if the value of Japanese stocks increased by 5% over the last one month and if the value of Japanese yen decreases by 5% during the same time, an investor will break-even. Some international mutual funds try to offset the currency exchange effect by hedging currency exposure with future contracts. NAVs of international funds are dollar denominated because the funds are traded in the USA. Prices of foreign securities are converted to US dollars by using appropriate exchange rate. Therefore NAVs include exchange rate effects. But returns to foreign market indices are in local currency. On a daily basis the market movement dominates the exchange rate movement, such that the exchange rate plays a small role in the relationship. In a more fundamental way, if one is interested in seeing how a foreign stock market influences mutual fund values based on that market, it is probably better not to adjust the foreign market for the exchange rate. The mutual fund is the one that actually adjusts for the exchange rate in calculating its NAV. If there had been no relation, then it might have been wise to see whether the mutual funds' adjustment was the factor eliminating the relation. However, Varela (2002) finds high R-squares in his regressions even though the currencies are different for NAVs and foreign indices. But Zitzewitz (2003a) shows that his results for international mutual funds may be an underestimation if he takes care of exchange rate. An investor can trade on exchange rate movements by buying international funds from post-close exchange rate fluctuations. For example, investors may monitor the movement of foreign exchange rate especially after 12 PM ET since most funds convert local prices into dollars using 12 PM ET exchange rates. Some websites (for example, http://www.econofinance.com/xrate.htm; http://www.bloomberg.com/markets/currencies/fxc.html; http://www.oanda.com/convert/classic etc.) provide intra-day exchange rate fluctuations. However, some mutual funds also use 4 PM exchange rate or exchange rate after 12 PM. Bhargava, Bose and Dubofsky (1998) suggest that the currency prices that mutual funds use to determine the dollar values of funds' underlying foreign securities are also stale. However, Karolyi and Stulz (1996) find that shocks to the Yen/Dollar foreign exchange rate and Treasury bill returns have no significant influence on the return correlations of the US and Japanese stocks. Copeland and Copeland (1998) suggest that the exchange rate is a significant and independent explanatory factor for both local-currency and dollar-denominated index returns; however they show that the exchange rate does not affect or bias their lead-lag results among the US and European or Asian countries. Most of these studies show a little or no effect of exchange rate in mutual fund's NAV prediction.

2.5. Methodology Employed for Fund Predictability

In order to conduct an empirical investigation, I divide the sample into two sub samples with an approximately equal number of observations: sub sample I (initial sample) contains 1242 daily observations from January 4, 1993 through November 28, 1997 and sub sample II (holdout sample) contains 1237 daily observations from December 1, 1997 through October 31, 2002. This division allows me to test the hypotheses and develop trading strategies by using one sub-sample and then to evaluate the trading strategies using the holdout sample. This method takes care of data snooping bias.

Returns of each mutual fund are then matched with the returns of both the US and foreign indices. Since changes in the returns of international mutual funds depend on the changes in the returns of foreign indices, I ignore foreign holidays and match the returns of each market index against the returns of each sample fund. This procedure is consistent with Varela (2002). Initially I calculate the serial correlations of each fund's returns for period up-to 3 days (i.e. first, second and third order serial correlations are calculated). The serial correlation measures the correlation between price (return) changes in successive time periods. A strong positive serial correlation in mutual funds returns may suggest a profitable trading strategy: buy a mutual fund after an initial period with a positive return and sell a mutual fund after an initial period with a negative return. A zero serial correlation is consistent with the weak form of market efficiency. To estimate the serial correlations, I use AR(1), AR(2) and AR(3) coefficients of each sample fund's returns. For example, AR(1) is computed using the following equation:

$$R_{i,t} = \alpha + \beta R_{i,t-1} + \varepsilon \qquad (3)$$

Similarly I compute AR (2) and AR (3) coefficients. I expect the coefficient (β) of independent variable in AR (1) equation to be positive and higher than the corresponding coefficients for AR (2) and AR (3) equations. The standard random walk argument predicts no serial correlation. Therefore, the null hypothesis can be stated as that the serial correlation coefficients of the first-differences at various lags are all zero.

Significant serial correlations in mutual fund returns imply that investors could exploit fund returns following a particular investment strategy; but unfortunately they cannot form a trading strategy just by following the movements in funds' NAVs (returns). Since NAVs are priced at 4 PM ET, investors have no way to know the price of mutual funds in advance and cannot make trading decisions on today's NAVs. In practice, NAV's may be available at the earliest at 5 PM ET and this is obviously too late to place an order before 4 PM ET. However, investors may follow a particular market index (or more than one index) for a fund and accordingly form their trading strategies. Since funds often correlate highly with a local index, one can use such an index to guess what their NAVs will be when reported. Some recent studies use today's US stocks index returns and/or index futures to predict tomorrow's NAVs. Varela (2002) uses today's foreign indices to predict today's NAVs and forms exploitable filter trading rule.

However, previous studies do not explicitly show which funds follow which specific local or US index (or indices). I use both indices as predictors in this study. I use a regression-based predictive model, where I regress today's fund returns on a set of previous day's US and foreign markets' indices. This predictive model follows step-wise regressions to identify the best predictor (or index). As the market variables are highly collinear, I use stepwise regression to eliminate variables that are statistically insignificant. Since one of the main objectives of this

Table 1: Summary Statistics of Sample Mutual Funds and Market Indices

This table presents the summary statistics of sample mutual funds and the US and foreign indices. Column one lists the names and ticker symbols of funds or indices. Columns two through five represent the minimum, maximum, mean and standard deviation (SD) of returns. Panel A shows the summary statistics for sample mutual funds and Panel B shows the summary statistics for the US and Foreign market indices. The sample period is from January 4, 1993 through October 31, 2002.

Panel A: Sample Mutual Funds

A. Diversified Emerging Market Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Merrill Lynch Dev Cap Market A	(MADCX)	-0.1073	0.0453	-0.00005	0.0107
Montgomery Emerging Mkts R	(MNEMX)	-0.0988	0.0483	-0.00011	0.0110
Morgan Stan Ins Emerging Mkt A	(MGEMX)	-0.1131	0.0453	-0.00001	0.0120
Templeton Developing Mkts A	(TEDMX)	-0.1580	0.1033	0.00003	0.0104
Portfolio		-0.1036	0.0424	-0.00004	0.0103

B. Diversified Pacific/Asia Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Fidelity Pacific Basin	(FPBFX)	-0.1147	0.0959	0.00004	0.0116
GAM Pacific Basin A	(GAPCX)	-0.1243	0.0895	-0.00024	0.0118
J. Hancock Pacific Basin Eq A	(JHWPX)	-0.0964	0.0651	-0.00002	0.0113
Merrill Lynch Pacific A	(MAPCX)	-0.1933	0.0750	-0.00006	0.0119
Morgan Stanley Pacific Growth B	(TGRBX)	-0.0898	0.0709	-0.00014	0.0117
Prudential Pacific Growth B	(PRPBX)	-0.1213	0.0468	-0.00021	0.0102
Templeton Pacific Growth A	(FKPGX)	-0.0808	0.0733	-0.00026	0.0108
Portfolio		-0.1383	0.0864	-0.00014	0.0112

C. Europe Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Alliance New Europe A	(ANEAX)	-0.1103	0.0621	0.00008	0.0118
DFA Continental Small Compny	(DFCSX)	-0.1724	0.0402	-0.00009	0.0097
DFA United Kingdom Small Co	(DFUKX)	-0.1933	0.0653	-0.00010	0.0097
Fidelity Europe	(FIEUX)	-0.1213	0.0575	0.00008	0.0109
INVESCO European Inv	(FEURX)	-0.2059	0.0643	-0.00012	0.0134
Merrill Lynch Euro Fund B	(MBEFX)	-0.2222	0.0574	-0.00006	0.0128
Morgan Stanley European Growth B	(EUGBX)	-0.1652	0.0532	0.00009	0.0124
Pioneer Europe A	(PEURX)	-0.0773	0.0516	0.00011	0.0110
Putnam Europe Growth A	(PEUGX)	-0.0800	0.0492	0.00018	0.0108
T. Rowe Price European Stock	(PRESX)	-0.0989	0.0626	0.00013	0.0109
Vanguard Euro Stock Index Fund	(VEURX)	-0.0560	0.0697	0.00023	0.0108
Portfolio		-0.0507	0.0468	0.00005	0.0091

D. Japan Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
DFA Japanese Small Company	(DFJSX)	-0.0698	0.1081	-0.00037	0.0144
The Japan Fund-Adv S	(SJPNX)	-0.1027	0.0936	-0.00017	0.0144
T. Rowe Price Japan Fund	(PRJPX)	-0.1338	0.1016	-0.00023	0.0148
Vanguard Pacific Stk Index Fd	(VPACX)	-0.0593	0.1272	-0.00010	0.0133
Portfolio		-0.0617	0.1076	-0.00022	0.0130

Table 1 Continued

E. Pacific/Asia Ex. Japan Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Eaton Vance Grtr China Gr A	(EVCGX)	-0.1395	0.1225	-0.00009	0.0149
Liberty Newport Tiger T Fd***	(CNTTX)	-0.1167	0.1542	-0.00023	0.0123
Merrill Lynch Dragon Fund B	(MBDRX)	-0.2158	0.1090	-0.00021	0.0145
Morgan Stan Ins Asian Eq A	(MSAEX)	-0.1283	0.0620	-0.00022	0.0139
T. Rowe Price New Asia Fd	(PRASX)	-0.1383	0.0861	-0.00004	0.0136
Portfolio		-0.1490	0.0933	-0.00016	0.0139

F. Foreign Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
ING International Growth I	(AEIGX)	-0.2361	0.0467	-0.00019	0.0122
AIM International Equity A	(AIIEX)	-0.0870	0.0461	0.00014	0.0097
American AAdvant Intl Eq Ins	(AAIEX)	-0.0894	0.0454	0.00012	0.0087
American Cent Intl Gr Inv	(TWIEX)	-0.1528	0.0591	0.00005	0.0110
American Funds EuroPacific A	(AEPGX)	-0.1125	0.0401	0.00013	0.0087
AXP International Fund A	(INIFX)	-0.1795	0.1069	-0.00019	0.0116
Babson-Stewart Ivory Intl	(BAINX)	-0.0547	0.0467	-0.00004	0.0090
Bernstein Tax-Mgd Intl Value	(SNIVX)	-0.1079	0.0462	0.00007	0.0089
BlackRock Intl Equity Instl	(PNINX)	-0.1625	0.0465	-0.00011	0.0100
Calvert World Value Intl EqA	(CWVGX)	-0.0822	0.0568	-0.00005	0.0092
CDC Nvest Intl Equity A	(NEFIX)	-0.0678	0.0446	-0.00007	0.0098
Columbia International Stock	(CMISX)	-0.1662	0.0428	0.00001	0.0098
Consulting Grp Cap Mkt Intl Equity	(TIEUX)	-0.1514	0.0438	-0.00005	0.0101
Credit Suisse Instl Intl Ins	(RBIEX)	-0.3495	0.0425	-0.00025	0.0125
Dreyfus Premier Intl Gr A	(DRGLX)	-0.3259	0.0414	-0.00033	0.0128
Eclipse EAFE Index Fd Nl	(NIEAX)	-0.3108	0.0401	-0.00015	0.0115
Enterprise Intl Growth A	(ENIGX)	-0.1458	0.0664	-0.00010	0.0104
Excelsior International Fd	(UMINX)	-0.0650	0.0546	-0.00002	0.0093
Federated Intl Equity A	(FTITX)	-0.1083	0.0377	-0.00007	0.0106
Fidelity Adv Overseas Fund T	(FAERX)	-0.0963	0.0524	0.00007	0.0098
Fidelity Canada Fund	(FICDX)	-0.0823	0.0619	0.00008	0.0098
Fidelity Diversified Intl Fund	(FDIVX)	-0.0524	0.0349	0.00028	0.0080
Fidelity Intl Growth & Inc	(FIGRX)	-0.1185	0.0403	0.00010	0.0089
Fidelity Overseas Fund	(FOSFX)	-0.1177	0.0515	0.00005	0.0100
Fifth Third Intl GDP Inst	(KNINX)	-0.0738	0.0429	-0.00002	0.0094
GAM International Fund A	(GAMNX)	-0.1024	0.0499	-0.00005	0.0104
Goldman Sachs Intl Eqty A	(GSIFX)	-0.1114	0.0531	-0.00007	0.0100
Harbor International Fund	(HAINX)	-0.1205	0.0451	0.00019	0.0096
Ivy International Fund A	(IVINX)	-0.2850	0.0493	-0.00006	0.0111
Liberty Acorn Intl Fund Z	(ACINX)	-0.1485	0.0498	0.00014	0.0084
Liberty Newport Intl Equity A	(CONAX)	-0.2063	0.0349	-0.00009	0.0097
Morgan Stan Ins Active Int All A	(MSACX)	-0.1536	0.0359	-0.00010	0.0094
Morgan Stan Ins Intl Equity A***	(MSIQX)	-0.1800	0.0402	0.00016	0.0096
Munder International Equity Y	(MUIYX)	-0.1176	0.0471	-0.00007	0.0098
Oakmark International Fund	(OAKIX)	-0.2346	0.0632	0.00010	0.0101
Phoenix-Aberdeen Intl Port. A	(PHITX)	-0.1567	0.0468	-0.00012	0.0111
Preferred International Value Fund	(PFIFX)	-0.1974	0.0393	0.00009	0.0095
Principal International A	(PRWLX)	-0.1167	0.0390	0.00000	0.0092
Schroder Intl Equity Inv	(SCIEX)	-0.5463	0.0404	-0.00042	0.0158
Scudder Intl Fund S	(SCINX)	-0.1112	0.0426	-0.00003	0.0100
SEI International Equity A	(SEITX)	-0.1108	0.0559	-0.00008	0.0098
Sit International Growth Fund	(SNGRX)	-0.1131	0.0568	-0.00007	0.0104

Table 1 Continued

F. Foreign Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Smith Barney Intl All Cap Gr A	(SBIEX)	-0.2109	0.0445	-0.00009	0.0106
Strong International Stock	(STISX)	-0.0847	0.0461	-0.00013	0.0110
T. Rowe Price Foreign Equity	(PRFEX)	-0.0927	0.0554	0.00003	0.0098
T. Rowe Price Intl Discovery***	(PRIDX)	-0.2062	0.0454	0.00011	0.0093
T. Rowe Price Intl Stock Fund	(PRITX)	-0.0926	0.0548	0.00000	0.0099
Templeton Foreign A	(TEMFX)	-0.1204	0.0421	0.00006	0.0079
Templeton Foreign Smaller Co A	(FINEX)	-0.1179	0.0484	0.00008	0.0075
USAA International Fund	(USIFX)	-0.0513	0.0400	0.00010	0.0085
Vanguard International Value Fund	(VTRIX)	-0.1997	0.0471	-0.00010	0.0102
Vanguard Intl Growth Fund	(VWIGX)	-0.0785	0.0602	0.00011	0.0096
Vontobel International Equity	(VNEPX)	-0.1950	0.0474	-0.00002	0.0103
Waddell & Reed Adv Intl Gr A	(UNCGX)	-0.2680	0.0565	-0.00011	0.0123
WM Intl Growth A	(SRIGX)	-0.0680	0.0449	-0.00008	0.0093
Wright Intl Blue Chip Equity Stand	(WIBCX)	-0.1590	0.0930	-0.00003	0.0102
Portfolio		-0.0510	0.0409	-0.00002	0.0081

G. Latin America Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Merrill Lynch Latin Amer B	(MBLTX)	-0.1466	0.1005	-0.00003	0.0157

H. World Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Alliance Global Small Cap A	(GSCAX)	-0.2155	0.0491	-0.00021	0.0120
American Fds New Prospective A	(ANWPX)	-0.1357	0.0411	0.00015	0.0090
American Fund Small Cap World A	(SMCWX)	-0.1860	0.0589	-0.00003	0.0107
American Heritage Fund	(AHERX)	-0.4055	0.3365	-0.00107	0.0427
AXP Global Growth A	(IGLGX)	-0.1739	0.0478	-0.00009	0.0107
Dreyfus Founders Wldwide Gr F***	(FWWGX)	-0.2759	0.0456	-0.00021	0.0120
Elfun International Equity Fund	(EGLBX)	-0.1612	0.0885	-0.00003	0.0109
Fidelity Worldwide Fund	(FWWFX)	-0.1574	0.0454	0.00008	0.0092
First Invest Global A	(FIISX)	-0.1394	0.0455	-0.00004	0.0096
GAM Global Fund A	(GAGLX)	-0.2231	0.0428	0.00006	0.0112
J. Hancock Global Fund B	(FGLOX)	-0.1120	0.0485	-0.00026	0.0104
Ivy Fund Global A	(MCGLX)	-0.0997	0.0475	-0.00015	0.0096
Janus Worldwide Fund***	(JAWWX)	-0.1182	0.0475	0.00020	0.0106
Lord Abbett Global Equity A	(LAGEX)	-0.1103	0.0467	-0.00009	0.0093
MFS Global Equity Fund B	(MWEBX)	-0.0955	0.0415	0.00007	0.0083
Oppenheimer Global Fund A	(OPPAX)	-0.2103	0.0607	0.00010	0.0114
Oppenheimer Global Gr & Inc Fd A	(OPGIX)	-0.1455	0.0546	0.00013	0.0111
Oppenheimer Quest Glob Val A	(QVGLX)	-0.2175	0.0501	0.00003	0.0094
Phoenix-Aberdeen Wldwde Opp A	(NWWOX)	-0.1961	0.0441	-0.00010	0.0113
Prudential Global Growth Fund B	(PRGLX)	-0.1819	0.0919	-0.00001	0.0115
Putnam Global Growth Fund A	(PEQUX)	-0.2136	0.0539	-0.00009	0.0124
Scudder Global Discovery Fd S***	(SGSCX)	-0.0874	0.0493	0.00016	0.0101
Scudder Global Fund S	(SCOBX)	-0.1734	0.0374	-0.00004	0.0089
Templeton Capital Accumulator	(TECAX)	-0.6978	0.0385	-0.00010	0.0161
Templeton Global Opportunities A	(TEGOX)	-0.1210	0.0632	-0.00002	0.0087
Templeton Global Small Co Gr A	(TEMGX)	-0.0883	0.326	-0.00005	0.0073
Templeton Growth A	(TEPLX)	-0.1480	0.0362	0.00004	0.0086
Templeton World A	(TEMWX)	-0.1289	0.0380	-0.00001	0.0091
USAA World Growth Fund	(USAWX)	-0.0518	0.0420	0.00007	0.0087

Table 1 Continued

H. World Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Portfolio		-0.0587	0.0400	-0.00005	0.0082

I. International Bond Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
Alliance Multi-Market Strategy A	(AMMSX)	-0.0644	0.0383	-0.00015	0.0030
Alliance North Amer Govt Inc A	(ANAGX)	-0.0903	0.0724	-0.00014	0.0075
American Century Intl Bond Inv	(BEGBX)	-0.0477	0.0282	0.00006	0.0060
American Fds Cap World Bond A	(CWBFX)	-0.0357	0.0218	0.00002	0.0036
AXP Global Bond A	(IGBFX)	-0.0194	0.0147	0.00002	0.0033
BlackRock Intl Bond Svc	(CIFIX)	-0.0952	0.0267	0.00000	0.0040
Consulting Group Intl Fixed Inv	(TIFUX)	-0.0530	0.0251	-0.00003	0.0050
Credit Suisse Global F/I Ret	(CGFIX)	-0.0430	0.0167	-0.00001	0.0034
DFA Five Year Global Fix-Inc	(DFGBX)	-0.0797	0.0178	0.00003	0.0032
Federated International Bond A	(FTIIX)	-0.0726	0.0329	-0.00002	0.0055
Franklin Temp Hard Currency A	(ICPHX)	-0.0849	0.0321	-0.00014	0.0056
Goldman Sachs Global Inc A	(GSGIX)	-0.0532	0.0090	0.00000	0.0027
Lord Abbett Global Income A	(LAGIX)	-0.0152	0.0163	-0.00012	0.0033
Merrill Lynch Global Bond B	(MBGOX)	-0.0263	0.0226	-0.00007	0.0036
Morgan Stan Ins Gl FI A	(MSGFX)	-0.0488	0.0488	0.00006	0.0041
PIMCO Foreign Bond Instl	(PFORX)	-0.1303	0.0151	0.00002	0.0041
Putnam Global Govtl Income A	(PGGIX)	-0.0215	0.0201	-0.00010	0.0037
Scudder Global Bond Fund S	(SSTGX)	-0.0139	0.0135	-0.00008	0.0024
Smith Barney Global Govt Bd A	(SBGLX)	-0.0794	0.0101	-0.00003	0.0032
T. Rowe Price Intl Bond Fund	(RPIBX)	-0.0357	0.0256	-0.00004	0.0049
Templeton Global Bond A	(TPINX)	-0.0169	0.0153	-0.00005	0.0032
Portfolio		-0.0114	0.0109	-0.00004	0.0025

J. International Hybrid Fund

Fund Name and Ticker		Minimum	Maximum	Mean	SD
American Funds Cap Inc Builder A	(CAIBX)	-0.0521	0.0390	0.00011	0.0051
UBS (Brinson) Global Balanced Y	(BPGLX)	-0.0986	0.0323	-0.00001	0.0063
First Eagle SoGen Global Fund A	(SGENX)	-0.1893	0.0190	0.00011	0.0068
Fremont Global Fund	(FMAFX)	-0.1344	0.0285	-0.00009	0.0072
Merrill Lynch Global Allocation A	(MALOX)	-0.1350	0.0316	-0.00001	0.0072
MFS Global Total Return Fund A	(MFWTX)	-0.0942	0.3082	0.00006	0.0060
Portfolio		-0.0643	0.0710	0.00003	0.0050

study is to develop an optimal switching strategy for mutual funds based on the market movement; I prefer to use stepwise regression to identify the statistically significant (best-fitting) market index for each sample mutual fund. The following regression model is used to predict mutual funds' returns from stock indices:

$$R_{i,t} = \alpha_1 + \alpha_2 I_{US,t-1} + \alpha_3 I_{F,t-1} + \varepsilon_{i,t} \qquad (4)$$

Table 1 Continued

Panel B: Sample US and Foreign Indices

Market Index	Minimum	Maximum	Mean	SD
S&P 500	-0.0711	0.0557	0.00029	0.0110
Russell 1000	-0.0696	0.0547	0.00028	0.0111
Russell 2000	-0.0753	0.0568	0.00021	0.0112
Russell 3000	-0.0687	0.0537	0.00027	0.0109
Wilshire 5000	-0.0695	0.0523	0.00027	0.0108
Dow Industrial	-0.0746	0.0615	0.00038	0.0108
Dow Composite	-0.0815	0.0535	0.00027	0.0099
Nasdaq	-0.0718	0.0460	0.00075	0.0090
MSCI Emerging Market Free	-0.1141	0.0477	-0.00004	0.0107
MSCI Europe Free	-0.0568	0.0519	0.00023	0.0105
MSCI Far East Free	-0.0562	0.1130	-0.00013	0.0136
MSCI Pacific Free	-0.0590	0.1086	-0.00010	0.0128
MSCI Far East Free ex. Japan	-0.1278	0.1028	-0.00008	0.0143
MSCI Pacific Free ex. Japan	-0.1214	0.0945	0.00003	0.0122
MSCI Europe, Australia, and Far East (EAFE) Free	-0.0468	0.0446	0.00010	0.0094
MSCI Latin America Free	-0.1448	0.1352	0.00002	0.0170
MSCI World Free	-0.0498	0.0460	0.00019	0.0085
Japan Topix 1st Section	-0.1280	0.1689	-0.00018	0.0133
Japan Topix 2nd Section	-0.1010	0.0579	-0.00004	0.0099
Nikkei 225	-0.0723	0.0766	-0.00029	0.0148
10-Year Treasury Bond	-0.0910	0.1045	-0.00021	0.0114
30-Year Treasury Bond	-0.0674	0.0630	-0.00015	0.0085

where,

R_{it} = Return of foreign mutual fund i at time t

$I_{US,t-1}$ = Return of US Indices at time t-1

$I_{F, t-1}$ = Return of foreign indices at time t-1

ε_{it} = Error term.

Regression equation (4) captures the relationships between today's fund returns and one day lagged returns of the US and foreign indices. The null hypothesis can be tested is that the US and foreign indices cannot predict international mutual funds' returns (slope coefficients of above regression equation should be zero). The alternative hypothesis infers that both slope coefficients will provide statistically significant positive values.

2.6. Empirical Results

2.6.1. Serial Correlation Results

As stated in last section, I divide the sample into two sub-samples with an approximately equal number of observations. I use the first sub-sample (1242 observations from January 4, 1993 through November 28, 1997) to compute the AR coefficients. I report the serial correlations results in Table 2. It is evident from Table 2 that the first order serial correlations are large and statistically significant in most cases. The higher order serial correlations (second or third order) are very small in magnitudes for most of the fund categories (except diversified emerging market funds) though statistically significant in some cases. One possible reason that the Diversified Emerging market funds exhibit statistically significant higher order serial correlations is that the emerging funds invest in the most illiquid emerging markets where some securities are not traded for several days at all. The Diversified Emerging market funds also invest in Latin American securities that correlate with the US. If the US leads Asian markets, this can produce serial correlations even if there is no correlation with any country. This explanation will also support the notion that foreign indices may have little predictive power in equation (4) when combined with the US indices.

I find higher and positive AR (1) coefficients for all categories of international equity funds (especially for Diversified Emerging market funds, Diversified Pacific/Asia funds, Pacific/ Asia excluding Japan funds, Foreign funds, Latin funds and World funds) as well as for International Hybrid funds (irrespective of load or no load funds). The large serial correlations in fund returns might imply that they are highly predictable, if investors could learn the fund's NAV in time to make prediction. This is not surprising because the above fund categories have

Table 2: Serial Correlations in Mutual Fund Returns

This table presents the results of serial correlations (equation 3) in sample fund returns. Column one lists the name and ticker symbol of sample mutual funds. Columns two through four present AR(1), AR(2) and AR(3) coefficients respectively. The significance of AR coefficients at 1%, 5% and 10% level are represented by ***, ** and * respectively. The sample period is from January 4, 1993 through November 28, 1997.

A. Diversified Emerging Market Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Merrill Lynch Dev Cap Market A	(MADCX)	0.2689***	0.1102***	0.1024***
Montgomery Emerging Mkts R	(MNEMX)	0.2622***	0.1041***	0.0937***
Morgan Stan Ins Emerging Mkt A	(MGEMX)	0.2881***	0.0815***	0.0690**
Templeton Developing Mkts A	(TEDMX)	0.2602***	0.0800***	0.1354***
Portfolio		0.3184***	0.1089***	0.1129***

B. Diversified Pacific/Asia Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Fidelity Pacific Basin	(FPBFX)	0.0985***	0.0381	0.0287
GAM Pacific Basin A	(GAPCX)	0.1004***	0.0129	0.0065
J. Hancock Pacific Basin Eq A	(JHWPX)	0.0747***	0.0274	0.0948***
Merrill Lynch Pacific A	(MAPCX)	0.0039	-0.0578***	0.0190
Morgan Stanley Pacific Growth B	(TGRBX)	0.1594***	0.0596**	0.1010***
Prudential Pacific Growth B	(PRPBX)	0.1172***	0.0367	0.0601**
Templeton Pacific Growth A	(FKPGX)	0.0996***	0.0677**	0.1032***
Portfolio		0.0719***	0.0532**	-0.0174

C. Europe Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance New Europe A	(ANEAX)	0.0102	-0.0101	-0.0056
DFA Continental Small Compny	(DFCSX)	0.0606**	0.0080	-0.0190
DFA United Kingdom Small Co	(DFUKX)	0.0662**	-0.0169**	-0.0630
Fidelity Europe	(FIEUX)	0.0374	0.0217	-0.0257
INVESCO European Inv	(FEURX)	0.0524*	0.0129	-0.0093
Merrill Lynch Euro Fund B	(MBEFX)	0.1166***	0.0081	0.0054
Morgan Stanley European Growth B	(EUGBX)	0.0391	-0.0193	-0.0253
Pioneer Europe A	(PEURX)	0.0502	-0.0161	-0.0003*
Putnam Europe Growth A	(PEUGX)	0.0216	0.0011	-0.0294
T. Rowe Price European Stock	(PRESX)	0.0085	0.0059	0.0023
Vanguard Euro Stock Index Fund	(VEURX)	0.0399	0.0288	0.0012
Portfolio		0.0656***	0.0202	-0.0083

D. Japan Fund

Fund Name and Ticker		AR (1)	AR(2)	AR(3)
DFA Japanese Small Company	(DFJSX)	0.1408***	0.0554*	0.0703**
The Japan Fund-Adv S	(SJPNX)	0.0759***	-0.0426	0.0058
T. Rowe Price Japan Fund	(PRJPX)	0.0309*	-0.0471	0.0202
Vanguard Pacific Stk Index Fd	(VPACX)	0.0307*	-0.0534	0.0255
Portfolio		0.0685**	-0.0322	0.0307

Table 2 Continued

E. Pacific/Asia Ex. Japan Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Eaton Vance Grtr China Gr A	(EVCGX)	0.1283***	0.0182	0.0914***
Liberty Newport Tiger T Fd***	(CNTTX)	0.1140***	-0.080**	0.0120*
Merrill Lynch Dragon Fund B	(MBDRX)	0.1295***	0.0458	0.1429***
Morgan Stan Ins Asian Eq A	(MSAEX)	0.1890***	0.0994***	0.0980***
T. Rowe Price New Asia Fd	(PRASX)	0.1429***	0.0692**	0.1145***
Portfolio		0.1211***	0.0299	0.1175***

F. Foreign Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
ING International Growth I	(AEIGX)	0.0551*	-0.0280	0.0009
AIM International Equity A	(AIIEX)	0.1312***	-0.0016	0.0412
American AAdvant Intl Eq Ins	(AAIEX)	0.0179	0.0135	-0.0142
American Cent Intl Gr Inv	(TWIEX)	0.0423	0.0149	-0.0218
American Funds EuroPacific A	(AEPGX)	0.1390***	-0.0010	0.0374
AXP International Fund A	(INIFX)	0.0359**	-0.0217	-0.0608
Babson-Stewart Ivory Intl	(BAINX)	0.0253	0.0148	0.0145
Bernstein Tax-Mgd Intl Value	(SNIVX)	0.0662**	0.0251	0.0047
BlackRock Intl Equity Instl	(PNINX)	0.0435	-0.0040	0.0059
Calvert World Value Intl EqA	(CWVGX)	0.1140***	0.0252	0.0235
CDC Nvest Intl Equity A	(NEFIX)	0.0396	0.0378	0.0164
Columbia International Stock	(CMISX)	0.1092***	-0.0145	0.0052
Consulting Grp Cap Mkt Intl Equity	(TIEUX)	0.0330	0.0047	0.0001
Credit Suisse Instl Intl Ins	(RBIEX)	0.1422***	0.0279	-0.0071
Dreyfus Premier Intl Gr A	(DRGLX)	0.0480*	0.0058	0.0025
Eclipse EAFE Index Fd Nl	(NIEAX)	0.0336	-0.0064	0.0115
Enterprise Intl Growth A	(ENIGX)	-0.0070	-0.0116	0.0394
Excelsior International Fd	(UMINX)	0.0735***	0.0221	0.0037
Federated Intl Equity A	(FTITX)	0.0269	0.0254	0.0213
Fidelity Adv Overseas Fund T	(FAERX)	0.0483*	0.0119	-0.0010
Fidelity Canada Fund	(FICDX)	0.0845***	0.0486*	0.0225
Fidelity Diversified Intl Fund	(FDIVX)	0.0971***	0.0217	-0.0052
Fidelity Intl Growth & Inc	(FIGRX)	0.0787***	0.0121	-0.0054
Fidelity Overseas Fund	(FOSFX)	0.0611**	0.0027	0.0003
Fifth Third Intl GDP Inst	(KNINX)	0.0396	-0.0003	0.0233
GAM International Fund A	(GAMNX)	0.0679**	0.0220	0.0046
Goldman Sachs Intl Eqty A	(GSIFX)	0.0136	-0.0078	-0.0424
Harbor International Fund	(HAINX)	0.1019***	0.0138	0.0550*
Ivy International Fund A	(IVINX)	0.1238***	0.0411	0.0174
Liberty Acorn Intl Fund Z	(ACINX)	0.1586***	0.1160***	0.0694**
Liberty Newport Intl Equity A	(CONAX)	0.2400***	0.0550*	0.0303
Morgan Stan Ins Active Int All A	(MSACX)	0.0406	0.0207	0.0063
Morgan Stan Ins Intl Equity A***	(MSIQX)	-0.0053	0.0140	-0.0036
Munder International Equity Y	(MUIYX)	0.1262***	0.0479	0.0109*
Oakmark International Fund	(OAKIX)	0.0918***	-0.0173	0.0573**
Phoenix-Aberdeen Intl Port. A	(PHITX)	-0.0244	0.0165	0.0059
Preferred International Value Fund	(PFIFX)	0.0910***	0.0146	0.0131
Principal International A	(PRWLX)	0.1132***	0.0349	0.0384
Schroder Intl Equity Inv	(SCIEX)	0.0606	0.0250**	0.0196
Scudder Intl Fund S	(SCINX)	0.0724**	0.0142	0.0085
SEI International Equity A	(SEITX)	0.1073***	0.0126	0.0221
Sit International Growth Fund	(SNGRX)	0.1424***	0.0560**	0.0523*

Table 2 Continued

F. Foreign Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Smith Barney Intl All Cap Gr A	(SBIEX)	0.1824***	0.0403	0.0225
Strong International Stock	(STISX)	0.1627***	0.0745***	0.0351
T. Rowe Price Foreign Equity	(PRFEX)	0.1080***	0.0457	0.0144
T. Rowe Price Intl Discovery***	(PRIDX)	0.1054***	0.0549***	0.0304***
T. Rowe Price Intl Stock Fund	(PRITX)	0.0877***	0.0155	0.0424
Templeton Foreign A	(TEMFX)	0.0821*	0.0541***	0.0402
Templeton Foreign Smaller Co A	(FINEX)	0.0970***	0.0481*	0.0264
USAA International Fund	(USIFX)	0.1695***	0.0320	0.0309
Vanguard International Value Fund	(VTRIX)	0.0276	-0.0001	-0.0169
Vanguard Intl Growth Fund	(VWIGX)	0.1077***	0.0286	0.0080
Vontobel International Equity	(VNEPX)	0.0879***	0.0243	0.0382
Waddell & Reed Adv Intl Gr A	(UNCGX)	0.0736***	-0.0478*	0.0067
WM Intl Growth A	(SRIGX)	0.0977***	0.0050	0.0220
Wright Intl Blue Chip Equity Stand	(WIBCX)	0.0615**	0.0019	0.0150
Portfolio		0.1584***	0.0437	0.0344

G. Latin America Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Merrill Lynch Latin Amer B	(MBLTX)	0.1864***	0.0198	0.0578**

H. World Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance Global Small Cap A	(GSCAX)	0.0838***	0.0234	0.0113
American Fds New Prospective A	(ANWPX)	0.1731***	0.0354	0.0261
American Fund Small Cap World A	(SMCWX)	0.1221***	0.0094	0.0089
American Heritage Fund	(AHERX)	-0.0783***	0.0516*	-0.0494*
AXP Global Growth A	(IGLGX)	0.2046***	0.0183	0.0050
Dreyfus Founders Wldwide Gr F***	(FWWGX)	0.1912***	0.0025	0.0016
Elfun International Equity Fund	(EGLBX)	0.1860***	0.0995*	0.0218
Fidelity Worldwide Fund	(FWWFX)	0.1583***	0.0504	0.0148*
First Invest Global A	(FIISX)	0.0897***	0.0343	0.0070
GAM Global Fund A	(GAGLX)	-0.4741***	0.0023	0.0067
J. Hancock Global Fund B	(FGLOX)	0.1004***	0.0396	0.0057
Ivy Fund Global A	(MCGLX)	0.1162***	0.0372	0.0214
Janus Worldwide Fund***	(JAWWX)	0.1577***	0.0176	0.0086
Lord Abbett Global Equity A	(LAGEX)	0.1053***	0.0141	0.0010
MFS Global Equity Fund B	(MWEBX)	0.1509***	0.0405	0.0092
Oppenheimer Global Fund A	(OPPAX)	0.0140	0.0020	0.0086
Oppenheimer Global Gr & Inc Fd A	(OPGIX)	0.1229***	0.0313	0.0190
Oppenheimer Quest Glob Val A	(QVGLX)	0.1258***	0.0389	0.0066
Phoenix-Aberdeen Wldwde Opp A	(NWWOX)	0.1224***	0.0210	0.0030
Prudential Global Growth Fund B	(PRGLX)	0.1602***	0.0272	0.0064
Putnam Global Growth Fund A	(PEQUX)	0.1430***	0.0355	0.0044
Scudder Global Discovery Fd S***	(SGSCX)	0.1929***	0.0396	0.0107
Scudder Global Fund S	(SCOBX)	0.1594***	0.0127	0.0032
Templeton Capital Accumulator	(TECAX)	0.0103	0.0073	0.0022
Templeton Global Opportunities A	(TEGOX)	0.2165***	0.0321	0.0036
Templeton Global Small Co Gr A	(TEMGX)	0.1523***	0.0916***	0.0412
Templeton Growth A	(TEPLX)	0.1369***	0.0566**	0.0325
Templeton World A	(TEMWX)	0.1196***	0.0492*	0.0360
USAA World Growth Fund	(USAWX)	0.2229***	0.0128	0.0077

Table 2 Continued

H. World Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Portfolio		0.1717***	0.0382	0.0334

I. International Bond Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance Multi-Market Strategy A	(AMMSX)	-0.1275***	0.2473***	-0.1336***
Alliance North Amer Govt Inc A	(ANAGX)	0.0659**	0.1942***	-0.0449
American Century Intl Bond Inv	(BEGBX)	-0.0015	-0.0080	-0.0388
American Fds Cap World Bond A	(CWBFX)	0.1001***	0.0129	-0.0376
AXP Global Bond A	(IGBFX)	0.1430***	0.0382	-0.0274
BlackRock Intl Bond Svc	(CIFIX)	0.0013	-0.0031	-0.0084
Consulting Group Intl Fixed Inv	(TIFUX)	0.0152	0.0187	-0.0417
Credit Suisse Global F/I Ret	(CGFIX)	0.0397	0.0150	-0.0025
DFA Five Year Global Fix-Inc	(DFGBX)	0.0529*	0.0286	0.0455
Federated International Bond A	(FTIIX)	0.0166	-0.0030	-0.0180
Franklin Temp Hard Currency A	(ICPHX)	-0.0038	-0.0033	-0.0500*
Goldman Sachs Global Inc A	(GSGIX)	0.0716**	0.0309	-0.0681**
Lord Abbett Global Income A	(LAGIX)	0.1028***	0.0660**	-0.0317
Merrill Lynch Global Bond B	(MBGOX)	0.1406***	-0.0012	-0.0414
Morgan Stan Ins Gl FI A	(MSGFX)	0.0796***	0.0318	-0.0046
PIMCO Foreign Bond Instl	(PFORX)	-0.0114	0.0144	0.0160
Putnam Global Govtl Income A	(PGGIX)	0.0865***	-0.0098	-0.0300
Scudder Global Bond Fund S	(SSTGX)	-0.0143	0.0440	0.0631**
Smith Barney Global Govt Bd A	(SBGLX)	0.0726**	0.0011	-0.0173
T. Rowe Price Intl Bond Fund	(RPIBX)	0.0702**	0.0090	-0.0253
Templeton Global Bond A	(TPINX)	0.1286***	0.0023	0.0044
Portfolio		0.2268***	0.0720**	-0.0378

J. International Hybrid Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
American Funds Cap Inc Builder A	(CAIBX)	0.0693**	0.0444	0.0123
UBS (Brinson) Global Balanced Y	(BPGLX)	0.0569**	-0.0218	-0.0167
First Eagle SoGen Global Fund A	(SGENX)	0.0977***	-0.0266	0.0085
Fremont Global Fund	(FMAFX)	0.0840***	0.0140	-0.0084
Merrill Lynch Global Allocation A	(MALOX)	0.1518***	0.0274	0.0039
MFS Global Total Return Fund A	(MFWTX)	0.1086***	-0.0219	-0.0551*
Portfolio		0.2416***	0.0111	0.0308

underlying shares from small and less developed markets where stocks are not traded frequently. High positive serial correlations in fund returns also suggest the existence of stale pricing components in underlying securities (and in funds). This refers that the underlying securities of funds are not traded as of the close of their respective security market (as a result prices are not updated on a systematic manner).

Most of the Japanese funds exhibited positive but small serial correlations; however, this is not surprising because during the same time period, most of the Japanese major market indices exhibited very small positive or negative serial correlations (small positive correlations for Topix 1st section and small negative correlations for Nikkei index were observed during the sample period).

The serial correlations are also positive and statistically significant for most of the international bond funds except for a few bond funds. For example, Alliance Multi-Market Strategy A (AMMSX), American Century International Bond Inv. (BEGBX), Franklin Temp Hard Currency A (ICPHX), PIMCO Foreign Bond Instl (PFORX) and Scudder Global Bond Fund S (SSTGX) exhibit first-order negative correlations. As I mentioned in an earlier section that bond fund distributions are calculated daily but paid at the end of each month as accrued dividend income; however, like the equity mutual funds, distributions of bond mutual funds do not affect the NAV of bond funds. I computed the serial correlations of international bond fund returns in Table 2 by dividing the monthly distributions of bond funds by the number of business days of each month. However, I also exclude the distributions data for each international bond funds and re-calculate the serial correlations and report the results in Table 3. The serial correlations results for international bond funds are qualitatively similar in Table 2 and Table 3. However, the serial correlations are little higher in Table 2 where I adjust the international bond fund distributions data.[32]

The observed large positive (or negative) serial correlations may be useful if investors can follow appropriate trading strategies. Overall, the results imply that one could predict tomorrow's mutual funds' returns using previous day's fund returns if they could be obtained in

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[32] To check the robustness of empirical testing and results, I re-estimate the serial correlations using the full sample period as well as the holdout sample period. The results are qualitatively similar and are reported in Table A-3 and A-4 of appendix for full sample and holdout sample respectively.

time to trade. Even though the results suggest predictable and exploitable behavior of mutual funds, unfortunately tracking only the funds' NAV does not help to form trading strategy to exploit them. Since NAV is computed at 4 PM ET, investors are not permitted to place any buy or sell order immediately after observing funds' NAV. However investors can follow an index today that best can predict the returns of a particular fund (or fund portfolios) tomorrow. Accordingly I use a stepwise regression to find the best predictor(s) of each fund and fund portfolios.

Table 3: Serial Correlations in International Bond Fund Returns (Without Distributions Data)

This table presents the results of serial correlations (equation 3) in sample international bond fund returns without distributions data. Column one lists the name and ticker symbol of sample bond mutual funds. Columns two through four present the AR(1), AR(2) and AR(3) coefficients respectively. The significance of AR coefficients at 1%, 5% and 10% level are represented by ***, ** and * respectively. The sample period is from January 4, 1993 through November 28, 1997.

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance Multi-Market Strategy A	(AMMSX)	-0.1275***	0.2470***	-0.1335***
Alliance North Amer Govt Inc A	(ANAGX)	0.0659**	0.1943***	-0.0449
American Century Intl Bond Inv	(BEGBX)	-0.0008	-0.0096	-0.0396
American Fds Cap World Bond A	(CWBFX)	0.1007***	0.0121	-0.0370
AXP Global Bond A	(IGBFX)	0.1433***	0.0384	-0.0277
BlackRock Intl Bond Svc	(CIFIX)	-0.0027	-0.0056	-0.0207
Consulting Group Intl Fixed Inv	(TIFUX)	0.0139	0.0175	-0.0416
Credit Suisse Global F/I Ret	(CGFIX)	0.0161	0.0156	-0.0007
DFA Five Year Global Fix-Inc	(DFGBX)	0.0580**	0.0257	0.0146
Federated International Bond A	(FTIIX)	0.0181	-0.0032	-0.0185
Franklin Temp Hard Currency A	(ICPHX)	-0.0042	-0.0034	-0.0481*
Goldman Sachs Global Inc A	(GSGIX)	0.0710**	0.0195	-0.0688**
Lord Abbett Global Income A	(LAGIX)	0.1016***	0.0656**	-0.0304
Merrill Lynch Global Bond B	(MBGOX)	0.1407***	-0.0013	-0.0413
Morgan Stan Ins Gl FI A	(MSGFX)	0.0876***	0.0294	-0.0043
PIMCO Foreign Bond Instl	(PFORX)	-0.0124	0.0144	0.0168
Putnam Global Govtl Income A	(PGGIX)	0.0864***	-0.0086	-0.0300
Scudder Global Bond Fund S	(SSTGX)	-0.0143	0.0438	0.0629**
Smith Barney Global Govt Bd A	(SBGLX)	0.0696**	0.0016	-0.0152
T. Rowe Price Intl Bond Fund	(RPIBX)	0.0700**	0.0083	-0.0271
Templeton Global Bond A	(TPINX)	0.1287***	0.0022	0.0040
Portfolio		0.2253***	0.0698**	-0.0383

2.6.2. Regression Results and Development of Trading Strategy

Table 4 presents the results of stepwise regressions. I use the lagged returns of major US indices in regression equation (4) to predict fund returns. In the same regression equation, I also employ the lagged foreign indices to investigate whether lagged foreign indices can be of useful to predict fund returns. One reason to believe that foreign indices may help predicting international funds' return is that these funds are benchmarked to foreign indices. Besides, the third chapter of this dissertation shows that some of the foreign indices are serially correlated. As stated previously, the relevant foreign index for each fund is selected on the basis of portfolio composition of each fund Since most of these funds exhibit statistically significant first order serial correlations, they might be correlated with lagged foreign indices too. Since investors prefer more wealth to less, I focus on the results for the US or foreign indices with the highest predictive coefficients.

On a portfolio basis, empirical results of Table 4 suggests that the S&P 500 emerges as the best predictor for diversified emerging market funds, Europe funds and Japan funds. The Russell and the Wilshire 5000 indices significantly predict other categories of international funds. For example, the Russell 3000 index becomes the best predictor for foreign and world funds; the Wilshire 5000 index can predict Diversified Pacific/Asia funds and Pacific/Asia excluding Japan funds. For Latin America fund, the MSCI Latin America index emerges as the best predictor. For international stock (or equity) funds, the highest slope coefficient (0.6633) is found for Pacific/Asia Ex. Japan funds and the lowest slope coefficient (0.2065) is found for Latin funds. The slope coefficients are also higher for other categories international equity funds. This suggests that international equity funds with underlying shares located in a time zone that is different from the US markets provide high predictability.

Table 4: Stepwise Regression Results Predicting Next Day Fund Returns

This table presents the results of stepwise regression (equation 4). Column one lists the name and ticker symbol of sample funds. Column two presents the highest slope coefficients of stepwise regressions. The t-statistics of slope coefficients are significant at 1% (***) level. The sample is from January 4, 1993 through November 28, 1997.

A. Diversified Emerging Market Fund

Fund Name and Ticker		Coefficient of Best predictor
Merrill Lynch Dev Cap Market A	(MADCX)	0.2920*** (S&P 500)
Montgomery Emerging Mkts R	(MNEMX)	0.3436*** (Russell 3000)
Morgan Stan Ins Emerging Mkt A	(MGEMX)	0.3547*** (MSCI Emerging Market)
Templeton Developing Mkts A	(TEDMX)	0.2883*** (S&P 500)
Portfolio		0.3122*** (S&P 500)

B. Diversified Pacific/Asia Fund

Fund Name and Ticker		Coefficient of Best predictor
Fidelity Pacific Basin	(FPBFX)	0.3362*** (Russell 3000)
GAM Pacific Basin A	(GAPCX)	0.5786*** (Russell 2000)
J. Hancock Pacific Basin Eq A	(JHWPX)	0.5752*** (Wilshire 5000)
Merrill Lynch Pacific A	(MAPCX)	0.4657*** (Wilshire 5000)
Morgan Stanley Pacific Growth B	(TGRBX)	0.6082*** (Wilshire 5000)
Prudential Pacific Growth B	(PRPBX)	0.4656*** (Russell 3000)
Templeton Pacific Growth A	(FKPGX)	0.5493*** (Wilshire 5000)
Portfolio		0.4912*** (Wilshire 5000)

C. Europe Fund

Fund Name and Ticker		Coefficient of Best predictor
Alliance New Europe A	(ANEAX)	0.3662*** (S&P 500)
DFA Continental Small Compny	(DFCSX)	0.2174*** (S&P 500)
DFA United Kingdom Small Co	(DFUKX)	0.1557*** (Wilshire 5000)
Fidelity Europe	(FIEUX)	0.3701*** (Russell 3000)
INVESCO European Inv	(FEURX)	0.4167*** (Wilshire 5000)
Merrill Lynch Euro Fund B	(MBEFX)	0.3712*** (Russell 3000)
Morgan Stanley European Growth B	(EUGBX)	0.3773*** (S&P 500)
Pioneer Europe A	(PEURX)	0.3459*** (S&P 500)
Putnam Europe Growth A	(PEUGX)	0.3880*** (S&P 500)
T. Rowe Price European Stock	(PRESX)	0.3358*** (S&P 500)
Vanguard Euro Stock Index Fund	(VEURX)	0.3669*** (S&P 500)
Portfolio		0.3283*** (S&P 500)

D. Japan Fund

Fund Name and Ticker		Coefficient of Best predictor
DFA Japanese Small Company	(DFJSX)	0.3470*** (Topix Second Section)
The Japan Fund-Adv S	(SJPNX)	0.3436*** (Russell 3000)
T. Rowe Price Japan Fund	(PRJPX)	0.2961*** (Russell 1000)
Vanguard Pacific Stk Index Fd	(VPACX)	0.3996*** (S&P 500)
Portfolio		0.3474*** (S&P 500)

Table 4 Continued

E. Pacific/Asia Ex. Japan Fund

Fund Name and Ticker		Coefficient of Best predictor
Eaton Vance Grtr China Gr A	(EVCGX)	0.6661*** (Wilshire 5000)
Liberty Newport Tiger T Fd***	(CNTTX)	0.6575*** (S&P 500)
Merrill Lynch Dragon Fund B	(MBDRX)	0.6663*** (Wilshire 5000)
Morgan Stan Ins Asian Eq A	(MSAEX)	0.6222*** (Wilshire 5000)
T. Rowe Price New Asia Fd	(PRASX)	0.6342*** (Russell 3000)
Portfolio		0.6633*** (Wilshire 5000)

F. Foreign Fund

Fund Name and Ticker		Coefficient of Best predictor
ING International Growth I	(AEIGX)	0.3727*** (S&P 500)
AIM International Equity A	(AIIEX)	0.4198*** (Russell 3000)
American AAdvant Intl Eq Ins	(AAIEX)	0.3739*** (Wilshire 5000)
American Cent Intl Gr Inv	(TWIEX)	0.3663*** (Russell 3000)
American Funds EuroPacific A	(AEPGX)	0.3694*** (Russell 3000)
AXP International Fund A	(INIFX)	0.4260*** (S&P 500)
Babson-Stewart Ivory Intl	(BAINX)	0.3680*** (Wilshire 5000)
Bernstein Tax-Mgd Intl Value	(SNIVX)	0.3344*** (S&P 500)
BlackRock Intl Equity Instl	(PNINX)	0.3483*** (S&P 500)
Calvert World Value Intl EqA	(CWVGX)	0.3650*** (S&P 500)
CDC Nvest Intl Equity A	(NEFIX)	0.3463*** (S&P 500)
Columbia International Stock	(CMISX)	0.3611*** (S&P 500)
Consulting Grp Cap Mkt Intl Equity	(TIEUX)	0.3912*** (S&P 500)
Credit Suisse Instl Intl Ins	(RBIEX)	0.3583*** (Russell 1000)
Dreyfus Premier Intl Gr A	(DRGLX)	0.3633*** (Russell 3000)
Eclipse EAFE Index Fd Nl	(NIEAX)	0.3628*** (S&P 500)
Enterprise Intl Growth A	(ENIGX)	0.3871*** (S&P 500)
Excelsior International Fd	(UMINX)	0.4057*** (Russell 3000)
Federated Intl Equity A	(FTITX)	0.3997*** (S&P 500)
Fidelity Adv Overseas Fund T	(FAERX)	0.3519*** (Russell 3000)
Fidelity Canada Fund	(FICDX)	0.2407*** (Dow Composite)
Fidelity Diversified Intl Fund	(FDIVX)	0.3021*** (Russell 3000)
Fidelity Intl Growth & Inc	(FIGRX)	0.2663*** (Russell 3000)
Fidelity Overseas Fund	(FOSFX)	0.3569*** (Russell 3000)
Fifth Third Intl GDP Inst	(KNINX)	0.3342*** (S&P 500)
GAM International Fund A	(GAMNX)	0.3428*** (S&P 500)
Goldman Sachs Intl Eqty A	(GSIFX)	0.4116*** (Russell 3000)
Harbor International Fund	(HAINX)	0.3748*** (Wilshire 5000)
Ivy International Fund A	(IVINX)	0.3677*** (S&P 500)
Liberty Acorn Intl Fund Z	(ACINX)	0.3197*** (Wilshire 5000)
Liberty Newport Intl Equity A	(CONAX)	0.2106*** (Dow Industrial)
Morgan Stan Ins Active Int All A	(MSACX)	0.4042*** (Russell 3000)
Morgan Stan Ins Intl Equity A***	(MSIQX)	0.3808*** (Russell 3000)
Munder International Equity Y	(MUIYX)	0.2634*** (Russell 3000)
Oakmark International Fund	(OAKIX)	0.3449*** (Wilshire 5000)
Phoenix-Aberdeen Intl Port. A	(PHITX)	0.3709*** (Wilshire 5000)
Preferred International Value Fund	(PFIFX)	0.3516*** (S&P 500)
Principal International A	(PRWLX)	0.4120*** (Wilshire 5000)
Schroder Intl Equity Inv	(SCIEX)	0.4270*** (Wilshire 5000)
Scudder Intl Fund S	(SCINX)	0.3928*** (S&P 500)
SEI International Equity A	(SEITX)	0.3558*** (Russell 3000)
Sit International Growth Fund	(SNGRX)	0.3516*** (Russell 3000)

Table 4 Continued

F. Foreign Fund

Fund Name and Ticker		Coefficient of Best predictor
Smith Barney Intl All Cap Gr A	(SBIEX)	0.4215*** (Wilshire 5000)
Strong International Stock	(STISX)	0.3683*** (Wilshire 5000)
T. Rowe Price Foreign Equity	(PRFEX)	0.3822*** (Russell 3000)
T. Rowe Price Intl Discovery***	(PRIDX)	0.3556*** (Wilshire 5000)
T. Rowe Price Intl Stock Fund	(PRITX)	0.3890*** (Russell 3000)
Templeton Foreign A	(TEMFX)	0.2918*** (Wilshire 5000)
Templeton Foreign Smaller Co A	(FINEX)	0.3576*** (Wilshire 5000)
USAA International Fund	(USIFX)	0.3324*** (Russell 3000)
Vanguard International Value Fund	(VTRIX)	0.3212*** (S&P 500)
Vanguard Intl Growth Fund	(VWIGX)	0.4074*** (Russell 3000)
Vontobel International Equity	(VNEPX)	0.3964*** (Russell 3000)
Waddell & Reed Adv Intl Gr A	(UNCGX)	0.4782*** (Wilshire 5000)
WM Intl Growth A	(SRIGX)	0.3622*** (S&P 500)
Wright Intl Blue Chip Equity Stand	(WIBCX)	0.3474*** (S&P 500)
Portfolio		0.3644*** (Russell 3000)

G. Latin America Fund

Fund Name and Ticker		Coefficient of Best predictor
Merrill Lynch Latin Amer B	(MBLTX)	0.2065*** (MSCI Latin Index)

H. World Fund

Fund Name and Ticker		Coefficient of Best predictor
Alliance Global Small Cap A	(GSCAX)	0.2110*** (Nasdaq)
American Fds New Prospective A	(ANWPX)	0.2238*** (Russell 3000)
American Fund Small Cap World A	(SMCWX)	0.2478*** (Nasdaq)
American Heritage Fund	(AHERX)	0.1908*** (Nasdaq)
AXP Global Growth A	(IGLGX)	0.3187*** (Russell 1000)
Dreyfus Founders Wldwide Gr F***	(FWWGX)	0.2156*** (Nasdaq)
Elfun International Equity Fund	(EGLBX)	0.3308*** (Russell 1000)
Fidelity Worldwide Fund	(FWWFX)	0.2956*** (Russell 3000)
First Invest Global A	(FIISX)	0.2917*** (S&P 500)
GAM Global Fund A	(GAGLX)	0.1408 (Russell 3000)
J. Hancock Global Fund B	(FGLOX)	0.3296*** (Russell 3000)
Ivy Fund Global A	(MCGLX)	0.3369*** (S&P 500)
Janus Worldwide Fund***	(JAWWX)	0.3523*** (Russell 1000)
Lord Abbett Global Equity A	(LAGEX)	0.3096*** (Russell 3000)
MFS Global Equity Fund B	(MWEBX)	0.2963*** (Russell 3000)
Oppenheimer Global Fund A	(OPPAX)	0.3463*** (Wilshire 5000)
Oppenheimer Global Gr & Inc Fd A	(OPGIX)	0.2831*** (Russell 1000)
Oppenheimer Quest Glob Val A	(QVGLX)	0.2402*** (Wilshire 5000)
Phoenix-Aberdeen Wldwde Opp A	(NWWOX)	0.2888*** (Russell 3000)
Prudential Global Growth Fund B	(PRGLX)	0.3788*** (Russell 3000)
Putnam Global Growth Fund A	(PEQUX)	0.3210*** (Russell 1000)
Scudder Global Discovery Fd S***	(SGSCX)	0.1998*** (Nasdaq)
Scudder Global Fund S	(SCOBX)	0.3326*** (Russell 3000)
Templeton Capital Accumulator	(TECAX)	0.3219*** (Nasdaq)
Templeton Global Opportunities A	(TEGOX)	0.3037*** (Russell 1000)
Templeton Global Small Co Gr A	(TEMGX)	0.2765*** (Russell 3000)
Templeton Growth A	(TEPLX)	0.2413*** (Russell 3000)
Templeton World A	(TEMWX)	0.2702*** (Russell 3000)
USAA World Growth Fund	(USAWX)	0.2725*** (Russell 3000)

Table 4 Continued

H. World Fund

Fund Name and Ticker		Coefficient of Best predictor
Portfolio		0.2912*** (Russell 3000)

I. International Bond Fund

Fund Name and Ticker		Coefficient of Best predictor
Alliance Multi-Market Strategy A	(AMMSX)	0.0386*** (S&P 500)
Alliance North Amer Govt Inc A	(ANAGX)	0.1329*** (S&P 500)
American Century Intl Bond Inv	(BEGBX)	0.0796*** (Dow Comp)
American Fds Cap World Bond A	(CWBFX)	0.0535*** (Dow Comp)
AXP Global Bond A	(IGBFX)	0.0577*** (S&P 500)
BlackRock Intl Bond Svc	(CIFIX)	0.0664*** (Wilshire 5000)
Consulting Group Intl Fixed Inv	(TIFUX)	0.0331 (Dow Comp)
Credit Suisse Global F/I Ret	(CGFIX)	0.0730*** (Dow Comp)
DFA Five Year Global Fix-Inc	(DFGBX)	0.0341*** (Russell 1000)
Federated International Bond A	(FTIIX)	0.0699*** (Dow Comp)
Franklin Temp Hard Currency A	(ICPHX)	-0.0536*** (Russell 3000)
Goldman Sachs Global Inc A	(GSGIX)	0.0480*** (S&P 500)
Lord Abbett Global Income A	(LAGIX)	0.0642*** (S&P 500)
Merrill Lynch Global Bond B	(MBGOX)	0.0430*** (S&P 500)
Morgan Stan Ins Gl FI A	(MSGFX)	0.0457*** (S&P 500)
PIMCO Foreign Bond Instl	(PFORX)	0.1083*** (Russell 1000)
Putnam Global Govtl Income A	(PGGIX)	0.0683*** (Russell 3000)
Scudder Global Bond Fund S	(SSTGX)	0.0255*** (S&P 500)
Smith Barney Global Govt Bd A	(SBGLX)	0.0391*** (Russell 1000)
T. Rowe Price Intl Bond Fund	(RPIBX)	0.0321 (S&P 500)
Templeton Global Bond A	(TPINX)	0.0590*** (Russell 1000)
Portfolio		0.0507*** (S&P 500)

J. International Hybrid Fund

Fund Name and Ticker		Coefficient of Best predictor
American Funds Cap Inc Builder A	(CAIBX)	0.0948*** (Russell 1000)
UBS (Brinson) Global Balanced Y	(BPGLX)	0.0924*** (Russell 1000)
First Eagle SoGen Global Fund A	(SGENX)	0.1503*** (Wilshire 5000)
Fremont Global Fund	(FMAFX)	0.1498*** (Russell 1000)
Merrill Lynch Global Allocation A	(MALOX)	0.1226*** (Russell 3000)
MFS Global Total Return Fund A	(MFWTX)	0.1677*** (Russell 3000)
Portfolio		0.1303*** (Russell 1000)

On individual fund basis, the slope coefficients of lagged US indices in equation (4) are significantly higher for all categories of international stock funds. The slope coefficients are significantly higher for all funds in Diversified Pacific/Asia and Pacific/Asia ex Japan fund categories. This is an important result because apparently all slope coefficients are positive for Diversified Pacific/Asia and Pacific/Asia ex. Japan funds. Moreover, the observed predictable.

components (slope coefficients) are statistically significant across fund categories. For individual stock funds, the highest slope coefficient (0.6663) is documented for Merrill Lynch Dragon Fund B (MBDRX) and the lowest slope coefficient (0.1408) is found for GAM Global Fund A (GAGLX). This implies that the predicted next day returns of MBDRX are 0.6663 times returns of today's Wilshire 5000 index. Similarly the predicted next day returns of GAGLX are 0.1408 times returns of today's Russell 3000 index. The above findings are consistent with Singal (2004) who also finds high correlations between lagged S&P 500 returns and today's returns of European, Foreign and Pacific funds during the year of 2000 and 2001.

For international bond funds, statistically significant negative slope coefficients with lagged T-bill yields are found; this is consistent with Zitzewitz (2003a).[33] When I use lagged returns of US stock indices, statistically significant but small (economically) amount of predictability is found for international bond funds. The low predictability suggests that international bond funds may not be a profitable trading vehicle to investors who wish to use the US stock market indices to form trading strategies for international bond funds. In other word, even though the US market indices provide a profitable trading signal for international bond funds, but the economic magnitude of the profit is lower than that of earned from international stock funds. This might be due to low variability in prices of bond funds or probably because of low correlations between stock and bond markets. The slope coefficients of international hybrid funds are also low but relatively higher than those of international bond funds. However, since interest rates show a low correlation with stock prices, international bond funds may be good places to park money when investors are out of foreign equity funds.

Finally, lagged foreign indices do not help much to predict tomorrows fund returns except for three individual funds. The highest slope coefficients for Morgan Stanley Emerging

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[33] The results with lagged T-bill yields are presented in Table A-5 of appendix.

Market A fund (MGEMX), DFA Japanese Small Company fund (DFJSX) and Merrill Lynch Latin America B fund (MBLTX) are found for the MSCI Emerging Market index, the Japan Topix 2nd Index and the MSCI Latin America index respectively. Although I reported the results for either the US or foreign indices in Table 4; however, it should be mentioned that on portfolio basis no foreign index appears to be significant predictor for any Diversified Pacific/Asia, Europe, Foreign, Hybrid, and World funds. However, on portfolio basis, there are little but significant predictability for Diversified Emerging Market fund, Japan fund, Latin fund, and Pacific/Asia excluding Japan fund when the MSCI Emerging Market index, Japan Topix 2nd Section index, the MSCI Latin index, and the MSCI Far East excluding Japan index respectively are used as independent variables in stepwise regression equation.

Overall, the empirical findings of Table 4 strongly suggest that investors can form trading strategies to exploit the predictability observed in the mutual funds. The results of Table 4 suggest that an increase (decrease) in index returns today is followed by an increase (decrease) in fund returns tomorrow; for example, a positive 1% return by the S&P 500 on day t should lead to an average positive return to the Liberty Newport Tiger Fund (CNTTX) of 0.66% on day t+1. Overall, the regression results of Table 4 suggest that on an average international stock funds' returns increase by 0.2 to 0.7 percent on day t+1 as a result of 1% increase in the corresponding best-fitted index returns on day t. It appears that there may be possible to implement profitable trading strategies for international funds. To check the robustness of step-wise regression results, I also compute the cross-correlations between each sample fund and each of the relevant US and foreign market index. Table 5 reports the cross-correlations among sample funds and relevant market indices (both the US and foreign). The cross-correlations results of Table 5 reconfirm the previous results found for step-wise regression in Table 4.

I propose trading strategies to exploit the observed fund predictability. The empirical results of Table 4 and 5 provide sufficient information to propose trading strategies. The foundation of the trading strategies lies on the fact that fund investors will buy (sell) an international mutual fund when its best predictive index rises (declines). Most of the other studies follow a trading rule that assumes that investors keep their investment in cash when they sell mutual funds. As opposed to other studies, I use three different parking vehicles when investors are out of the international funds: when the best predictive index declines, investors sell international funds and can either hold the proceedings in *cash*, or in *money market funds* or in *index funds*. Accordingly I propose the following three trading strategies for sample international funds on the basis of the movements in their best-predictive indices: switching in between international fund and cash (***strategy I***); switching in between international fund and money market fund (***strategy II***) and switching in between international fund and Index fund (***strategy III***).

Most mutual funds allow investors to exchange stock funds with money market or index funds free of costs. In strategy II, the reason for using money market fund is that shifting to T-bills requires selling the fund, obtaining cash (after the sale has settled), and then buying T-bills. This procedure takes more than one day. Furthermore, if the funds are in a variable annuity or in many types of retirement accounts, T-bills cannot be purchased at all. *Dial Data*, like most other mutual funds databases, lacks the return data for money market funds. I use the money market fund of the TIAA-CREF's retirement annuity as a proxy for the returns on a money market fund. In strategy III, index fund is used as an alternative-parking place of investment because investors cannot directly invest in an index but may invest in an index fund that follows a corresponding market index. Investors also can directly buy or sell index fund or exchange index fund for other

Table 5: Cross Auto-correlations among Mutual Funds and the US and Foreign Market Indices

This table presents cross auto-correlations among sample mutual funds and the US and relevant Foreign market indices. Cross-autocorrelations refer to the correlations between a mutual fund's returns and one-day lag returns of a market index. Column one lists the ticker symbols of each category of sample international mutual funds. Columns two through nine present cross-autocorrelations among all categories of sample international funds and the US market indices. For Diversified Emerging Market Fund, Europe Fund, Foreign fund, Latin Fund, World Fund and International Hybrid Fund, column ten shows cross-autocorrelations among mutual funds and the relevant MSCI market indices. For Diversified Pacific/Asia Fund, columns ten through thirteen list cross-autocorrelations among mutual funds and the relevant MSCI market indices. For Pacific/Asia Ex. Japan Fund columns ten and eleven list cross-autocorrelations among mutual funds and the relevant MSCI market indices. For Japan Fund, columns ten through twelve show cross-autocorrelations among mutual funds and the relevant Japanese indices. For International Bond, columns ten and eleven present cross-autocorrelations among bond mutual funds and 10-Year and 30 Year Treasury bill yield respectively. Cross-autocorrelations are significant at 1% (***), 5% (**) or 10% (*) level. The sample is from January 4, 1993 through November 28, 1997.

A. Diversified Emerging Market Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI Emerging Market
MADCX	0.2923***	0.2896***	0.2286***	0.2915***	0.2906***	0.2869***	0.2751***	0.2518***	0.2801***
MNEMX	0.3041***	0.3037***	0.2367***	0.3049***	0.3028***	0.3001***	0.2909***	0.2551***	0.2816***
MGEMX	0.2970***	0.2951***	0.2414***	0.2981***	0.2983***	0.2917***	0.2719***	0.2505***	0.3409***
TEDMX	0.3147***	0.3109***	0.2363***	0.3132***	0.3104***	0.3092***	0.2959***	0.2538***	0.2856***
Portfolio	0.3292***	0.3269***	0.2576***	0.3291***	0.3278***	0.3237***	0.3087***	0.2758***	0.2860***

B. Diversified Pacific/Asia Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI Far East	MSCI Pacific	MSCI Far East Ex. Japan	MSCI Pacific Ex. Japan
FPBFX	0.2624***	0.2651***	0.2213***	0.2690***	0.2666***	0.2492***	0.2499***	0.2330***	0.0364	0.0398	0.1094***	0.1165***
GAPCX	0.0782***	0.0808***	0.1188***	0.0858***	0.0902***	0.0714***	0.0805***	0.0956***	0.0212	0.0239	0.0406	0.0539**
JHWPX	0.4293***	0.4264***	0.3626***	0.4308***	0.4327***	0.4093***	0.4072***	0.3507***	0.0259	0.0288	0.1044***	0.1148***
MAPCX	0.3427***	0.3388***	0.2838***	0.3428***	0.3444***	0.3229***	0.3241***	0.2857***	0.0017	0.0047	0.0227	0.0447
TGRBX	0.4217***	0.4205***	0.3667***	0.4261***	0.4272***	0.4040***	0.4027***	0.3467***	0.0173	0.0208	0.1520***	0.1551***
PRPBX	0.4166***	0.4176***	0.3577***	0.4225***	0.4223***	0.3975***	0.4035***	0.3493***	0.0357	0.0388	0.1105***	0.1214***
FKPGX	0.4353***	0.4340***	0.3732***	0.4379***	0.4395***	0.4214***	0.4184***	0.3631***	0.0163	0.0183	0.1169***	0.1239***
Portfolio	0.3757***	0.3762***	0.3469***	0.3827***	0.3855***	0.3571***	0.3619***	0.3286***	0.0300	0.0340	0.1105***	0.1262***

Table 5 Continued

C. Europe Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI Europe
ANEAX	0.3727***	0.3710***	0.2984***	0.3725***	0.3720***	0.3492***	0.3500***	0.3228***	0.0489*
DFCSX	0.2369***	0.2322***	0.1822***	0.2337***	0.2357***	0.2284***	0.2192***	0.2037***	0.0836***
DFUKX	0.1314***	0.1244***	0.1250***	0.1311***	0.1374***	0.1318***	0.1329***	0.1153***	0.0771***
FIEUX	0.3697***	0.3703***	0.3088***	0.3730***	0.3729***	0.3554***	0.3575***	0.3227***	0.1273***
FEURX	0.3803***	0.3796***	0.3102***	0.3824***	0.3829***	0.3595***	0.3449***	0.3543***	0.0757***
MBEFX	0.2991***	0.3007***	0.2447***	0.3014***	0.3004***	0.2863***	0.2828***	0.2577***	0.0575**
EUGBX	0.3592***	0.3581***	0.2668***	0.3584***	0.3561***	0.3275***	0.3182***	0.3217***	0.0719**
PEURX	0.3592***	0.3566***	0.2744***	0.3582***	0.3582***	0.3373***	0.3478***	0.3082***	0.0683**
PEUGX	0.4244***	0.4219***	0.3241***	0.4222***	0.4187***	0.4097***	0.3987***	0.3693***	0.0661**
PRESX	0.3737***	0.3706***	0.2771***	0.3699***	0.3679***	0.3458***	0.3386***	0.3145***	0.0475*
VEURX	0.3843***	0.3807***	0.2900***	0.3803***	0.3787***	0.3601***	0.3425***	0.3280***	0.0672**
Portfolio	0.4224***	0.4196***	0.3326***	0.4216***	0.4214***	0.3995***	0.3929***	0.3682***	0.0908***

D. Japan Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	Topix 1st Section	Topix 2nd Section	Nikkei 225
DFJSX	0.1723***	0.1724***	0.1378***	0.1725***	0.1708***	0.1602***	0.1618***	0.1507***	0.1420***	0.2161***	0.1253***
SJPNX	0.2111***	0.2147***	0.1892***	0.2169***	0.2155***	0.1897***	0.2053***	0.2005***	0.1255***	0.1683***	0.1126***
PRJPX	0.1768***	0.1832***	0.1574***	0.1828***	0.1798***	0.1586***	0.1641***	0.1756***	0.0808***	0.1355***	0.0678**
VPACX	0.2603***	0.2575***	0.2118***	0.2595***	0.2581***	0.2411***	0.2437***	0.2210***	0.0361	0.0801***	0.0275
Portfolio	0.2183***	0.2203***	0.1850***	0.2213***	0.2192***	0.1996***	0.2061***	0.1989***	0.1043***	0.1629***	0.0905***

E. Pacific/Asia Ex. Japan Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI Far East Ex. Japan	MSCI Pacific Ex. Japan
EVCGX	0.3612***	0.3573***	0.2970***	0.3603***	0.3623***	0.3499***	0.3486***	0.2856***	0.1368***	0.1256***
CNTTX	0.2065***	0.2011***	0.1696***	0.2027***	0.2040***	0.2053***	0.1815***	0.1616***	0.0515*	0.0433
MBDRX	0.3928***	0.3901***	0.3249***	0.3928***	0.3941***	0.3767***	0.3692***	0.3167***	0.1376***	0.1250***
MSAEX	0.3616***	0.3630***	0.3370***	0.3688***	0.3707***	0.3529***	0.3429***	0.3134***	0.1986***	0.1875***
PRASX	0.4018***	0.4007***	0.3472***	0.4054***	0.4050***	0.3863***	0.3812***	0.3349***	0.1546***	0.1426***
Portfolio	0.3775***	0.3741***	0.3215***	0.3779***	0.3794***	0.3671***	0.3530***	0.3076***	0.1425***	0.1301***

Table 5 Continued

F. Foreign Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI EAFE
AEIGX	0.3723***	0.3696***	0.2796***	0.3699***	0.3671***	0.3469***	0.3489***	0.3084***	0.0430
AIIEX	0.4668***	0.4667***	0.3730***	0.4700***	0.4676***	0.4353***	0.4315***	0.4045***	0.0684**
AAIEX	0.4112***	0.4088***	0.3263***	0.4105***	0.4125***	0.3852***	0.3811***	0.3527***	0.0609**
TWIEX	0.3425***	0.3448***	0.2869***	0.3483***	0.3437***	0.3200***	0.3209***	0.3117***	0.0665**
AEPGX	0.4521***	0.4512***	0.3667***	0.4549***	0.4532***	0.4289***	0.4241***	0.4026***	0.0683**
INIFX	0.3749***	0.3706***	0.2539***	0.3681***	0.3633***	0.3414***	0.3363***	0.2958***	0.0358
BAINX	0.4035***	0.3991***	0.3223***	0.4033***	0.4036***	0.3711***	0.3683***	0.3478***	0.0748***
SNIVX	0.3995***	0.3943***	0.3074***	0.3973***	0.3951***	0.3717***	0.3743***	0.3241***	0.0426
PNINX	0.4041***	0.3997***	0.3087***	0.4011***	0.4005***	0.3747***	0.3766***	0.3261***	0.0588**
CWVGX	0.4525***	0.4495***	0.3486***	0.4522***	0.4491***	0.4222***	0.4194***	0.3789***	0.0704**
NEFIX	0.3696***	0.3661***	0.2825***	0.3665***	0.3656***	0.3461***	0.3448***	0.3104***	0.0283
CMISX	0.4012***	0.3987***	0.2916***	0.3969***	0.3936***	0.3778***	0.3774***	0.3192***	0.0589**
TIEUX	0.3843***	0.3814***	0.3018***	0.3831***	0.3813***	0.3609***	0.3657***	0.3121***	0.0320
RBIEX	0.3932***	0.3957***	0.3087***	0.3955***	0.3941***	0.3697***	0.3580***	0.3457***	0.1354***
DRGLX	0.3428***	0.3435***	0.2865***	0.3467***	0.3460***	0.3310***	0.3225***	0.3223***	0.0216
NIEAX	0.3645***	0.3614***	0.2759***	0.3607***	0.3591***	0.3379***	0.3348***	0.3015***	0.0329
ENIGX	0.3665***	0.3596***	0.2187***	0.3546***	0.3472***	0.3322***	0.3217***	0.2637***	0.0273
UMINX	0.4511***	0.4521***	0.3597***	0.4528***	0.4518***	0.4189***	0.4223***	0.3879***	0.0748***
FTITX	0.4045***	0.4002***	0.2906***	0.3993***	0.3947***	0.3915***	0.3795***	0.3233***	0.0487*
FAERX	0.3917***	0.3923***	0.3088***	0.3936***	0.3896***	0.3780***	0.3765***	0.3308***	0.0629**
FICDX	0.1157***	0.1155***	0.1234***	0.1207***	0.1236***	0.1224***	0.1286***	0.1187***	0.0783***
FDIVX	0.3570***	0.3607***	0.2993***	0.3630***	0.3615***	0.3506***	0.3509***	0.3131***	0.0917***
FIGRX	0.3323***	0.3345***	0.2671***	0.3354***	0.3325***	0.3185***	0.3201***	0.2837***	0.0751***
FOSFX	0.3865***	0.3877***	0.3136***	0.3898***	0.3865***	0.3743***	0.3746***	0.3317***	0.0666**
KNINX	0.3633***	0.3594***	0.2753***	0.3593***	0.3580***	0.3412***	0.3387***	0.2959***	0.0441
GAMNX	0.2878***	0.2824***	0.2036***	0.2813***	0.2778***	0.2517***	0.2556***	0.2230***	0.0342
GSIFX	0.4415***	0.4409***	0.3544***	0.4440***	0.4415***	0.4091***	0.4062***	0.3895***	0.0349
HAINX	0.3742***	0.3770***	0.3156***	0.3789***	0.3798***	0.3499***	0.3470***	0.3407***	0.0307
IVINX	0.4203***	0.4193***	0.3349***	0.4203***	0.4191***	0.3991***	0.39111***	0.3578***	0.0445
ACINX	0.4706***	0.4733***	0.4255***	0.4790***	0.4837***	0.4483***	0.4462***	0.4318***	0.1174***
CONAX	0.2452***	0.2470***	0.2035***	0.2445***	0.2475***	0.2485***	0.2431***	0.2002***	0.0488*
MSACX	0.4023***	0.4011***	0.3291***	0.4032***	0.4009***	0.3789***	0.3778***	0.3446***	0.0271
MSIQX	0.3875***	0.3853***	0.3242***	0.3886***	0.3874***	0.3674***	0.3644***	0.3489***	0.0360
MUIYX	0.2823***	0.2891***	0.2519***	0.2914***	0.2906***	0.2583***	0.2558***	0.2877***	0.0530*
OAKIX	0.2462***	0.2455***	0.2096***	0.2471***	0.2474***	0.2329***	0.2321***	0.2229***	0.0333*

Table 5 Continued

F. Foreign Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI EAFE
PHITX	0.3209***	0.3241***	0.2758***	0.3264***	0.3266***	0.3074***	0.2906***	0.3009***	0.0027
PFIFX	0.4119***	0.4065***	0.3178***	0.4090***	0.4104***	0.3973***	0.3911***	0.3455***	0.0483*
PRWLX	0.4602***	0.4601***	0.3748***	0.4634***	0.4646***	0.4329***	0.4245***	0.4038***	0.0779***
SCIEX	0.3172***	0.3224***	0.2828***	0.3255***	0.3270***	0.2928***	0.2979***	0.3019***	0.0552*
SCINX	0.45042***	0.4482***	0.3579***	0.4502***	0.4486***	0.4218***	0.4201***	0.3962***	0.0482**
SEITX	0.3308***	0.3321***	0.2858***	0.3359***	0.3351***	0.3022***	0.3187***	0.3043***	0.0274
SNGRX	0.3887***	0.3916***	0.3285***	0.3939***	0.3925***	0.3674***	0.3689***	0.3397***	0.0777***
SBIEX	0.4657***	0.4691***	0.4037***	0.4748***	0.4774***	0.4401***	0.4303***	0.4300***	0.0872***
STISX	0.4003***	0.3933***	0.3252***	0.3983***	0.4027***	0.3938***	0.3875***	0.3264***	0.1020***
PRFEX	0.4275***	0.4273***	0.3384***	0.4280***	0.4251***	0.4000***	0.3961***	0.3638***	0.0528*
PRIDX	0.4486***	0.4465***	0.4069***	0.4555***	0.4593***	0.4302***	0.4349***	0.4029***	0.1393***
PRITX	0.4222***	0.4218***	0.3334***	0.4226***	0.4197***	0.3951***	0.3904***	0.3613***	0.0519*
TEMFX	0.3202***	0.3233***	0.2791***	0.3262***	0.3272***	0.3133***	0.3011***	0.2908***	0.0755***
FINEX	0.3782***	0.3771***	0.3133***	0.3810***	0.3812***	0.3581***	0.3532***	0.3356***	0.0779***
USIFX	0.3943***	0.3956***	0.3266***	0.3982***	0.3981***	0.3677***	0.3643***	0.3482***	0.0853***
VTRIX	0.2765***	0.2686***	0.1880***	0.2674***	0.2653***	0.2600***	0.2536***	0.2031***	0.0463
VWIGX	0.4478***	0.4470***	0.3615***	0.4482***	0.4479***	0.4197***	0.4143***	0.3808***	0.0820***
VNEPX	0.4126***	0.4147***	0.3340***	0.4167***	0.4154***	0.3802***	0.3760***	0.3611***	0.0347
UNCGX	0.3677***	0.3688***	0.3307***	0.3743***	0.3754***	0.3586***	0.3525***	0.3402***	0.0501*
SRIGX	0.4297***	0.4242***	0.3145***	0.4247***	0.4224***	0.4127***	0.4003***	0.3429***	0.0730**
WIBCX	0.4285***	0.4225***	0.3339***	0.4273***	0.4264***	0.4039***	0.3970***	0.3445***	0.0614**
Portfolio	0.4914***	0.4901***	0.3939***	0.4926***	0.4913***	0.4634***	0.4597***	0.4235***	0.0750***

G. Latin America Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI Latin
MBLTX	0.1062***	0.1074***	0.0518***	0.1041***	0.1008***	0.1078***	0.0936***	0.0920***	0.2378***

H. World Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI World
GSCAX	0.1929***	0.1991***	0.1566***	0.1986***	0.1964***	0.1587***	0.1606***	0.2050***	0.1077***
ANWPX	0.2527***	0.2624***	0.2231***	0.2629***	0.2591***	0.2244***	0.2296***	0.2601***	0.1580***
SMCWX	0.2506***	0.2647***	0.2790***	0.2711***	0.2708***	0.2296***	0.2187***	0.3166***	0.1478***

Table 5 Continued

H. World Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI World
AHERX	0.0620**	0.0697**	0.0857***	0.0703**	0.0742***	0.0544*	0.0497*	0.0950***	-0.0119
IGLGX	0.3721***	0.3736***	0.2879***	0.3730***	0.3701***	0.3500***	0.3419***	0.3162***	0.2565***
FWWGX	0.3399***	0.3476***	0.2913***	0.3503***	0.3481***	0.3041***	0.2963***	0.3530***	0.2209***
EGLBX	0.2910***	0.2933***	0.2209***	0.2930***	0.2901***	0.2758***	0.2659***	0.2710***	0.1868***
FWWFX	0.3897***	0.3911***	0.3258***	0.3939***	0.3928***	0.3737***	0.3658***	0.3472***	0.2967***
FIISX	0.3141***	0.3101***	0.1924***	0.3058***	0.2991***	0.2851***	0.2757***	0.2369***	0.2074***
GAGLX	0.0182	0.0181	0.0182	0.0208	0.0196	0.0092	0.0113	0.0326***	0.0176
FGLOX	0.2737***	0.2782***	0.2181***	0.2789***	0.2760***	0.2391***	0.2406***	0.2548***	0.1498***
MCGLX	0.3693***	0.3662***	0.2685***	0.3643***	0.3611***	0.3522***	0.3392***	0.2972***	0.2345***
JAWWX	0.4105***	0.4127***	0.3093***	0.4124***	0.4059***	0.3767***	0.3604***	0.3686***	0.2437***
LAGEX	0.3789***	0.3790***	0.2786***	0.3786***	0.3728***	0.3496***	0.3433***	0.3095***	0.2640***
MWEBX	0.3201***	0.3215***	0.2524***	0.3238***	0.3214***	0.2928***	0.2938***	0.2895***	0.1983***
OPPAX	0.2741***	0.2840***	0.2605***	0.2859***	0.2887***	0.2601***	0.2469***	0.2782***	0.2099***
OPGIX	0.3122***	0.3217***	0.2696***	0.3214***	0.3217***	0.2918***	0.2860***	0.3000***	0.2121***
QVGLX	0.2516***	0.2571***	0.2192***	0.2577***	0.2591***	0.2311***	0.2247***	0.2413***	0.1574***
NWWOX	0.2435***	0.2506***	0.1882***	0.2485***	0.2442***	0.2184***	0.2067***	0.2425***	0.1228***
PRGLX	0.3748***	0.3842***	0.3121***	0.3857***	0.3805***	0.3478***	0.3516***	0.3641***	0.2391***
PEQUX	0.3796***	0.3812***	0.2831***	0.3808***	0.3746***	0.3698***	0.3560***	0.3331***	0.2299***
SGSCX	0.2952***	0.3076***	0.2882***	0.3127***	0.3126***	0.2656***	0.2709***	0.3350***	0.2183***
SCOBX	0.4228***	0.4227***	0.3368***	0.4253***	0.4221***	0.3972***	0.3934***	0.3820***	0.2692***
TECAX	0.1105***	0.1162***	0.1151***	0.1183***	0.1177***	0.0980***	0.1104***	0.1413***	0.0625***
TEGOX	0.3318***	0.3360***	0.2790***	0.3352***	0.3359***	0.3262***	0.3254***	0.2905***	0.2290***
TEMGX	0.3106***	0.3172***	0.2893***	0.3222***	0.3206***	0.2853***	0.2752***	0.2995***	0.2431***
TEPLX	0.2243***	0.2335***	0.2079***	0.2353***	0.2330***	0.2112***	0.1972***	0.2215***	0.1740***
TEMWX	0.2116***	0.2214***	0.1981***	0.2231***	0.2209***	0.1983***	0.1809***	0.2151***	0.1644***
USAWX	0.3411***	0.3500***	0.2910***	0.3504***	0.3477***	0.3121***	0.3071***	0.3272***	0.2313***
Portfolio	0.3812***	0.3891***	0.3249***	0.3904***	0.3885***	0.3489***	0.3429***	0.3750***	0.2451***

I. International Bond Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	10 Year T-Bond	30 Year T-Bond
AMMSX	0.0751***	0.0708**	0.0139	0.0682**	0.0662**	0.0636**	0.0590**	0.0308	-0.1012***	-0.1037***
ANAGX	0.1129***	0.1125***	0.0588**	0.1109***	0.1094***	0.1055***	0.0896***	0.0775***	-0.1006***	-0.1019***
BEGBX	0.0894***	0.0862***	0.0469*	0.0860***	0.0872***	0.0894***	0.0965***	0.0421	-0.2170***	-0.2214***

Table 5 Continued

I. International Bond Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	10 Year T-Bond	30 Year T-Bond
CWBFX	0.1091***	0.1051***	0.0605**	0.1063***	0.1029***	0.0988***	0.1115***	0.0704**	-0.2619***	-0.2509***
IGBFX	0.1460***	0.1380***	0.0661**	0.1393***	0.1363***	0.1246***	0.1236***	0.0839***	-0.2685***	-0.2498***
CIFIX	0.0870***	0.0903***	0.0914***	0.0917***	0.0948***	0.0867***	0.0896***	0.0725**	-0.1331***	-0.1322***
TIFUX	0.0422	0.0386	0.0198	0.0399	0.0400	0.0269	0.0499*	0.0056	-0.2091***	-0.2057***
CGFIX	0.1541***	0.1543***	0.0853***	0.1501***	0.1486***	0.1544***	0.1581***	0.0855***	-0.2308***	-0.2312***
DFGBX	0.0780***	0.0807***	0.0401	0.0783***	0.0769***	0.0760***	0.0771***	0.0379	-0.1725***	-0.1613***
FTIIX	0.0735***	0.0712**	0.0642**	0.0748***	0.0764***	0.0719***	0.0931***	0.0482*	-0.2027***	-0.1997***
ICPHX	-0.0624**	-0.0651**	-0.0589**	-0.0662**	-0.0646**	-0.0608**	-0.0626**	-0.0467	-0.0325	-0.0247
GSGIX	0.1369***	0.1368***	0.0839***	0.1336***	0.1314***	0.1322***	0.1305***	0.0779***	-0.2642***	-0.2545***
LAGIX	0.1616***	0.1532***	0.0956***	0.1580***	0.1539***	0.1409***	0.1494***	0.0936***	-0.3018***	-0.2973***
MBGOX	0.1059***	0.1004***	0.0529*	0.1012***	0.1000***	0.0792***	0.0820***	0.0508*	-0.2627***	-0.2597***
MSGFX	0.0942***	0.0906***	0.0434	0.0894***	0.0892***	0.0754***	0.0799***	0.0557**	-0.2378***	-0.2356***
PFORX	0.1629***	0.1634***	0.0765***	0.1554***	0.1494***	0.1530***	0.1555***	0.0882***	-0.1516***	-0.1529***
PGGIX	0.1273***	0.1270***	0.0917***	0.1288***	0.1278***	0.1163***	0.1249***	0.1046***	-0.2121***	-0.2070***
SSTGX	0.0969***	0.0907***	0.0369	0.0919***	0.0880**	0.0796***	0.0779***	0.0445	-0.1748***	-0.1794***
SBGLX	0.0963***	0.1004***	0.0758***	0.0985***	0.0986***	0.0721**	0.0807***	0.0687**	-0.2134***	-0.2017***
RPIBX	0.0519*	0.0476*	0.0115	0.0466	0.0473*	0.0338	0.0382	0.0183	-0.1850***	-0.1693***
TPINX	0.1601***	0.1629***	0.0966***	0.1567***	0.1539***	0.1423***	0.1559***	0.0933***	-0.3070***	-0.2936***
Portfolio	0.1666***	0.1631***	0.0912***	0.1618***	0.1602***	0.1491***	0.1557***	0.0963***	-0.3336***	-0.3260***

J. International Hybrid Fund

Ticker	S&P 500	Russell 1000	Russell 2000	Russell 3000	Wilshire 5000	Dow Industrial	Dow Composite	Nasdaq	MSCI World
CAIBX	0.1680***	0.1748***	0.1446***	0.1745***	0.1726***	0.1404***	0.1429***	0.1483***	0.1176***
BPGLX	0.1442***	0.1489***	0.1074***	0.1475***	0.1414***	0.1253***	0.1417***	0.1253***	0.0866***
SGENX	0.2595***	0.2653***	0.2335***	0.2670***	0.2692***	0.2580***	0.2668***	0.2474***	0.1750***
FMAFX	0.1877***	0.1960***	0.1512***	0.1942***	0.1903***	0.1720***	0.1662***	0.1764***	0.1236***
MALOX	0.1872***	0.1951***	0.1754***	0.1965***	0.1942***	0.1670***	0.1657***	0.1885***	0.1265***
MFWTX	0.2577***	0.2609***	0.2099***	0.2625***	0.2590***	0.2272***	0.2332***	0.2336***	0.1635***
Portfolio	0.2858***	0.2947***	0.2414***	0.2948***	0.2908***	0.2583***	0.2640***	0.2656***	0.1878***

categories of mutual funds. For a particular international fund, I use its best-fitted index returns (from Table 4) as a proxy for its index funds' returns. The reason for using best-fitted index return as a proxy for index funds' returns is that most of the sample funds either do not have corresponding index fund within the same family of funds, or they do not have similar length of index fund return series that corresponds to the return series of sample funds.

2.6.3. Returns and Risks of Trading Strategies

Table 6, Table 7 and Table 8 report the average daily returns and risks (standard deviations) of a buy-and-hold strategy and the proposed trading strategy I, trading strategy II and trading strategy III respectively. The buy-and-hold returns are negative for almost all categories of international funds (both on portfolio and individual fund basis). This is because the holdout sample period overlaps a world bear market. The broad market indices declined over the sample period, especially over the holdout sample. The poor performance of both the US and international markets is to some extent responsible for the poor performance (or negative returns) of the mutual funds. I computed the mean returns for most of the US and international (or foreign) indices from December 1, 1997 through October 31, 2002 (holdout sample period). The mean returns of the sample foreign indices varied from –0.01% to –0.05%. during the holdout sample period Mutual funds are portfolios of stocks traded in an index; thus the effects that reduce the index returns will also reduce the mutual fund returns. Thus part of the negative buy

and-hold strategy returns can be explained by the negative returns (or poor performance) observed in the stock market indices worldwide.[34]

The results of Table 6, Table 7 and Table 8 suggest that trading strategies provide higher average daily returns and lower standard deviations (risks) than that of a buy-and-hold strategy for all categories of international stock funds. For example, the average daily returns and risks of American Century International Growth Investment Fund (TWIEX) were –0.0285% and 1.3708% respectively for a buy-and-hold investor. But investors may increase the average daily returns and reduce the average daily risks of TWIEX by following the proposed trading strategies. The mean daily returns of TWIEX were enhanced to 0.1987%, 0.2076% and 0.1735% for trading strategies I, II and III respectively. This suggests an annualized return of 49.68%, 51.90% and 43.37% for trading strategies I, II and III respectively (assuming 250 trading days in a year) for TWIEX as opposed to a buy-and-hold annualized returns of –7.13%. The mean daily standard deviations (risks) of TWEIX were also reduced to 0.8106%, 0.8085% and 1.3330% for trading strategies I, II and III respectively.

Table 6, Table 7 and Table 8 also document that the average daily returns are the highest and the average daily risks are the lowest for trading strategy II (when investors use money market fund as an alternative parking vehicle). These findings are consistent across all categories of international funds. This is not surprising because money market funds provide steady and less risky positive returns. If investors can exchange international funds for money market funds, they can maximize their returns. The second highest average daily returns, in generally, are observed for strategy I (when the alternative parking investment is cash); this is because of the

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[34] For example, S&P 500 declined by approximately 22.1% in 2002, 11.9% in 2001 and 9.1% in 2000; Russell 3000 declined by approximately 21.5% in 2002, 11.5% in 2001 and 7.5% in 2000.

Table 6: Returns and Risks of Buy-and-hold Strategy and Trading Strategy I

This table presents the returns and risks of buy-and-hold strategy and trading strategy I. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations (SD) of returns of buy-and-hold strategy. Columns four and five present cumulative returns and annualized returns of buy-and-hold strategy. Columns six and seven show mean daily returns and standard deviations of return of trading strategy I (switching between international fund and cash). Columns eight and nine present cumulative returns and annual returns of trading strategy I. The significance level of t-statistics (to test the differences in mean returns between buy-and-hold and trading strategies) and F-statistics (to test differences in mean variances between buy-and-hold and trading strategies) are presented at 1% (***), 5% (**) and 10% (*) level respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
MADCX	-0.0318%	1.3224%	$ 0.6050	-7.9497%	0.1536%***	0.8925%***	$ 6.3671	38.3957%
MNEMX	-0.0424%	1.3434%	$ 0.5286	-10.6072%	0.1673%***	0.8649%***	$ 7.5511	41.8304%
MGEMX	-0.0318%	1.4658%	$ 0.5899	-7.9424%	0.1598%***	0.9160%***	$ 6.8371	39.9405%
TEDMX	-0.0319%	1.3084%	$ 0.6054	-7.9648%	0.1354%***	0.9192%***	$ 5.0544	33.8424%
Portfolio	-0.0345%	1.2831%	$ 0.5891	-8.6161%	0.1511%***	0.8526%***	$ 6.1887	37.7668%

B. Diversified Pacific/Asia Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
FPBFX	-0.0014%	1.3893%	$ 0.8723	-0.3463%	0.1874%***	0.9167%***	$ 9.6665	46.8615%
GAPCX	-0.0389%	1.4254%	$ 0.5445	-9.7200%	0.2008%***	0.9521%***	$ 11.4153	50.2155%
JHWPX	-0.0147%	1.3235%	$ 0.7475	-3.6738%	0.1898%***	0.8935%***	$ 9.9955	47.4595%
MAPCX	-0.0347%	1.4110%	$ 0.5729	-8.6787%	0.1517%***	0.9363%***	$ 6.2250	37.9155%
TGRBX	-0.0294%	1.3397%	$ 0.6225	-7.3313%	0.1863%***	0.9191%***	$ 9.5430	46.5867%
PRPBX	-0.0471%	4.2347%	$ 0.0231	-11.7665%	0.0766%	2.9115%***	$ 0.1552	19.1433%
FKPGX	-0.0512%	1.2696%	$ 0.4805	-12.7881%	0.1489%***	0.8370%***	$ 6.0574	37.2259%
Portfolio	-0.0310%	1.3295%	$ 0.6106	-7.7578%	0.1602%***	0.8928%***	$ 6.9332	40.0619%

Table 6 Continued

C. Europe Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
ANEAX	-0.0414%	1.5057%	$ 0.5200	-10.3562%	0.1476%***	1.0694%***	$ 5.8440	36.9054%
DFCSX	-0.0511%	1.1944%	$ 0.4837	-12.7789%	0.0472%***	0.9304%***	$ 1.6924	11.7909%
DFUKX	-0.0592%	1.1280%	$ 0.4415	-14.8061%	0.0427%***	0.8956%***	$ 1.6086	10.6737%
FIEUX	-0.0443%	1.3766%	$ 0.5137	-11.0672%	0.1569%***	0.9772%***	$ 7.3137	39.2322%
FEURX	-0.0666%	1.7461%	$ 0.3617	-16.6512%	0.2430%***	1.0524%***	$ 18.9942	60.7405%
MBEFX	-0.0495%	1.5844%	$ 0.4596	-12.3709%	0.0949%***	1.1661%***	$ 2.9700	23.7196%
EUGBX	-0.0418%	1.5714%	$ 0.5100	-10.4507%	0.1724%***	1.0850%***	$ 7.9472	43.1118%
PEURX	-0.0289%	1.3817%	$ 0.6210	-7.2345%	0.1688%***	0.8947%***	$ 7.7037	42.1977%
PEUGX	-0.0280%	1.3644%	$ 0.6298	-7.0043%	0.1634%***	0.8829%***	$ 7.2578	40.8466%
PRESX	-0.0370%	1.3908%	$ 0.5609	-9.2480%	0.1422%***	0.9186%***	$ 5.5572	35.5410%
VEURX	-0.0152%	1.3483%	$ 0.7405	-3.7992%	0.1224%***	0.8975%***	$ 4.3918	30.6039%
Portfolio	-0.0421%	1.1558%	$ 0.5468	-10.5243%	0.1281%***	0.7634%***	$ 4.7411	32.0205%

D. Japan Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
DFJSX	-0.0193%	1.5653%	$ 0.6914	-4.8164%	0.0547%**	1.0610%***	$ 1.7953	13.6828%
SJPNX	-0.0195%	1.7005%	$ 0.6712	-4.8741%	0.1705%***	1.1819%***	$ 6.8327	42.6292%
PRJPX	-0.0320%	1.6781%	$ 0.5826	-7.9926%	0.1620%***	1.1366%***	$ 6.2023	40.5031%
VPACX	-0.0278%	1.5067%	$ 0.6326	-6.9436%	0.0760%***	1.0521%***	$ 2.2983	19.0056%
Portfolio	-0.0246%	1.4668%	$ 0.6608	-6.1567%	0.1161%***	1.4668%***	$ 3.6852	29.0159%

Table 6 Continued

E. Pacific/Asia Ex. Japan Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
EVCGX	-0.0309%	1.7032%	$ 0.5698	-7.7227%	0.2087%***	1.1680%***	$ 12.1542	52.1697%
CNTTX	-0.0088%	1.7435%	$ 0.7430	-2.2078%	0.1930%***	1.1785%***	$ 10.0721	48.2383%
MBDRX	-0.0470%	1.7022%	$ 0.4651	-11.7537%	0.2050%***	1.0755%***	$ 11.7857	51.2384%
MSAEX	-0.0237%	1.6030%	$ 0.6355	-5.9153%	0.2147%***	1.0747%***	$ 13.1111	53.6751%
PRASX	-0.0025%	1.5777%	$ 0.8302	-0.6305%	0.2075%***	1.1011%***	$ 12.1163	51.8838%
Portfolio	-0.0226%	1.5740%	$ 0.6483	-5.6460%	0.2071%***	1.0674%***	$ 12.0901	51.7812%

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
AEIGX	-0.0742%	1.5644%	$ 0.3401	-18.5480%	0.1333%***	1.0147%***	$ 4.9130	33.3308%
AIIEX	-0.0220%	1.2165%	$ 0.6951	-5.4890%	0.1974%***	0.7735%***	$ 11.1659	49.3519%
AAIEX	-0.0268%	1.0590%	$ 0.6691	-6.7045%	0.1263%***	0.7694%***	$ 4.6256	31.5778%
TWIEX	-0.0285%	1.3708%	$ 0.6239	-7.1272%	0.1987%***	0.8106%***	$ 11.3146	49.6809%
AEPGX	-0.0143%	1.0919%	$ 0.7778	-3.5748%	0.1457%***	0.7055%***	$ 5.9479	36.4257%
INIFX	-0.0601%	1.4149%	$ 0.4186	-15.0198%	0.1234%***	1.0827%***	$ 4.3168	30.8434%
BAINX	-0.0394%	1.1035%	$ 0.5697	-9.8453%	0.1636%***	0.7387%***	$ 7.3654	40.9041%
SNIVX	-0.0284%	1.0914%	$ 0.6530	-7.0969%	0.1251%***	0.6983%***	$ 4.5977	31.2839%
PNINX	-0.0492%	1.2633%	$ 0.4914	-12.3103%	0.1422%***	0.8172%***	$ 5.6268	35.5472%
CWVGX	-0.0371%	1.1629%	$ 0.5808	-9.2797%	0.1285%***	0.8045%***	$ 4.7468	32.1187%
NEFIX	-0.0271%	1.1994%	$ 0.6538	-6.7800%	0.1482%***	0.8182%***	$ 6.0259	37.0621%
CMISX	-0.0343%	1.2144%	$ 0.5959	-8.5668%	0.1207%***	0.8740%***	$ 4.2814	30.1637%
TIEUX	-0.0363%	1.2201%	$ 0.5813	-9.0668%	0.1540%***	0.7640%***	$ 6.5435	38.4875%
RBIEX	-0.0844%	1.6449%	$ 0.2911	-21.1011%	0.1284%***	1.3335%***	$ 4.3321	32.0987%
DRGLX	-0.0826%	1.6488%	$ 0.2988	-20.6559%	0.1674%***	1.2433%***	$ 7.1705	41.8561%
NIEAX	-0.0603%	1.4516%	$ 0.4107	-15.0757%	0.1074%***	1.1771%***	$ 3.4591	26.8486%
ENIGX	-0.0444%	1.2462%	$ 0.5241	-11.1045%	0.1521%***	0.8124%***	$ 6.3418	38.0343%

Table 6 Continued

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
UMINX	-0.0365%	1.1611%	$ 0.5857	-9.1201%	0.2001%***	0.7761%***	$ 11.5206	50.0249%
FTITX	-0.0352%	1.3017%	$ 0.5818	-8.8009%	0.1617%***	0.8856%***	$ 7.0819	40.4159%
FAERX	-0.0337%	1.2324%	$ 0.5998	-8.42224%	0.1318%***	0.8560%***	$ 4.9284	32.9389%
FICDX	-0.0023%	1.2627%	$0.8942	-0.5799%	0.0582%**	0.8706%***	$1.9772	14.5469%
FDIVX	-0.0023%	0.9626%	$ 0.9712	0.5700%	0.1331%***	0.6598%***	$ 5.0856	33.2645%
FIGRX	-0.0179%	1.1354%	$ 0.7389	-4.4855%	0.1436%***	0.8067%***	$ 5.7200	35.9121%
FOSFX	-0.0339%	1.2513%	$ 0.5967	-8.4641%	0.1301%***	0.8836%***	$ 4.8103	32.5144%
KNINX	-0.0381%	1.1456%	$ 0.5756	-9.5150%	0.1288%***	0.7848%***	$ 4.7791	32.2032%
GAMNX	-0.0633%	1.1455%	$ 0.4210	-15.8179%	0.0998%***	0.7865%***	$ 3.3635	24.9598%
GSIFX	-0.0433%	1.2583%	$ 0.5301	-10.8209%	0.1747%***	0.8300%***	$ 8.3440	43.6800%
HAINX	-0.0243%	1.1808%	$ 0.6780	-6.0868%	0.1155%***	0.8780%***	$ 3.9942	28.8687%
IVINX	-0.0698%	1.4221%	$ 0.3680	-17.4609%	0.1045%***	1.1259%***	$3.3587	26.1353%
ACINX	-0.0212%	1.1016%	$ 0.7122	-5.3097%	0.1850%***	0.6807%***	$ 9.5917	46.2421%
CONAX	-0.0543%	1.2062%	$ 0.4651	-13.5740%	0.1284%***	0.7141%***	$ 4.7687	32.1038%
MSACX	-0.0380%	1.1313%	$ 0.5761	-9.5057%	0.1443%***	0.7395%***	$ 5.8212	36.0789%
MSIQX	-0.0213%	1.1733%	$ 0.7034	-5.3204%	0.1143%***	0.9053%***	$ 3.9249	28.5615%
MUIYX	-0.0370%	1.2390%	$ 0.5754	-9.2401%	0.0604%***	0.7954%***	$ 2.0582	15.0882%
OAKIX	-0.0020%	1.0669%	$ 0.9078	-0.5057%	0.1481%***	0.7008%***	$ 6.1009	37.0257%
PHITX	-0.0591%	1.3587%	$ 0.4283	-14.7647%	0.1374%***	1.0173%***	$ 5.1562	34.3532%
PFIFX	-0.0297%	1.1863%	$ 0.6321	-7.4243%	0.0882%***	0.9721%***	$ 2.8194	22.0457%
PRWLX	-0.0493%	1.1440%	$ 0.5008	-12.3191%	0.1386%***	0.7937%***	$ 5.3730	34.6513%
SCIEX	-0.0979%	2.0448%	$ 0.2081	-24.4788%	0.0864%***	1.8467%***	$ 2.1455	21.5992%
SCINX	-0.0409%	1.2615%	$ 0.5454	-10.2353%	0.1418%***	0.9017%***	$ 5.5286	35.4469%
SEITX	-0.0201%	1.1589%	$ 0.7173	-5.0330%	0.1885%***	0.7743%***	$ 9.9866	47.1262%
SNGRX	-0.0533%	1.3328%	$ 0.4631	-13.3219%	0.1551%***	0.8361%***	$ 6.5724	38.7636%
SBIEX	-0.0577%	1.3789%	$ 0.4336	-14.4275%	0.1720%***	1.0196%***	$ 7.8688	42.9902%
STISX	-0.0380%	1.4195%	$ 0.5514	-9.4953%	0.2264%***	0.9214%***	$ 15.5678	56.5996%
PRFEX	-0.0353%	1.2384%	$ 0.5875	-8.8235%	0.1718%***	0.8137%***	$ 8.1018	42.9463%
PRIDX	-0.0015%	1.2128%	$ 0.8933	-0.3656%	0.1951%***	0.7204%***	$ 10.7843	48.7829%

Table 6 Continued

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
PRITX	-0.0375%	1.2400%	$ 0.5717	-9.3674%	0.1717%***	0.8099%***	$ 8.1014	42.9331%
TEMFX	-0.0166%	0.9423%	$ 0.7702	-4.1507%	0.1059%***	0.6942%***	$ 3.6171	26.4753%
FINEX	-0.0142%	0.8438%	$ 0.8019	-3.5553%	0.1015%***	0.6218%***	$ 3.4228	25.3638%
USIFX	-0.0228%	1.0414%	$ 0.7052	-5.7002%	0.1215%***	0.7161%***	$ 4.3639	30.3746%
VTRIX	-0.0277%	1.1546%	$ 0.6532	-6.9158%	0.0927%***	0.7495%***	$ 3.0564	23.1629%
VWIGX	-0.0268%	1.2038%	$ 0.6558	-6.7078%	0.1598%***	0.7932%***	$ 6.9780	39.9590%
VNEPX	-0.0417%	1.2982%	$ 0.5362	-10.4203%	0.1635%***	0.9722%***	$ 7.1441	40.8789%
UNCGX	-0.0628%	1.5055%	$ 0.3954	-15.6889%	0.1409%***	0.9831%***	$ 5.4130	35.2357%
SRIGX	-0.0338%	1.1537%	$ 0.6060	-8.4520%	0.1597%***	0.7598%***	$ 6.9914	39.9354%
WIBCX	-0.0407%	1.3074%	$ 0.5431	-10.1659%	0.1312%***	0.9571%***	$ 4.8351	32.8055%
Portfolio	-0.0380%	1.0174%	$ 0.5863	-9.4932%	0.1485%***	0.6699%***	$ 6.1455	37.1128%

G. Latin Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
MBLTX	-0.0358%	1.7505%	$ 0.5306	-8.9602%	0.1285%***	1.1016%***	$ 4.6207	32.1298%

H. World Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
GSCAX	-0.0614%	1.4194%	$ 0.4117	-15.3587%	0.1327%***	1.0142%***	$ 4.8591	33.1840%
ANWPX	-0.0115%	1.1286%	$ 0.8004	-2.8800%	0.1181%***	0.6923%***	$ 4.2398	29.5206%
SMCWX	-0.0386%	1.3354%	$ 0.5541	-9.6438%	0.1207%***	0.8306%***	$ 4.2848	30.1847%
AHERX	-0.1966%	5.7550%	$0.0111	-49.1394%	0.1847%***	4.1315%***	$ 3.4484	46.1646%
IGLGX	-0.0466%	1.3768%	$ 0.4982	-11.6604%	0.0910%***	1.0236%***	$ 2.9292	22.7412%

Table 6 Continued

H. World Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
FWWGX	-0.0839%	1.5975%	$ 0.2987	-20.9844%	0.0810%***	1.1890%***	$ 2.4938	20.2480%
EGLBX	-0.0373%	1.3071%	$ 0.5659	-9.3150%	0.1511%***	1.0032%***	$ 6.1689	37.7668%
FWWFX	-0.0284%	1.1874%	$ 0.6440	-7.0911%	0.0847%***	0.7320%***	$ 2.7867	21.1696%
FIISX	-0.0361%	1.1665%	$ 0.5876	-9.0213%	0.0900%***	0.7044%***	$ 2.9831	22.4910%
GAGLX	-0.0347%	1.1259%	$ 0.6014	-8.6871%	0.0670%***	0.7264%***	$ 2.2738	16.7382%
FGLOX	-0.0625%	1.2150%	$ 0.4210	-15.6210%	0.0849%***	0.7611%***	$ 2.8067	21.2331%
MCGLX	-0.0444%	1.1753%	$ 0.5300	-11.0943%	0.0848%***	0.8031%***	$ 2.7554	21.2007%
JAWWX	-0.0159%	1.3633%	$ 0.7319	-3.9676%	0.1433%***	0.8851%***	$ 5.6790	35.8371%
LAGEX	-0.0367%	1.1777%	$ 0.5820	-9.1848%	0.0991%***	0.7671%***	$ 3.3254	24.7793%
MWEBX	-0.0186%	0.9791%	$ 0.7487	-4.6442%	0.1051%***	0.6766%***	$ 3.5936	26.2633%
OPPAX	-0.0203%	1.3836%	$ 0.6875	-5.0779%	0.1254%***	0.8001%***	$ 4.5597	31.3623%
OPGIX	-0.0114%	1.4375%	$ 0.7632	-2.8545%	0.0980%***	0.9765%***	$ 3.2072	24.5088%
QVGLX	-0.0336%	1.1754%	$ 0.6032	-8.3976%	0.0483%***	0.9615%***	$ 1.7327	12.0958%
NWWOX	-0.0501%	1.3561%	$ 0.4775	-12.5215%	0.0837%***	1.0570%***	$ 2.6417	20.9151%
PRGLX	-0.0448%	1.4691%	$ 0.5010	-11.2073%	0.1321%***	0.9540%***	$ 4.8927	33.0127%
PEQUX	-0.0577%	1.6394%	$ 0.4114	-14.4295%	0.1309%***	0.9336%***	$ 4.8440	32.7169%
SGSCX	-0.0135%	1.3259%	$ 0.7581	-3.3839%	0.1468%***	0.8945%***	$ 5.8899	36.7076%
SCOBX	-0.0515%	1.1389%	$ 0.4863	-12.8717%	0.0652%***	0.8790%***	$ 2.1606	16.3062%
TECAX	-0.0178%	1.0038%	$ 0.7536	-4.4475%	0.1079%***	0.7007%***	$ 3.7201	26.9751%
TEGOX	-0.0387%	1.0452%	$ 0.5788	-9.6640%	0.0766%***	0.7687%***	$ 2.5050	19.1393%
TEMGX	-0.0371%	0.8336%	$ 0.6053	-9.2675%	0.0758%***	0.6077%***	$ 2.5080	18.9405%
TEPLX	-0.0186%	0.9710%	$ 0.7483	-4.6506%	0.0654%***	0.7559%***	$ 2.1832	16.3458%
TEMWX	-0.0228%	0.9728%	$ 0.7105	-5.7035%	0.0910%***	0.7393%***	$ 3.0132	22.7563%
USAWX	-0.0254%	1.1032%	$ 0.6772	-6.3538%	0.0819%***	0.7512%***	$ 2.6735	20.4656%
Portfolio	-0.0413%	1.0276%	$ 0.5622	-10.3146%	0.0997%***	0.6724%***	$ 3.3724	24.9312%

Table 6 Continued

I. International Bond Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
AMMSX	-0.0151%	0.1862%	$ 0.8276	-3.7807%	-0.0052%**	0.0893%***	$ 0.9386	-1.3022%
ANAGX	-0.0128%	0.6116%	$ 0.8343	-3.1914%	0.0096%*	0.4176%***	$ 1.1203	2.3907%
BEGBX	0.0028%	0.6045%	$ 1.0126	0.7092%	-0.0129%	0.4267%***	$ 0.8384	-3.2217%
CWBFX	-0.0041%	0.3786%	$ 0.9422	-1.0237%	-0.0032%	0.2526%***	$ 0.9558	-0.7991%
IGBFX	-0.0033%	0.3549%	$ 0.9526	-0.8250%	-0.0034%	0.2408%***	$ 0.9548	-0.8580%
CIFIX	-0.0005%	0.3133%	$ 0.9872	-0.1345%	-0.0063%	0.1606%***	$ 0.9247	-1.5681%
TIFUX	-0.0101%	0.5215%	$ 0.8675	-2.5333%	-0.0264%	0.3576%***	$ 0.7120	-6.6068%
CGFIX	-0.0076%	0.3437%	$ 0.9032	-1.9077%	0.0049%	0.1785%***	$ 1.0608	1.2193%
DFGBX	0.0011%	0.3281%	$ 1.0068	0.2767%	-0.0026%	0.1733%***	$ 0.9705	-0.6389%
FTIIX	-0.0056%	0.5530%	$ 0.9159	-1.3944%	-0.0174%	0.3760%***	$ 0.7941	4.3435%
ICPHX	-0.0123%	0.5449%	$ 0.8437	-3.0644%	-0.0081%	0.3636%***	$ 0.8914	-2.0350%
GSGIX	-0.0043%	0.2792%	$ 0.9437	-1.0713%	-0.0028%	0.1693%***	$ 0.9662	-0.6946%
LAGIX	-0.0156%	0.3666%	$ 0.8173	-3.9083%	-0.0064%	0.2491%***	$ 0.9189	-1.6050%
MBGOX	-0.0079%	0.4022%	$ 0.8980	-1.9721%	-0.0133%	0.2715%***	$ 0.8437	-3.3210%
MSGFX	0.0058%	0.4596%	$ 1.0606	1.4533%	-0.0021%	0.3135%***	$ 0.9660	-0.5132%
PFORX	-0.0012%	0.3320%	$ 0.9783	-0.3058%	0.0123%**	0.2343%***	$ 1.1611	3.0797%
PGGIX	-0.0147%	0.3622%	$ 0.8266	-3.6849%	-0.0030%	0.2455%***	$ 0.9575	-0.7592%
SSTGX	-0.0005%	0.2829%	$ 0.9887	-0.1296%	0.0069%	0.1875%***	$ 1.0850	1.7353%
SBGLX	-0.0090%	0.3525%	$ 0.8878	-2.2462%	-0.0096%	0.2983%***	$ 0.8862	-2.3928%
RPIBX	-0.0083%	0.5263%	$ 0.8867	-2.0855%	-0.0119%	0.3575%***	$ 0.8511	-2.9738%
TPINX	-0.0118%	0.3702%	$ 0.8566	-2.9561%	-0.0002%	0.2550%***	$ 0.9926	-0.0474%
Portfolio	-0.0064%	0.2792%	$ 0.9191	-1.6084%	-0.0035%	0.1880%***	$ 0.9545	-0.8748%

J. International Hybrid Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
CAIBX	-0.0122%	0.5977%	$ 0.8415	-3.0394%	0.0346%***	0.3802%***	$ 1.5361	8.6580%

Table 6 Continued

J. International Hybrid Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy I			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
BPGLX	-0.0237%	0.7600%	$ 0.7193	-5.9161%	0.0434%***	0.4465%***	$ 1.6979	10.8477%
SGENX	-0.0123%	0.8839%	$ 0.8153	-3.0750%	0.0605%***	0.4542%***	$ 2.0926	15.1160%
FMAFX	-0.0327%	0.8491%	$ 0.6378	-8.1803%	0.0398%***	0.5880%***	$ 1.6163	9.9454%
MALOX	-0.0281%	0.9170%	$ 0.6689	-7.0309%	0.0453%***	0.5870%***	$ 1.7219	11.3162%
MFWTX	-0.0163%	1.8306%	$ 0.6537	-4.0765%	0.0092%	1.3048%***	$ 0.9770	2.3045%
Portfolio	-0.0209%	0.6328%	$ 0.7534	-5.2197%	0.0383%***	0.4214%***	$ 1.5988	9.5816%

fact that investors avoid the negative fund returns by switching to cash that eventually greatly reduces the risks of trading strategy.

However, for strategy III (when index fund is used as an alternative parking investment), the mean daily returns are the lowest with relatively higher risks. The index funds follow the corresponding index and it is not surprising that investors will get negative (or lower) returns (according to strategy III) from an index fund when the corresponding US indexes decreases. Moreover, investors also bear the higher risks (as opposed to cash or money market fund) of index funds.

I also computed the paired t-test to test the null hypothesis of no significant difference in average daily returns between buy-and-hold and trading strategies. The F-test is also conducted to test the hypothesis of no significant difference in average daily standard deviation between buy-and-hold and trading strategies. The results of t-test suggest that there is statistically significant

Table 7: Returns and Risks of Buy-and-hold Strategy and Trading Strategy II

This table presents the returns and risks of buy-and-hold strategy and trading strategy II. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations (SD) of returns of buy-and-hold strategy. Columns four and five present cumulative returns and annual returns of buy-and-hold strategy. Columns six and seven show mean daily returns and standard deviations of returns of trading strategy II (switching between international fund and money market fund). Columns eight and nine present cumulative returns and annualized returns of trading strategy II. The significance level of t-statistics (to test the differences in mean returns between buy-and-hold and trading strategies) and F-statistics (to test differences in mean variances between buy-and-hold and trading strategies) are presented at 1% (***), 5% (**) and 10% (*) level respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
MADCX	-0.0318%	1.3224%	$ 0.6050	-7.9497%	0.1626%***	0.8910%***	$ 7.1002	40.6445%
MNEMX	-0.0424%	1.3434%	$ 0.5286	-10.6072%	0.1762%***	0.8633%***	$ 8.4273	44.0493%
MGEMX	-0.0318%	1.4658%	$ 0.5899	-7.9424%	0.1682%***	0.9146%***	$ 7.5914	42.0423%
TEDMX	-0.0319%	1.3084%	$ 0.6054	-7.9648%	0.1444%***	0.9179%***	$ 5.6452	36.0912%
Portfolio	-0.0345%	1.2831%	$ 0.5891	-8.6161%	0.1601%***	0.8511%***	$ 6.9130	40.0156%

B. Diversified Pacific/Asia Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
FPBFX	-0.0014%	1.3893%	$ 0.8723	-0.3463%	0.1963%***	0.9150%***	$ 10.7466	49.0804%
GAPCX	-0.0389%	1.4254%	$ 0.5445	-9.7200%	0.2094%***	0.9504%***	$ 12.5737	52.3479%
JHWPX	-0.0147%	1.3235%	$ 0.7475	-3.6738%	0.1986%***	0.8917%***	$ 11.0807	49.6517%
MAPCX	-0.0347%	1.4110%	$ 0.5729	-8.6787%	0.1604%***	0.9350%***	$ 6.8726	40.1077%
TGRBX	-0.0294%	1.3397%	$ 0.6225	-7.3313%	0.1951%***	0.9174%***	$ 10.5845	48.7789%
PRPBX	-0.0471%	4.2347%	$ 0.0231	-11.7665%	0.0854%	2.9113%***	$ 0.1725	21.3622%
FKPGX	-0.0512%	1.2696%	$ 0.4805	-12.7881%	0.1577%***	0.8355%***	$ 6.7244	39.4181%
Portfolio	-0.0310%	1.3295%	$ 0.6106	-7.7578%	0.1690%***	0.8913%***	$ 7.2823	42.2541%

Table 7 Continued

C. Europe Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
ANEAX	-0.0414%	1.5057%	$ 0.5200	-10.3562%	0.1566%***	1.0683%***	$ 6.4532	39.1543%
DFCSX	-0.0511%	1.1944%	$ 0.4837	-12.7789%	0.0562%***	0.9300%***	$ 1.8915	14.0398%
DFUKX	-0.0592%	1.1280%	$ 0.4415	-14.8061%	0.0515%***	0.8953%***	$ 1.7903	12.8659%
FIEUX	-0.0443%	1.3766%	$ 0.5137	-11.0672%	0.1658%***	0.9759%***	$ 7.1002	41.4511%
FEURX	-0.0666%	1.7461%	$ 0.3617	-16.6512%	0.2517%***	1.0504%***	$ 20.9551	62.9327%
MBEFX	-0.0495%	1.5844%	$ 0.4596	-12.3709%	0.1038%***	1.1654%***	$ 3.2953	25.9385%
EUGBX	-0.0418%	1.5714%	$ 0.5100	-10.4507%	0.1814%***	1.0837%***	$ 8.7429	45.3607%
PEURX	-0.0289%	1.3817%	$ 0.6210	-7.2345%	0.1778%***	0.8931%***	$ 8.5703	44.4466%
PEUGX	-0.0280%	1.3644%	$ 0.6298	-7.0043%	0.1724%***	0.8813%***	$ 8.0268	43.0955%
PRESX	-0.0370%	1.3908%	$ 0.5609	-9.2480%	0.1512%***	0.9173%***	$ 6.1505	37.7898%
VEURX	-0.0152%	1.3483%	$ 0.7405	-3.7992%	0.1314%***	0.8964%***	$ 4.8314	32.8528%
Portfolio	-0.0421%	1.1558%	$ 0.5468	-10.5243%	0.1371%***	0.7620%***	$ 5.2572	34.2694%

D. Japan Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
DFJSX	-0.0193%	1.5653%	$ 0.6914	-4.8164%	0.0640%**	1.0606%***	$ 1.9831	16.0070%
SJPNX	-0.0195%	1.7005%	$ 0.6712	-4.8741%	0.1793%***	1.1807%***	$7.5268	44.8348%
PRJPX	-0.0320%	1.6781%	$ 0.5826	-7.9926%	0.1708%***	1.1354%***	$ 6.8554	42.6969%
VPACX	-0.0278%	1.5067%	$ 0.6326	-6.9436%	0.0849%***	1.0515%***	$ 2.5347	21.2243%
Portfolio	-0.0246%	1.4668%	$ 0.6608	-6.1567%	0.1249%***	1.0255%***	$ 4.0638	31.2347%

Table 7 Continued

E. Pacific/Asia Ex. Japan Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
EVCGX	-0.0309%	1.7032%	$ 0.5698	-7.7227%	0.2174%***	1.1665%***	$ 13.4994	54.3618%
CNTTX	-0.0088%	1.7435%	$ 0.7430	-2.2078%	0.2019%***	1.1771%***	$ 11.1368	50.4872%
MBDRX	-0.0470%	1.7022%	$ 0.4651	-11.7537%	0.2137%***	1.0739%***	$ 13.0620	53.4306%
MSAEX	-0.0237%	1.6030%	$ 0.6355	-5.9153%	0.2235%***	1.0730%***	$ 14.7313	55.8673%
PRASX	-0.0025%	1.5777%	$ 0.8302	-0.6305%	0.2164%***	1.0995%***	$ 13.4534	541027%
Portfolio	-0.0226%	1.5740%	$ 0.6483	-5.6460%	0.2159%***	1.0657%***	$ 13.4293	53.9734%

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
AEIGX	-0.0742%	1.5644%	$ 0.3401	-18.5480%	0.1423%***	1.0136%***	$ 5.4357	35.5797%
AIIEX	-0.0220%	1.2165%	$ 0.6951	-5.4890%	0.2063%***	0.7714%***	$ 12.3361	51.5708%
AAIEX	-0.0268%	1.0590%	$ 0.6691	-6.7045%	0.1351%***	0.7681%***	$ 5.1192	33.7700%
TWIEX	-0.0285%	1.3708%	$ 0.6239	-7.1272%	0.2076%***	0.8085%***	$ 12.4926	51.8998%
AEPGX	-0.0143%	1.0919%	$ 0.7778	-3.5748%	0.1546%***	0.7038%***	$ 6.5540	38.6446%
INIFX	-0.0601%	1.4149%	$ 0.4186	-15.0198%	0.1324%***	1.0818%***	$ 4.7614	33.0922%
BAINX	-0.0394%	1.1035%	$ 0.5697	-9.8453%	0.1724%***	0.7369%***	$ 8.1428	43.0963%
SNIVX	-0.0284%	1.0914%	$ 0.6530	-7.0969%	0.1341%***	0.6968%***	$ 5.0930	33.5328%
PNINX	-0.0492%	1.2633%	$ 0.4914	-12.3103%	0.1512%***	0.8158%***	$ 6.2156	37.7961%
CWVGX	-0.0371%	1.1629%	$ 0.5808	-9.2797%	0.1375%***	0.8031%***	$ 5.2557	34.3676%
NEFIX	-0.0271%	1.1994%	$ 0.6538	-6.7800%	0.1572%***	0.8166%***	$ 6.7017	39.3110%
CMISX	-0.0343%	1.2144%	$ 0.5959	-8.5668%	0.1297%***	0.8728%***	$ 4.7301	32.4126%
TIEUX	-0.0363%	1.2201%	$ 0.5813	-9.0668%	0.1630%***	0.7623%***	$ 7.2289	40.7364%
RBIEX	-0.0844%	1.6449%	$ 0.2911	-21.1011%	0.1372%***	1.3327%***	$ 4.7871	34.3018%
DRGLX	-0.0826%	1.6488%	$ 0.2988	-20.6559%	0.1763%***	1.2421%***	$ 7.9123	44.0750%
NIEAX	-0.0603%	1.4516%	$ 0.4107	-15.0757%	0.1164%***	1.1763%***	$ 3.8201	29.0975%
ENIGX	-0.0444%	1.2462%	$ 0.5241	-11.1045%	0.1611%***	0.8108%***	$ 7.0371	40.2832%

Table 7 Continued

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
UMINX	-0.0365%	1.1611%	$ 0.5857	-9.1201%	0.2090%***	0.7739%***	$ 12.7501	52.2438%
FTITX	-0.0352%	1.3017%	$ 0.5818	-8.8009%	0.1707%***	0.8841%***	$ 7.8499	42.6648%
FAERX	-0.0337%	1.2324%	$ 0.5998	-8.42224%	0.1406%***	0.4547%***	$ 5.4365	35.1578%
FICDX	-0.0023%	1.2627%	$0.8942	-0.5799%	0.0674%***	0.8701%***	$2.1949	16.8463%
FDIVX	-0.0023%	0.9626%	$ 0.9712	0.5700%	0.1419%***	0.6582%***	$ 5.6279	35.4834%
FIGRX	-0.0179%	1.1354%	$ 0.7389	-4.4855%	0.1525%***	0.8052%***	$ 6.3262	38.1310%
FOSFX	-0.0339%	1.2513%	$ 0.5967	-8.4641%	0.1389%***	0.8824%***	$ 5.3063	34.7333%
KNINX	-0.0381%	1.1456%	$ 0.5756	-9.5150%	0.1378%***	0.7834%***	$ 5.2889	34.4521%
GAMNX	-0.0633%	1.1455%	$ 0.4210	-15.8179%	0.1088%***	0.7855%***	$ 3.6950	27.2087%
GSIFX	-0.0433%	1.2583%	$ 0.5301	-10.8209%	0.1836%***	0.8282%***	$ 9.2675	45.8989%
HAINX	-0.0243%	1.1808%	$ 0.6780	-6.0868%	0.1242%***	0.8769%***	$ 4.4261	31.0608%
IVINX	-0.0698%	1.4221%	$ 0.3680	-17.4609%	0.1135%***	1.1251%***	$ 3.7271	28.3842%
ACINX	-0.0212%	1.1016%	$ 0.7122	-5.3097%	0.1937%***	0.6784%***	$ 10.6524	48.4342%
CONAX	-0.0543%	1.2062%	$ 0.4651	-13.5740%	0.1374%***	0.7126%***	$ 5.2979	34.3534%
MSACX	-0.0380%	1.1313%	$ 0.5761	-9.5057%	0.1532%***	0.7379%***	$ 6.4213	38.2978%
MSIQX	-0.0213%	1.1733%	$ 0.7034	-5.3204%	0.1231%***	0.9042%***	$ 4.3441	30.7804%
MUIYX	-0.0370%	1.2390%	$ 0.5754	-9.2401%	0.0692%***	0.7948%***	$ 2.2640	17.3071%
OAKIX	-0.0020%	1.0669%	$ 0.9078	-0.5057%	0.1569%***	0.6991%***	$ 6.7428	39.2179%
PHITX	-0.0591%	1.3587%	$ 0.4283	-14.7647%	0.1462%***	1.0162%***	$ 5.7019	36.5454%
PFIFX	-0.0297%	1.1863%	$ 0.6321	-7.4243%	0.0972%***	0.9714%***	$ 3.1241	24.2946%
PRWLX	-0.0493%	1.1440%	$ 0.5008	-12.3191%	0.1474%***	0.7922%***	$ 5.9439	36.8434%
SCIEX	-0.0979%	2.0448%	$ 0.2081	-24.4788%	0.0952%***	1.8463%***	$ 2.3803	23.7913%
SCINX	-0.0409%	1.2615%	$ 0.5454	-10.2353%	0.1508%***	0.9004%***	$ 6.1276	37.6958%
SEITX	-0.0201%	1.1589%	$ 0.7173	-5.0330%	0.1914%***	0.7722%***	$ 11.0515	49.3451%
SNGRX	-0.0533%	1.3328%	$ 0.4631	-13.3219%	0.1639%***	0.8346%***	$ 7.2671	40.9825%
SBIEX	-0.0577%	1.3789%	$ 0.4336	-14.4275%	0.1807%***	1.0182%***	$ 8.7223	45.1824%
STISX	-0.0380%	1.4195%	$ 0.5514	-9.4953%	0.2352%***	0.9194%***	$ 17.3511	58.7917%
PRFEX	-0.0353%	1.2384%	$ 0.5875	-8.8235%	0.1807%***	0.8120%***	$ 8.9553	45.1652%
PRIDX	-0.0015%	1.2128%	$ 0.8933	-0.3656%	0.2039%***	0.7182%***	$ 12.0351	50.9751%

Table 7 Continued

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
PRITX	-0.0375%	1.2400%	$ 0.5717	-9.3674%	0.1806%***	0.8082%***	$ 8.9530	45.1520%
TEMFX	-0.0166%	0.9423%	$ 0.7702	-4.1507%	0.1147%***	0.6930%***	$ 4.0040	28.6675%
FINEX	-0.0142%	0.8438%	$ 0.8019	-3.5553%	0.1102%***	0.6205%***	$ 3.8123	27.5560%
USIFX	-0.0228%	1.0414%	$ 0.7052	-5.7002%	0.1304%***	0.7147%***	$ 4.8557	32.5935%
VTRIX	-0.0277%	1.1546%	$ 0.6532	-6.9158%	0.1016%***	0.7485%***	$ 3.3945	25.4118%
VWIGX	-0.0268%	1.2038%	$ 0.6558	-6.7078%	0.1687%***	0.7915%***	$ 7.7423	42.1779%
VNEPX	-0.0417%	1.2982%	$ 0.5362	-10.4203%	0.1724%***	0.9708%***	$ 7.9207	43.0978%
UNCGX	-0.0628%	1.5055%	$ 0.3954	-15.6889%	0.1497%***	0.9820%***	$ 5.9779	37.4279%
SRIGX	-0.0338%	1.1537%	$ 0.6060	-8.4520%	0.1687%***	0.7580%***	$ 7.7689	42.1843%
WIBCX	-0.0407%	1.3074%	$ 0.5431	-10.1659%	0.1402%***	0.9559%***	$ 5.3416	35.0544%
Portfolio	-0.0380%	1.0174%	$ 0.5863	-9.4932%	0.1573%***	0.6681%***	$ 6.8014	39.3317%

G. Latin Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
MBLTX	-0.0358%	1.7505%	$ 0.5306	-8.9602%	0.1374%***	1.1007%***	$ 5.0745	34.3491%

H. World Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
GSCAX	-0.0614%	1.4194%	$ 0.4117	-15.3587%	0.1411%***	1.0132%***	$ 5.3567	35.2680%
ANWPX	-0.0115%	1.1286%	$ 0.8004	-2.8800%	0.1270%***	0.6909%***	$ 4.6644	31.7396%
SMCWX	-0.0386%	1.3354%	$ 0.5541	-9.6438%	0.1291%***	0.8295%***	$ 4.7254	32.2688%
AHERX	-0.1966%	5.7550%	$0.0111	-49.1394%	0.1930%***	4.1311%***	$ 3.8656	48.2486%
IGLGX	-0.0466%	1.3768%	$ 0.4982	-11.6604%	0.0998%***	1.0229%***	$ 3.2117	24.9443%

Table 7 Continued

H. World Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
FWWGX	-0.0839%	1.5975%	$ 0.2987	-20.9844%	0.0893%***	1.1885%***	$ 2.7395	22.3320%
EGLBX	-0.0373%	1.3071%	$ 0.5659	-9.3150%	0.1599%***	1.0019%***	$ 6.7652	39.96999%
FWWFX	-0.0284%	1.1874%	$ 0.6440	-7.0911%	0.0936%***	0.7311%***	$ 3.0758	23.3885%
FIISX	-0.0361%	1.1665%	$ 0.5876	-9.0213%	0.0990%***	0.7033%***	$ 3.2972	24.7399%
GAGLX	-0.0347%	1.1259%	$ 0.6014	-8.6871%	0.0758%***	0.7257%***	$ 2.4724	18.9571%
FGLOX	-0.0625%	1.2150%	$ 0.4210	-15.6210%	0.0938%***	0.7602%***	$ 3.0774	23.4520%
MCGLX	-0.0444%	1.1753%	$ 0.5300	-11.0943%	0.0938%***	0.8023%***	$ 3.0636	23.4496%
JAWWX	-0.0159%	1.3633%	$ 0.7319	-3.9676%	0.1522%***	0.8838%***	$ 6.2506	38.0402%
LAGEX	-0.0367%	1.1777%	$ 0.5820	-9.1848%	0.1080%***	0.7660%***	$ 3.6646	26.9982%
MWEBX	-0.0186%	0.9791%	$ 0.7487	-4.6442%	0.1139%***	0.6753%***	$ 3.9755	28.4822%
OPPAX	-0.0203%	1.3836%	$ 0.6875	-5.0779%	0.1342%***	0.7988%***	$ 5.0521	33.5545%
OPGIX	-0.0114%	1.4375%	$ 0.7632	-2.8545%	0.1068%***	0.9757%***	$ 3.5331	26.7119%
QVGLX	-0.0336%	1.1754%	$ 0.6032	-8.3976%	0.0572%***	0.9611%***	$ 1.9066	14.2880%
NWWOX	-0.0501%	1.3561%	$ 0.4775	-12.5215%	0.0925%***	1.0564%***	$ 2.9162	23.1340%
PRGLX	-0.0448%	1.4691%	$ 0.5010	-11.2073%	0.1409%***	0.9529%***	$ 5.3943	35.2316%
PEQUX	-0.0577%	1.6394%	$ 0.4114	-14.4295%	0.1397%***	0.9325%***	$ 5.3281	34.9200%
SGSCX	-0.0135%	1.3259%	$ 0.7581	-3.3839%	0.1552%***	0.8932%***	$ 6.4782	38.7916%
SCOBX	-0.0515%	1.1389%	$ 0.4863	-12.8717%	0.0741%***	0.8785%***	$ 2.3765	18.5251%
TECAX	-0.0178%	1.0038%	$ 0.7536	-4.4475%	0.1162%***	0.6995%***	$ 4.0817	29.0591%
TEGOX	-0.0387%	1.0452%	$ 0.5788	-9.6640%	0.0854%***	0.7679%***	$ 2.7684	21.3424%
TEMGX	-0.0371%	0.8336%	$ 0.6053	-9.2675%	0.0846%***	0.6067%***	$ 2.7827	21.1594%
TEPLX	-0.0186%	0.9710%	$ 0.7483	-4.6506%	0.0743%***	0.7552%***	$ 2.4147	18.5647%
TEMWX	-0.0228%	0.9728%	$ 0.7105	-5.7035%	0.0999%***	0.7383%***	$ 3.3220	24.9753%
USAWX	-0.0254%	1.1032%	$ 0.6772	-6.3538%	0.0907%***	0.7503%***	$ 2.9659	22.6846%
Portfolio	-0.0413%	1.0276%	$ 0.5622	-10.3146%	0.1086%***	0.6712%***	$ 3.7243	27.1501%

Table 7 Continued

I. International Bond Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
AMMSX	-0.0151%	0.1862%	$ 0.8276	-3.7807%	0.0038%***	0.0908%***	$ 1.0474	0.9467%
ANAGX	-0.0128%	0.6116%	$ 0.8343	-3.1914%	0.0186%**	0.4176%***	$ 1.2445	4.6396%
BEGBX	0.0028%	0.6045%	$ 1.0126	0.7092%	-0.0037%	0.4271%***	$ 0.9446	-0.9223%
CWBFX	-0.0041%	0.3786%	$ 0.9422	-1.0237%	0.0060%	0.2530%***	$ 1.0728	1.5003%
IGBFX	-0.0033%	0.3549%	$ 0.9526	-0.8250%	0.0056%	0.2413%***	$ 1.0674	1.3909%
CIFIX	-0.0005%	0.3133%	$ 0.9872	-0.1345%	0.0025%	0.1615%***	$ 1.0297	0.6241%
TIFUX	-0.0101%	0.5215%	$ 0.8675	-2.5333%	-0.0172%	0.3585%***	$ 0.8016	-4.3074%
CGFIX	-0.0076%	0.3437%	$ 0.9032	-1.9077%	0.0141%***	0.1787%***	$ 1.1878	3.5186%
DFGBX	0.0011%	0.3281%	$ 1.0068	0.2767%	0.0063%	0.1739%***	$ 1.0784	1.5642%
FTIIX	-0.0056%	0.5530%	$ 0.9159	-1.3944%	-0.0082%	0.3767%***	$ 0.8959	-2.0441%
ICPHX	-0.0123%	0.5449%	$ 0.8437	-3.0644%	0.0007%	0.3640%***	$ 1.0009	0.1839%
GSGIX	-0.0043%	0.2792%	$ 0.9437	-1.0713%	0.0062%*	0.1699%***	$ 1.0780	1.5543%
LAGIX	-0.0156%	0.3666%	$ 0.8173	-3.9083%	0.0026%**	0.2496%***	$ 1.0284	0.6439%
MBGOX	-0.0079%	0.4022%	$ 0.8980	-1.9721%	-0.0043%	0.2723%***	$ 0.9440	-1.0721%
MSGFX	0.0058%	0.4596%	$ 1.0606	1.4533%	0.0069%	0.3138%***	$ 1.0830	1.7357%
PFORX	-0.0012%	0.3320%	$ 0.9783	-0.3058%	0.0211%***	0.2342%***	$ 1.2943	5.2828%
PGGIX	-0.0147%	0.3622%	$ 0.8266	-3.6849%	0.0058%***	0.2459%***	$ 1.0709	1.4597%
SSTGX	-0.0005%	0.2829%	$ 0.9887	-0.1296%	0.0159%***	0.1876%***	$ 1.2152	3.9842%
SBGLX	-0.0090%	0.3525%	$ 0.8878	-2.2462%	-0.0008%	0.2988%***	$ 0.9850	-0.1897%
RPIBX	-0.0083%	0.5263%	$ 0.8867	-2.0855%	-0.0029%	0.3580%***	$ 0.9572	-0.7249%
TPINX	-0.0118%	0.3702%	$ 0.8566	-2.9561%	0.0086%***	0.2553%***	$ 1.1081	2.1557%
Portfolio	-0.0064%	0.2792%	$ 0.9191	-1.6084%	0.0055%**	0.1887%***	$ 1.0680	1.3741%

J. International Hybrid Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
CAIBX	-0.0122%	0.5977%	$ 0.8415	-3.0394%	0.0434%***	0.3796%***	$ 1.6962	10.8611%
BPGLX	-0.0237%	0.7600%	$ 0.7193	-5.9161%	0.0522%***	0.4458%***	$ 1.8834	13.0508%

Table 7 Continued

J. International Hybrid Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy II			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
SGENX	-0.0123%	0.8839%	$ 0.8153	-3.0750%	0.0692%***	0.4532%***	$ 2.3233	17.3081%
FMAFX	-0.0327%	0.8491%	$ 0.6378	-8.1803%	0.0486%***	0.5875%***	$ 1.7849	12.1485%
MALOX	-0.0281%	0.9170%	$ 0.6689	-7.0309%	0.0541%***	0.5865%***	$ 1.9108	13.5351%
MFWTX	-0.0163%	1.8306%	$ 0.6537	-4.0765%	0.0181%	1.3048%***	$ 1.0865	4.5234%
Portfolio	-0.0209%	0.6328%	$ 0.7534	-5.2197%	0.0471%***	0.4208%***	$ 1.7717	11.7847%

difference in average daily returns between buy-and-hold strategy and trading strategies I, II and III for all categories of international

funds except international bond funds. The average daily returns from trading strategies I and III are relatively either negative or low

for most of the international bond funds. However, trading strategy II provides positive returns for most of the bond funds and

t-statistics are also significant for some of them. It has been reported in last sub-section that the US indices do not help much to predict

international bond funds. Overall, the findings for international bond funds are mixed: out of 21 international bond funds, 11 bond

funds performed better than the corresponding buy-and-hold returns under trading strategy I and only 1 bond fund performed better

than the corresponding buy-and-hold returns under trading strategy III. However, the returns are the highest for 18 out of 21 sample

international bond funds (though statistically significant for only 9 bond funds) and the risks are the lowest for all international bond

funds under trading strategy II. A low but higher return is also observed for international hybrid funds when investors follow the US.

Table 8: Returns and Risks of Buy-and-hold Strategy and Trading Strategy III

This table presents the returns and risks of buy-and-hold strategy and trading strategy III. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations (SD) of returns of buy-and-hold strategy. Columns four and five present cumulative returns and annualized returns of buy-and-hold strategy. Columns six and seven show mean daily returns and standard deviations of returns of trading strategy III (switching between international fund and relevant index fund). Columns eight and nine present cumulative returns and annual returns of trading strategy III. The significance level of t-statistics (to test the differences in mean returns between buy-and-hold and trading strategies) and F-statistics (to test differences in mean variances between buy-and-hold and trading strategies) are presented at 1% (***), 5% (**) and 10% (*) level respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
MADCX	-0.0318%	1.3224%	$ 0.6050	-7.9497%	0.1405%***	1.3734%*	$ 5.0518	35.1252%
MNEMX	-0.0424%	1.3434%	$ 0.5286	-10.6072%	0.1412%***	1.3659%	$ 5.1039	35.3041%
MGEMX	-0.0318%	1.4658%	$ 0.5899	-7.9424%	-0.0207%	1.3543%	$ 0.6907	-5.1675%
TEDMX	-0.0319%	1.3084%	$ 0.6054	-7.9648%	0.1222%***	1.3907%**	$ 4.0103	30.5402%
Portfolio	-0.0345%	1.2831%	$ 0.5891	-8.6161%	0.1378%***	1.3478%**	$ 4.9103	34.4618%

B. Diversified Pacific/Asia Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
FPBFX	-0.0014%	1.3893%	$ 0.8723	-0.3463%	0.1617%***	1.3997%	$ 6.5336	40.4130%
GAPCX	-0.0389%	1.4254%	$ 0.5445	-9.7200%	0.1309%***	1.4661%	$ 4.4123	32.7146%
JHWPX	-0.0147%	1.3235%	$ 0.7475	-3.6738%	0.1555%***	1.3725%*	$ 6.0806	38.8695%
MAPCX	-0.0347%	1.4110%	$ 0.5729	-8.6787%	0.1176%***	1.4000%	$ 3.7868	29.4087%
TGRBX	-0.0294%	1.3397%	$ 0.6225	-7.3313%	0.1519%***	1.3893%*	$ 5.8053	37.9862%
PRPBX	-0.0471%	4.2347%	$ 0.0231	-11.7665%	0.0508%	3.0967%***	$ 0.1049	12.7079%
FKPGX	-0.0512%	1.2696%	$ 0.4805	-12.7881%	0.1144%***	1.3354%**	$ 3.6854	28.6076%
Portfolio	-0.0310%	1.3295%	$ 0.6106	-7.7578%	0.1259%***	1.3714%	$ 4.2177	31.4812%

Table 8 Continued

C. Europe Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
ANEAX	-0.0414%	1.5057%	$ 0.5200	-10.3562%	0.1353%***	1.4947%	$ 4.6368	33.8347%
DFCSX	-0.0511%	1.1944%	$ 0.4837	-12.7789%	0.0339%**	1.3973%***	$ 1.3428	8.4742%
DFUKX	-0.0592%	1.1280%	$ 0.4415	-14.8061%	0.0080%*	1.3702%***	$ 0.9785	2.0026%
FIEUX	-0.0443%	1.3766%	$ 0.5137	-11.0672%	0.1317%***	1.4397%*	$ 4.4754	32.9154%
FEURX	-0.0666%	1.7461%	$ 0.3617	-16.6512%	0.2090%***	1.4823%***	$ 11.5547	52.2485%
MBEFX	-0.0495%	1.5844%	$ 0.4596	-12.3709%	0.0692%***	1.5728%	$ 2.0074	17.3114%
EUGBX	-0.0418%	1.5714%	$ 0.5100	-10.4507%	0.1605%***	1.5064%*	$ 6.3055	40.1177%
PEURX	-0.0289%	1.3817%	$ 0.6210	-7.2345%	0.1559%***	1.3750%	$ 6.1124	38.9755%
PEUGX	-0.0280%	1.3644%	$ 0.6298	-7.0043%	0.1510%***	1.3675%	$ 5.7585	37.7443%
PRESX	-0.0370%	1.3908%	$ 0.5609	-9.2480%	0.1297%***	1.3906%	$ 4.4092	32.4236%
VEURX	-0.0152%	1.3483%	$ 0.7405	-3.7992%	0.1104%***	1.3771%	$ 3.4846	27.6106%
Portfolio	-0.0421%	1.1558%	$ 0.5468	-10.5243%	0.1155%***	1.2932%***	$ 3.7618	28.8823%

D. Japan Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
DFJSX	-0.0193%	1.5653%	$ 0.6914	-4.8164%	-0.0959%**	1.3757%	$ 0.2905	-23.9840%
SJPNX	-0.0195%	1.7005%	$ 0.6712	-4.8741%	0.1405%***	1.5706%***	$ 4.48643	35.1269%
PRJPX	-0.0320%	1.6781%	$ 0.5826	-7.9926%	0.1395%***	1.5341%***	$ 4.4656	34.8756%
VPACX	-0.0278%	1.5067%	$ 0.6326	-6.9436%	0.0614%**	1.4640%	$ 1.8120	15.3613%
Portfolio	-0.0246%	1.4668%	$ 0.6608	-6.1567%	0.1015%***	1.4461%	$ 2.9055	25.3745%

Table 8 Continued

E. Pacific/Asia Ex. Japan Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
EVCGX	-0.0309%	1.7032%	$ 0.5698	-7.7227%	0.1742%***	1.5656%***	$ 7.3938	43.5410%
CNTTX	-0.0088%	1.7435%	$ 0.7430	-2.2078%	0.1806%***	1.5749%***	$ 7.9915	45.1407%
MBDRX	-0.0470%	1.7022%	$ 0.4651	-11.7537%	0.1706%***	1.4978%***	$ 7.1696	42.6533%
MSAEX	-0.0237%	1.6030%	$ 0.6355	-5.9153%	0.1793%***	1.4977%***	$ 7.9759	44.8137%
PRASX	-0.0025%	1.5777%	$ 0.8302	-0.6305%	0.1818%***	1.5272%	$ 8.1895	45.4607%
Portfolio	-0.0226%	1.5740%	$ 0.6483	-5.6460%	0.1726%***	1.4920%**	$ 7.3548	43.1509%

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
AEIGX	-0.0742%	1.5644%	$ 0.3401	-18.5480%	0.1209%***	1.4558%***	$ 3.8981	30.2201%
AIIEX	-0.0220%	1.2165%	$ 0.6951	-5.4890%	0.1721%***	1.3108%***	$ 7.5471	43.0308%
AAIEX	-0.0268%	1.0590%	$ 0.6691	-6.7045%	0.0921%***	1.2936%***	$ 2.8139	23.0219%
TWIEX	-0.0285%	1.3708%	$ 0.6239	-7.1272%	0.1735%***	1.3330%	$ 7.6476	43.3726%
AEPGX	-0.0143%	1.0919%	$ 0.7778	-3.5748%	0.1206%***	1.2710%***	$ 4.0202	30.1583%
INIFX	-0.0601%	1.4149%	$ 0.4186	-15.0198%	0.1112%***	1.5041%**	$ 3.4251	27.7957%
BAINX	-0.0394%	1.1035%	$ 0.5697	-9.8453%	0.1295%***	1.2766%***	$ 4.4806	32.3693%
SNIVX	-0.0284%	1.0914%	$ 0.6530	-7.0969%	0.1126%***	1.2558%***	$ 3.6479	28.1488%
PNINX	-0.0492%	1.2633%	$ 0.4914	-12.3103%	0.1299%***	1.3260%**	$ 4.4645	32.4694%
CWVGX	-0.0371%	1.1629%	$ 0.5808	-9.2797%	0.1160%***	1.3179%***	$ 3.7662	28.9933%
NEFIX	-0.0271%	1.1994%	$ 0.6538	-6.7800%	0.1354%***	1.3263%***	$ 4.7811	33.84632%
CMISX	-0.0343%	1.2144%	$ 0.5959	-8.5668%	0.1083%***	1.3615%***	$ 3.3970	27.0829%
TIEUX	-0.0363%	1.2201%	$ 0.5813	-9.0668%	0.1416%***	1.2940%**	$ 5.1918	35.4077%
RBIEX	-0.0844%	1.6449%	$ 0.2911	-21.1011%	0.1107%***	1.6998%	$ 3.2200	27.6735%
DRGLX	-0.0826%	1.6488%	$ 0.2988	-20.6559%	0.1422%***	1.6322%	$ 6.8466	35.5599%
NIEAX	-0.0603%	1.4516%	$ 0.4107	-15.0757%	0.0951%***	1.5732%***	$ 2.7446	23.7759%
ENIGX	-0.0444%	1.2462%	$ 0.5241	-11.1045%	0.1395%***	1.3228%**	$ 5.0318	34.8642%

Table 8 Continued

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
UMINX	-0.0365%	1.1611%	$ 0.5857	-9.1201%	0.1747%***	1.3123%***	$ 7.7869	43.6685%
FTITX	-0.0352%	1.3017%	$ 0.5818	-8.8009%	0.1491%***	1.3692%**	$ 5.6190	37.2676%
FAERX	-0.0337%	1.2324%	$ 0.5998	-8.42224%	0.1066%***	1.3599%***	$ 3.3311	26.6495%
FICDX	-0.0023%	1.2627%	$0.8942	-0.5799%	0.0232%	1.2733%	$ 1.2040	5.7916%
FDIVX	-0.0023%	0.9626%	$ 0.9712	0.5700%	0.1076%***	1.2457%***	$ 3.4374	26.9096%
FIGRX	-0.0179%	1.1354%	$ 0.7389	-4.4855%	0.1183%***	1.3295%***	$ 3.8662	29.5695%
FOSFX	-0.0339%	1.2513%	$ 0.5967	-8.4641%	0.1049%***	1.3774%***	$ 3.2513	26.2247%
KNINX	-0.0381%	1.1456%	$ 0.5756	-9.5150%	0.1163%***	1.3060%***	$ 3.7919	29.0874%
GAMNX	-0.0633%	1.1455%	$ 0.4210	-15.8179%	0.0880%***	1.3073%***	$ 2.6687	21.9949%
GSIFX	-0.0433%	1.2583%	$ 0.5301	-10.8209%	0.1490%***	1.3442%**	$ 5.6397	37.2510%
HAINX	-0.0243%	1.1808%	$ 0.6780	-6.0868%	0.0811%***	1.3606%***	$ 2.4298	20.2867%
IVINX	-0.0698%	1.4221%	$ 0.3680	-17.4609%	0.0919%***	1.5350%***	$ 2.6649	22.9643%
ACINX	-0.0212%	1.1016%	$ 0.7122	-5.3097%	0.1505%***	1.2444%***	$ 5.8349	37.6152%
CONAX	-0.0543%	1.2062%	$ 0.4651	-13.5740%	0.1066%***	1.2389%	$ 3.3976	26.6563%
MSACX	-0.0380%	1.1313%	$ 0.5761	-9.5057%	0.1192%***	1.2900%***	$ 3.9346	29.7897%
MSIQX	-0.0213%	1.1733%	$ 0.7034	-5.3204%	0.0888%***	1.3910%***	$ 2.6528	22.2034%
MUIYX	-0.0370%	1.2390%	$ 0.5754	-9.2401%	0.0354%***	1.3215%**	$ 1.3912	8.8569%
OAKIX	-0.0020%	1.0669%	$ 0.9078	-0.5057%	0.1140%***	1.2547%***	$ 3.7114	28.4974%
PHITX	-0.0591%	1.3587%	$ 0.4283	-14.7647%	0.1033%***	1.4551%***	$ 3.1367	25.8134%
PFIFX	-0.0297%	1.1863%	$ 0.6321	-7.4243%	0.0756%***	1.4260%***	$ 2.2370	18.9043%
PRWLX	-0.0493%	1.1440%	$ 0.5008	-12.3191%	0.1044%***	1.3085%***	$ 3.2685	26.1037%
SCIEX	-0.0979%	2.0448%	$ 0.2081	-24.4788%	0.0520%***	2.1187%	$ 1.3052	12.9894%
SCINX	-0.0409%	1.2615%	$ 0.5454	-10.2353%	0.1292%***	1.3795%***	$ 4.3865	32.3004%
SEITX	-0.0201%	1.1589%	$ 0.7173	-5.0330%	0.1631%***	1.3110%***	$ 6.7500	40.7713%
SNGRX	-0.0533%	1.3328%	$ 0.4631	-13.3219%	0.1297%***	1.3478%	$ 4.4423	32.4258%
SBIEX	-0.0577%	1.3789%	$ 0.4336	-14.4275%	0.1376%***	1.4574%**	$ 4.7868	34.4018%
STISX	-0.0380%	1.4195%	$ 0.5514	-9.4953%	0.1916%***	1.3918%	$ 9.4703	47.9003%
PRFEX	-0.0353%	1.2384%	$ 0.5875	-8.8235%	0.1465%***	1.3344%***	$ 5.4761	36.6152%
PRIDX	-0.0015%	1.2128%	$ 0.8933	-0.3656%	0.1602%***	1.2669%*	$ 6.5604	40.0577%

Table 8 Continued

F. Foreign Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
PRITX	-0.0375%	1.2400%	$ 0.5717	-9.3674%	0.1464%***	1.3321%***	$ 5.4758	36.6064%
TEMFX	-0.0166%	0.9423%	$ 0.7702	-4.1507%	0.0717%***	1.2497%***	$ 2.2004	17.9145%
FINEX	-0.0142%	0.8438%	$ 0.8019	-3.5553%	0.0667%***	1.2108%***	$ 2.0822	16.6784%
USIFX	-0.0228%	1.0414%	$ 0.7052	-5.7002%	0.0956%***	1.2760%***	$ 2.9496	23.9086%
VTRIX	-0.0277%	1.1546%	$ 0.6532	-6.9158%	0.0799%***	1.2846%***	$ 2.4250	19.9748%
VWIGX	-0.0268%	1.2038%	$ 0.6558	-6.7078%	0.1342%***	1.3216%***	$ 4.7165	33.5510%
VNEPX	-0.0417%	1.2982%	$ 0.5362	-10.4203%	0.1379%***	1.4363%***	$ 4.8287	34.4861%
UNCGX	-0.0628%	1.5055%	$ 0.3954	-15.6889%	0.1069%***	1.4315%**	$ 3.2929	26.7231%
SRIGX	-0.0338%	1.1537%	$ 0.6060	-8.4520%	0.1469%***	1.2912%***	$ 5.5472	36.7365%
WIBCX	-0.0407%	1.3074%	$ 0.5431	-10.1659%	0.1189%***	1.4163%***	$ 3.8363	29.7254%
Portfolio	-0.0380%	1.0174%	$ 0.5863	-9.4932%	0.1230%***	1.2513%***	$ 4.1538	30.7563%

G. Latin Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
MBLTX	-0.0358%	1.7505%	$ 0.5306	-8.9602%	-0.0278%	1.7944%	$ 0.5804	-6.9458%

H. World Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
GSCAX	-0.0614%	1.4194%	$ 0.4117	-15.3587%	0.1150%***	2.0815%	$ 3.1652	28.7420%
ANWPX	-0.0115%	1.1286%	$ 0.8004	-2.8800%	0.0931%***	1.2633%***	$ 2.8657	23.2861%
SMCWX	-0.0386%	1.3354%	$ 0.5541	-9.6438%	0.1029%***	1.9983%	$ 2.7911	25.7347%
AHERX	-0.1966%	5.7550%	$0.0111	-49.1394%	0.1655%***	4.5140%***	$ 2.2463	41.3853%
IGLGX	-0.0466%	1.3768%	$ 0.4982	-11.6604%	0.0739%***	1.4694%**	$ 2.1773	18.4755%

Table 8 Continued

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
FWWGX	-0.0839%	1.5975%	$ 0.2987	-20.9844%	0.0635%***	2.1717%***	$ 1.6245	15.8779%
EGLBX	-0.0373%	1.3071%	$ 0.5659	-9.3150%	0.1340%***	1.4559%***	$ 4.5853	33.4974%
FWWFX	-0.0284%	1.1874%	$ 0.6440	-7.0911%	0.0595%***	1.2846%***	$ 1.8836	14.8688%
FIISX	-0.0361%	1.1665%	$ 0.5876	-9.0213%	0.0776%***	1.2590%***	$ 2.3669	19.4005%
GAGLX	-0.0347%	1.1259%	$ 0.6014	-8.6871%	0.0430%***	1.2828%***	$ 1.5369	10.7454%
FGLOX	-0.0625%	1.2150%	$ 0.4210	-15.6210%	0.0603%***	1.3019%***	$ 1.8970	15.0673%
MCGLX	-0.0444%	1.1753%	$ 0.5300	-11.0943%	0.0719%***	1.3164%***	$ 2.1862	17.9839%
JAWWX	-0.0159%	1.3633%	$ 0.7319	-3.9676%	0.1260%***	1.3768%	$ 4.2212	31.4930%
LAGEX	-0.0367%	1.1777%	$ 0.5820	-9.1848%	0.0740%***	1.3052%***	$ 2.2477	18.5101%
MWEBX	-0.0186%	0.9791%	$ 0.7487	-4.6442%	0.0797%***	1.2541%***	$ 2.4289	19.9149%
OPPAX	-0.0203%	1.3836%	$ 0.6875	-5.0779%	0.0911%***	1.3120%**	$ 2.7738	22.7829%
OPGIX	-0.0114%	1.4375%	$ 0.7632	-2.8545%	0.0806%***	1.4367%	$ 2.3839	20.1470%
QVGLX	-0.0336%	1.1754%	$ 0.6032	-8.3976%	0.0146%**	1.4147%***	$ 1.0540	3.6571%
NWWOX	-0.0501%	1.3561%	$ 0.4775	-12.5215%	0.0584%***	1.4938%***	$ 1.7855	14.6106%
PRGLX	-0.0448%	1.4691%	$ 0.5010	-11.2073%	0.1069%***	1.4237%	$ 3.3070	26.7342%
PEQUX	-0.0577%	1.6394%	$ 0.4114	-14.4295%	0.1136%***	1.4084%***	$ 3.6008	28.3880%
SGSCX	-0.0135%	1.3259%	$ 0.7581	-3.3839%	0.1292%***	2.0260%**	$ 3.8366	32.3119%
SCOBX	-0.0515%	1.1389%	$ 0.4863	-12.8717%	0.0403%***	1.3736%***	$ 1.4604	10.0762%
TECAX	-0.0178%	1.0038%	$ 0.7536	-4.4475%	0.0905%***	1.9480%***	$ 2.4232	22.6292%
TEGOX	-0.0387%	1.0452%	$ 0.5788	-9.6640%	0.0588%***	1.3039%***	$ 1.8620	14.7123%
TEMGX	-0.0371%	0.8336%	$ 0.6053	-9.2675%	0.0501%***	1.2175%***	$ 1.6952	12.5326%
TEPLX	-0.0186%	0.9710%	$ 0.7483	-4.6506%	0.0400%**	1.2978%***	$ 1.4757	10.0023%
TEMWX	-0.0228%	0.9728%	$ 0.7105	-5.7035%	0.0659%***	1.2889%***	$ 2.0366	16.4781%
USAWX	-0.0254%	1.1032%	$ 0.6772	-6.3538%	0.0562%***	1.2953%***	$ 1.8070	14.0609%
Portfolio	-0.0413%	1.0276%	$ 0.5622	-10.3146%	0.0745%***	1.2518%***	$ 2.2795	18.6188%

Table 8 Continued

I. International Bond Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
AMMSX	-0.0151%	0.1862%	$ 0.8276	-3.7807%	-0.0183%	1.0457%***	$ 0.7448	-4.5863%
ANAGX	-0.0128%	0.6116%	$ 0.8343	-3.1914%	-0.0032%	1.1228%***	$ 0.8889	-0.8018%
BEGBX	0.0028%	0.6045%	$ 1.0126	0.7092%	-0.0491%*	1.0197%***	$ 0.5105	-12.2786%
CWBFX	-0.0041%	0.3786%	$ 0.9422	-1.0237%	-0.0391%	0.9603%***	$ 0.5820	-9.7791%
IGBFX	-0.0033%	0.3549%	$ 0.9526	-0.8250%	-0.0167%	1.0694%***	$ 0.7576	-4.1780%
CIFIX	-0.0005%	0.3133%	$ 0.9872	-0.1345%	-0.0410%	1.0477%***	$ 0.5625	-10.2482%
TIFUX	-0.0101%	0.5215%	$ 0.8675	-2.5333%	-0.0626%*	0.9923%***	$ 0.4336	-15.6477%
CGFIX	-0.0076%	0.3437%	$ 0.9032	-1.9077%	-0.0309%	0.9438%***	$ 0.6460	-7.7116%
DFGBX	0.0011%	0.3281%	$ 1.0068	0.2767%	-0.0207%	1.0657%***	$ 0.7214	-5.1774%
FTIIX	-0.0056%	0.5530%	$ 0.9159	-1.3944%	-0.0537%	0.9995%***	$ 0.4835	-13.4273%
ICPHX	-0.0123%	0.5449%	$ 0.8437	-3.0644%	-0.0347%	1.1140%***	$ 0.6025	-8.6838%
GSGIX	-0.0043%	0.2792%	$ 0.9437	-1.0713%	-0.0159%	1.0556%***	$ 0.7666	-3.9758%
LAGIX	-0.0156%	0.3666%	$ 0.8173	-3.9083%	-0.0198%	1.0712%***	$ 0.7291	-4.9475%
MBGOX	-0.0079%	0.4022%	$ 0.8980	-1.9721%	-0.0266%	1.0766%***	$ 0.6694	-6.6584%
MSGFX	0.0058%	0.4596%	$ 1.0606	1.4533%	-0.0156%	1.0881%***	$ 0.7664	-3.8926%
PFORX	-0.0012%	0.3320%	$ 0.9783	-0.3058%	-0.0061%	1.0776%***	$ 0.8631	-1.5217%
PGGIX	-0.0147%	0.3622%	$ 0.8266	-3.6849%	-0.0293%	1.0812%***	$ 0.6472	-7.3296%
SSTGX	-0.0005%	0.2829%	$ 0.9887	-0.1296%	-0.0065%	1.0588%***	$ 0.8609	-1.6240%
SBGLX	-0.0090%	0.3525%	$ 0.8878	-2.2462%	-0.0277%	1.0929%***	$ 0.6587	-6.9362%
RPIBX	-0.0083%	0.5263%	$ 0.8867	-2.0855%	-0.0257%	1.1016%***	$ 0.6753	-6.4159%
TPINX	-0.0118%	0.3702%	$ 0.8566	-2.9561%	-0.0187%	1.0820%***	$ 0.7378	-4.6788%
Portfolio	-0.0064%	0.2792%	$ 0.9191	-1.6084%	-0.0169%	1.0587%***	$ 0.7573	-4.2142%

J. International Hybrid Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
CAIBX	-0.0122%	0.5977%	$ 0.8415	-3.0394%	0.0170%	1.1191%***	$ 1.1418	4.2475%

Table 8 Continued

J. International Hybrid Fund

Ticker	Returns and Risks of Buy-and-hold Strategy				Returns and Risks of Trading Strategy III			
	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns	Mean Daily Return	Mean Daily SD	Cumulative Returns	Annual Returns
BPGLX	-0.0237%	0.7600%	$ 0.7193	-5.9161%	0.0254%*	1.1432%***	$ 1.2620	6.3441%
SGENX	-0.0123%	0.8839%	$ 0.8153	-3.0750%	0.0260%	1.1326%***	$ 1.2730	6.4950%
FMAFX	-0.0327%	0.8491%	$ 0.6378	-8.1803%	0.0221%***	1.2057%***	$ 1.2014	5.5330%
MALOX	-0.0281%	0.9170%	$ 0.6689	-7.0309%	0.0196%*	1.2067%***	$ 1.1638	4.9042%
MFWTX	-0.0163%	1.8306%	$ 0.6537	-4.0765%	-0.0166%	1.6769%***	$ 0.6604	-4.1496%
Portfolio	-0.0209%	0.6328%	$ 0.7534	-5.2197%	0.0204%*	1.1336%***	$ 1.1884	5.0996%

indices to trade them.

Finally, the results of F-test suggest that there is statistically significant difference in average daily standard deviations (risks) between buy-and-hold and trading strategies I, II and III for all categories of international funds. More specifically, the average daily standard deviations of trading strategies I and II are lower than the standard deviations of buy-and-hold strategy; and the average daily standard deviations of trading strategy III are higher than the standard deviations of buy-and-hold strategy. Trading strategies I and II are associated with lower risks because investors keep their money in cash or in less-risky money market funds respectively when they are out of international mutual funds markets. Since an index fund bears almost similar risks a market index bears; investors had to bear higher risks under trading strategy III.

I also computed cumulative returns of three trading strategies. The cumulative returns of trading strategy I, II and III are then compared with the cumulative returns of buy-and-hold strategy in Table 6, Table 7 and Table 8 respectively. The cumulative returns were the highest for strategy II that uses money market fund as an alternative parking investment. For example by timing the Wilshire 5000 index (i.e. using Wilshire 5000 index as a trading signal for trading strategy II), investors may transform one dollar invested in the INVESCO European Inv fund (FEURX) on December 1, 1997 into $20.96 on October 31, 2002. However, during the same period, the buy-and-hold cumulative returns for FEURX were only $0.36.

Finally, I computed the number of trades (roundtrip) required for each fund and portfolio of funds. By definition the number of trades required are the same whether investors follow trading strategy I or II or III, because, the trading signals for funds under each strategy are based on the movements of their best-fitting market index. Sample funds that follow Russell 2000 index as trading signal require 282 trades during the holdout sample period of 1237 days (on average, one roundtrip trade per 4.39 days) The number of roundtrip trades required for funds (or portfolios) is provided in the parentheses after the name of the market index that was used as trading signals: S&P 500 (318 for all funds and 301 trades for Japan funds); Russell 1000 (317 for all funds and 300 for Japan funds); Russell 3000 (313 for all fund and 297 for Japan funds); Wilshire 5000 (314); Dow Composite (311); Dow Industrial (314); Nasdaq (299), MSCI Latin (276); MSCI Emerging Market (249); and Topix 2nd Section (228).

2.6.4. Returns and Risks of Load and No Load Funds

Out of 117 sample international stock funds of this study, there are 62 load and 55 no load funds. The number of load and no load funds is 12 and 9 respectively in international bond fund category. There are 4 load and 2 no load funds in international hybrid fund category. Overall, out of 144 sample funds, 66 are no load funds and the rest 78 are load funds (of which 65 funds have front-end load that varies in between 2.25% to 5.75%; 12 funds have back-end load that varies in between 1% to 5% and 1 fund has both back and front-end loads).

It is a common belief among investors that no load funds can be traded without incurring any cost. Load fees are usually paid when investors buy (front-end load) and sell (back-end load) funds. However investors get the privileges of paying load fees only once because most funds exempted investors of paying load fees when investors remain in the same fund family. The load fees are usually low or exempted for investors who invest a large amount of money in fund complexes. Besides, investors (who have paid a load) may enjoy unrestricted exchange privileges between load and no load funds within a fund family without paying transactions costs.

Mutual funds also offer breakpoint discounts to investors, which allow investors to purchase load funds (usually for class A-shares with front-end loads) with discounts. The breakpoint discounts allow investors to take advantages of purchasing load funds at low costs or without any cost. Mutual fund breakpoint discounts are also known as volume discounts on the front-end loads at certain pre-determined investment level. Most mutual funds provide breakpoint discounts to investors who make large purchases at one time. The extent of the discounts depends on the size of purchase: front-end load decreases as the size of the purchase

increases and front-end load is waived for large investment into a fund. Moreover, some funds allow investors to qualify for breakpoint discounts on the basis of current holdings of a fund or another fund from the same fund family from prior purchases through 'rights of accumulation' and future purchases, based upon 'letters of intent'. To be qualified for breakpoint discounts, some funds allow investors to count current holdings if these funds are purchased from the same fund family by related parties (such as spouse, children etc. from the same households). This privilege allows individual investors, households or groups of related investors to combine their account balances and purchase shares from the same fund family to qualify for breakpoint discounts. This includes all brokerage accounts an investor and his households (spouse, children etc.) posses at different firms, college savings accounts (529 plans) and retirement accounts.[35]

To investigate whether trading load funds are more profitable than no load funds, I compute the average daily returns, average daily standard deviations (risks) and cumulative returns for both load and no load funds using buy-and-hold and trading strategies. Table 9 reports the risks and returns comparison between load and no load funds. It should be noted that the sample does not include any 'load' fund from Japan fund category and in contrast no 'no load' fund from Diversified Pacific/Asia and Latin fund categories. However for other category of international funds, Table 9 reveals that there are no statistically significant return differences between load and no load funds; the finding is consistent either for buy-and-hold strategy or for trading strategies I, II and III. The t-test for a two-sample comparison of average returns between load and no load funds is also computed and in most cases these are insignificant. Since no

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[35] However, the SEC recently adopts a rule that requires mutual fund to describe in its prospectus any arrangements that result in breakpoints in sales loads and to provide a brief summary of shareholder eligibility requirements. The rule is effective from July 23, 2004. [Source: 'Final Rule: Disclosure of Breakpoint Discounts by Mutual Funds', Securities and Exchange Commission, 17 CFR Parts 239 and 274, Release Nos. 33-8427; 34-49817; IC-26464; File No. S7-28-03; RIN 3235-AI95; at http://www.sec.gov/rules/final/33-8427.htm].

Table 9: Returns and Risks Comparison between Load and No Load Mutual Funds

This table presents the differences in daily mean returns and risks and cumulative returns between load and no load funds. Column one lists the fund category with the number of load and no load funds in each category. Columns two through four present the average daily returns for load fund and no load fund and T-test (for mean differences between load and no load funds) respectively. Columns five through seven list average daily standard deviations for load fund and no load fund and F-test (for variance differences between load and no load funds) respectively. The level of significance is provided in parentheses. Columns eight and nine present the cumulative returns for load fund and no load fund respectively. There are four panels in this table. Panel A, B, C and D present the differences in daily mean returns, standard deviation and cumulative returns for buy-and-hold strategy, trading strategy I, trading strategy II and trading strategy III respectively. The sample is from December 1, 1997 to October 31, 2002.

Panel A: Buy-and-hold Strategy (Load vs. No Load Funds)

Fund Category (# of Load / # of No Load)		Average Daily Returns			Average Daily Standard Deviation			Cumulative Returns	
		Load	No Load	T-test	Load	No Load	F-test	Load	No Load
Diversified Emerging Market	(2/2)	-0.0318%	-0.0371%	0.3514 (0.7253)	1.2529%	1.3646%	0.8848 (0.0158)	$ 0.6116	$ 0.5626
Diversified Pacific/Asia	(7/0)	-0.0310%	N/A	N/A	1.3295%	N/A	N/A	$ 0.6106	N/A
Europe	(6/5)	-0.0390%	-0.0458%	0.3436 (0.6872)	1.2837%	1.0751%	1.4256 (0.0000)	$ 0.5574	$ 0.5278
Japan	(0/4)	N/A	-0.0246%	N/A	N/A	1.4668%	N/A	N/A	$ 0.6608
Pacific/Asia Ex. Japan	(3/2)	-0.0289%	-0.0131%	-0.8757 (0.3814)	1.6357%	1.5549%	1.1067 (0.0374)	$ 0.5922	$ 0.7314
Foreign	(22/34)	-0.0440%	-0.0341%	-1.6866 (0.0919)	1.0204%	1.0204%	0.9939 (0.4572)	$ 0.5441	$ 0.6146
Latin	(1/0)	-0.0358%	N/A	N/A	1.7505%	N/A	N/A	$ 0.5306	N/A
World	(21/8)	-0.0354%	-0.0566%	0.9321 (0.3515)	0.9914%	1.3070%	0.5753 (0.0000)	$ 0.6070	$ 0.4468
International Bond	(12/9)	-0.0097%	-0.0021%	-2.3198 (0.0205)	0.2809%	0.2903%	0.9368 (0.1256)	$ 0.8825	$ 0.9697
International Hybrid	(4/2)	-0.0172%	-0.0282%	0.5929 (0.5533)	0.7084%	0.6927%	1.0457 (0.2160)	$ 0.7833	$ 0.6848

Table 9 Continued

Panel B: Trading Strategy I (Load vs. No Load Funds)

Fund Category (# of Load / # of No Load)		Average Daily Returns			Average Daily Standard Deviation			Cumulative Returns	
		Load	No Load	T-test	Load	No Load	F-test	Load	No Load
Diversified Emerging Market	(2/2)	0.1446%	0.1576%	-1.2363 (0.2166)	0.8455%	0.8988%	0.8429 (0.0013)	$ 5.7136	$ 6.6741
Diversified Pacific/Asia	(7/0)	0.1602%	N/A	N/A	0.8928%	N/A	N/A	$ 6.9332	N/A
Europe	(6/5)	0.1447%	0.1098%	2.5807 (0.0100)	0.8518%	0.7319%	1.3543 (0.0000)	$ 5.7172	$ 3.7578
Japan	(0/4)	N/A	0.1161%	N/A	N/A	1.4668%	N/A	N/A	$ 3.6852
Pacific/Asia Ex. Japan	(3/2)	0.2055%	0.2102%	-0.8757 (0.3814)	1.1002%	1.0660%	1.0653 (0.1331)	$ 11.7611	$ 12.5211
Foreign	(22/34)	0.1483%	0.1497%	-0.3061 (0.7596)	0.6699%	0.6781%	0.9758 (0.3335)	$ 6.0806	$ 6.1839
Latin	(1/0)	0.1285%	N/A	N/A	1.1016%	N/A	N/A	$ 4.6207	N/A
World	(21/8)	0.0993%	0.1040%	-0.2782 (0.7809)	0.6538%	0.8795%	0.5525 (0.0000)	$ 3.3242	$ 3.4478
International Bond	(12/9)	-0.0049%	-0.0016%	-1.5539 (0.1205)	0.1903%	0.1935%	0.9672 (0.2790)	$ 0.9383	$ 0.9763
International Hybrid	(4/2)	0.0372%	0.0422%	0.4250 (0.6709)	0.4723%	0.4506%	1.0985 (0.0494)	$ 1.5612	$ 1.6641

Panel C: Trading Strategy II (Load vs. No Load Funds)

Fund Category (# of Load / # of No Load)		Average Daily Returns			Average Daily Standard Deviation			Cumulative Returns	
		Load	No Load	T-test	Load	No Load	F-test	Load	No Load
Diversified Emerging Market	(2/2)	0.1536%	0.1666%	-1.2363 (0.2166)	0.8440%	0.8973%	0.8847 (0.0157)	$ 6.3832	$ 7.4562
Diversified Pacific/Asia	(7/0)	0.1690%	N/A	N/A	0.8913%	N/A	N/A	$ 7.2823	N/A
Europe	(6/5)	0.1536%	0.1187%	2.5807 (0.0100)	0.8504%	0.7307%	1.3544 (0.0000)	$ 6.3872	$ 4.1981
Japan	(0/4)	N/A	0.1249%	N/A	N/A	1.0255%	N/A	N/A	$ 4.0638
Pacific/Asia Ex. Japan	(3/2)	0.2142%	0.2190%	-0.3982 (0.6905)	1.0987%	1.0643%	1.0656 (0.1322)	$ 13.1025	$ 13.9492
Foreign	(22/34)	0.1571%	0.1585%	-0.3061 (0.7596)	0.6680%	0.6763%	0.9757 (0.3330)	$ 6.7831	$ 6.8983

Table 9 Continued

Panel C: Trading Strategy II (Load vs. No Load Funds)

Fund Category (# of Load / # of No Load)		Average Daily Returns			Average Daily Standard Deviation			Cumulative Returns	
		Load	No Load	T-test	Load	No Load	F-test	Load	No Load
Latin	(1/0)	0.1374%	N/A	N/A	1.1007%	N/A	N/A	$ 5.0745	N/A
World	(21/8)	0.1081%	0.1128%	-0.2782 (0.7809)	0.6525%	0.8786%	0.5516 (0.0000)	$ 3.7083	$ 3.8461
International Bond	(12/9)	0.0041%	0.0074%	-1.5539 (0.1205)	0.1910%	0.1940%	0.9690 (0.2898)	$ 1.0494	$ 1.0931
International Hybrid	(4/2)	0.0459%	0.0510%	0.4250 (0.6709)	0.4718%	0.4500%	1.0992 (0.0482)	$ 1.7402	$ 1.8549

Panel D: Trading Strategy III (Load vs. No Load Funds)

Fund Category (# of Load / # of No Load)		Average Daily Returns			Average Daily Standard Deviation			Cumulative Returns	
		Load	No Load	T-test	Load	No Load	F-test	Load	No Load
Diversified Emerging Market	(2/2)	0.1313%	0.1443%	-1.2363 (0.2166)	1.3432%	1.3776%	0.9508 (0.1875)	$ 4.5333	$ 5.2954
Diversified Pacific/Asia	(7/0)	0.1259%	N/A	N/A	1.3714%	N/A	N/A	$ 4.2177	N/A
Europe	(6/5)	0.1314%	0.0965%	2.5807 (0.0100)	1.3472%	1.2745%	1.1174 (0.0255)	$ 4.5362	$ 2.9815
Japan	(0/4)	N/A	0.1015%	N/A	N/A	1.4461%	N/A	N/A	$ 2.9055
Pacific/Asia Ex. Japan	(3/2)	0.1707%	0.1754%	-0.3982 (0.6905)	1.5156%	1.4911%	1.0332 (0.2828)	$ 7.1546	$ 7.6169
Foreign	(22/34)	0.1222%	0.1236%	-0.3061 (0.7596)	1.2512%	1.2556%	0.9929 (0.4502)	$ 4.1099	$ 4.1797
Latin	(1/0)	-0.0278%	N/A	N/A	1.7944%	N/A	N/A	$ 0.5804	N/A
World	(21/8)	0.0732%	0.0779%	-0.2782 (0.7809)	1.2416%	1.3740%	0.8165 (0.0002)	$ 2.2469	$ 2.3304
International Bond	(12/9)	-0.0182%	-0.0150%	-1.5085 (0.1317)	1.0591%	1.0597%	0.9988 (0.4917)	$ 0.7445	$ 0.7746
International Hybrid	(4/2)	0.0187%	0.0238%	0.4250 (0.6709)	1.1534%	1.1447%	1.0151 (0.3960)	$ 1.1604	$ 1.2369

significant return difference is found between load and no load funds and in the presence of some institutional features of mutual funds (such as breakpoint discounts, incentives to attract investors and other common practices to avoid loads) it can be argued that investors may trade load funds as equally as no load funds. However, many fund families limit frequent trading and investors using no load funds may trade until fund families restrict them. Besides, in a no load fund the investors can merely shift to another fund family.

2.6.5. Size and Style Effects of Predicting International Mutual Funds

This study also examines the idea of using US returns on different types of stocks, notably value and growth indices to predict which types of international funds would perform best the next day. This analysis is done to investigate whether good news from the US moves the other markets up (i.e. whether international funds or the underlying stocks are affected by a general US optimism). It may be that large-cap international funds do pretty much whatever large-cap US stock funds do or small-cap international funds perform similar to whatever small-cap US stock funds do.

A plausible guess is that when the sentiment in the US is flowing towards growth (for example, Nasdaq up much more than the Dow), a similar move will occur in foreign stocks (and eventually in international funds) and with the lag in international fund pricing profitable trades can be made. Besides sentiment shifts, one can imagine specific. news or events that affect certain industries that are classified as growth or value. For instances, recent evidence of problems in personal computers might affect the industry worldwide and hurt the growth accounts that are invested in European or Asian computer related firms. It is expected that the growth indices would predict international funds better than the value indices because of the

nature of the industries. Many of the value stocks are composed of services (finance, banking, insurances etc.), which may be local and retail; or of heavy industrial or consumer products (food, clothing, tobacco, auto, steel etc.) that are not sold in quite as much of an international market (oil is a partial exception). Many of the growth industries produce light goods (drugs, software, computers, cell phones, medical equipment, electronic gadgets, semi-conductor etc.) that are sold around the world with much competition. Many of the leading firms are clearly now competing worldwide; for example, Nokkia, Erickson, Mortorola are competing worldwide in cell phones. There are many drug companies too that sell worldwide. Its expected that international funds may have strong relationship with firms and industries competing worldwide.

To investigate what the sentiment in the US is (growth versus value), I use the S&P Barra growth and S&P Barra value indices. Since the large firms seem to be more affected by worldwide trends than the smaller ones, I use the S&P Barra growth and value indices. The S&P Barra growth index consists of those companies from the S&P 500 index with the highest price-to-book and price-earnings ratios. The value index consists of firms with higher book-to-price ratios; conversely, the growth index has firms with lower book-to-price ratios. The value and growth indices are capitalization-weighted (each stock is weighted in proportion to its market value). Companies in the growth index have higher market capitalization on average than those in their associated value index. Value index exhibits lower price-to-earning ratios (or higher earnings to price ratios or higher cash flow to price ratios), higher dividends yields, and lower historical and predicted earnings growth. The S&P Barra value index is heavily concentrated in the energy, utility and financial services industries and the growth index is heavily concentrated in noncyclicals and technology industries.

Using the classification of Morningstar, the sample international equity mutual funds of this study are divided into value, growth and blend categories; each category is also divided according to its market capitalization.[36] Table 10 (panel A, B and C) presents the cross-autocorrelations between the returns of international equity mutual fund and the S&P Barra value and growth indices. On a portfolio basis, the cross-autocorrelations results suggest that both the S&P Barra value and growth index have high cross-autocorrelations with international equity mutual funds and both indices can be used to predict international mutual funds (the correlations between the S&P Barra growth and value indices during the sample period is approximately 0.80). The results suggest that the returns of large value, large blend and medium blend funds are more correlated with the S&P Barra Value index. The returns of small value, large growth and small growth funds also exhibit relatively higher correlations with the lagged returns of the S&P Barra value index. On the other hand, the returns of medium value and medium growth funds exhibit higher correlations with the S&P Barra growth index. On an individual fund basis, similar results are also observed. The finding suggests the returns of S&P Barra growth or the S&P Barra value index can be used as trading signals for the US-based international mutual funds.

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[36] The style boxes of international equity funds are categorized differently by Morningstar than for domestic equity funds. Since earnings are reported in different ways around the world, Morning star uses price-to-cash flow (instead of price-to-earnings) ratio for international equity funds. According to Mornginstar, *"Cash flow from operations takes net income and adds back all the adjustments that earnings accounting can make for noncash expenses--such as depreciation and the use of reserve accounts--and subtracts out all cash payments"*. The price-to-cash and the price-to-book ratios of international equity funds are viewed in relation to the MSCI EAFE index. International equity funds with a combined relative price-to-cash and relative price-to-book ratios of less than 1.75 are considered as Value funds. Blend funds have a combined relative price-to-cash and relative price-to-book ratios in between 1.75 and 2.25; the growth funds have a combined ratios of more than 2.25. If the median market capitalization of an international equity fund is more than $5 billion , the fund is classified as Large funds. Medium funds have a median market capitalization of in between $1 to $5 billion and Small funds have a medium market capitalization of less than $1 billion. However, Mornginstar uses interest rate sensitivity and credit quality to categorize its international bond funds and accordingly they categorized international bond funds.

Table 10 also presents the annual returns from the proposed trading strategies I, II and III when the S&P Barra Growth and Value indices are used as trading signals. It is evident from table 10 that the returns of trading strategies (whether one uses either the S&P Barra growth or value index as signal) dominate the returns of buy-and-hold strategy. Surprisingly, the S&P Barra growth index emerges as a profitable trading signal for most of the sample international equity funds even though the S&P Barra value index exhibited higher cross-autocorrelations with most of the sample funds during the initial sample period. To explain this result, I also compute the cross-autocorrelations between style and size portfolios of sample funds and the S& Barra value and growth indices during the holdout sample period. The cross-autocorrelations results showed that both the growth and blend funds had relatively higher correlations with the S&P Barra growth index during the holdout sample period.[37] This might partially explain the higher annual returns earned from the trading strategies using the returns of S&P growth index as trading signals. But the value funds also provide higher trading strategy returns using the S&P growth index as signal. It may be due to the fact that the world market is more integrated during the holdout sample period (late 1997-2002) as opposed to the initial sample period (1993-1997). As a result, the value of foreign stocks (and eventually the price of international mutual funds) is more affected by the growth stocks of the US markets. As discussed earlier, the S&P Barra growth index consists of large firms that are competing worldwide and any news that affects the growth industries may have international spillover effects.

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[37] The cross-autocorrelations between different funds and the S&P Barra value and growth indices during the holdout sample period (from December 1, 1997 through December 31, 2001) are as follow: large value funds (0.3877 with S&P value index and 0.3720 with S&P growth index); medium value funds (0.3118 with S&P value index and 0.2698 with S&P growth index); small value funds (0.2974 with S&P value index and 0.2930 with S&P growth index); large growth funds (0.3330 with S&P value index and 0.3607 with S&P growth index); medium growth funds (0.3262 with S&P value index and 0.3612 with S&P growth index); small growth funds (0.3284 with S&P value index and 0.3807 with S&P growth index); large blend funds (0.3742 with S&P value index and 0.3872 with S&P growth index); medium blend funds (0.3421 with S&P value index and 0.3509 with S&P growth index).

Table 10: Comparison between Buy-and-hold Strategy and Trading Strategy Returns for Different Sizes and Styles of International Mutual Funds

This table splits the sample mutual funds into different sizes and styles of international mutual funds defined by Morningstar. The table presents the cross-autocorrelations among different sizes and styles of mutual funds and S&P Barra value and S&P Barra growth Indices. This table also compares the annual returns of trading strategies with the annual returns of buy-and-hold strategy under two trading signals: S&P Barra value Index and S&P Barra growth Index. Columns one and two list the ticker symbols and fund category of sample funds respectively. Columns three and four present the cross-autocorrelations between sample funds and S&P Barra value index and S&P Barra growth index respectively. Column five presents the buy-and-hold annual returns for sample funds. The significance of cross-autocorrelations are reported for 1% (**) and 5% (*) significance level. To compute cross-autocorrelations, the sample is used from January 4, 1993 through November 28, 1997. Columns six through eight present the annual returns of trading strategy I, II and III respectively when the lagged returns of S&P Barra value index are used as trading signals. Columns nine through eleven present the annual returns of trading strategy I, II and III respectively when the lagged returns of S&P Barra growth index are used as trading signals. To compute annual returns of buy-and-hold strategy and trading strategies I, II and III, the sample is used from December 1, 1997 though December 31, 2001 (DRI provides the S&P Barra indices up to December 31, 2001). Panel A reports the results for Value funds, Panel B reports the results for growth funds, Panel C reports the results for Blend funds and Panel D reports the results for International Bond and Hybrid Funds.

Panel A: Value Fund

A.1. Large Value Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
MNEMX	Emerging	0.2873**	0.2760**	-9.7951%	38.6388%	41.1906%	31.9548%	40.9907%	43.4935%	38.1187%
GAPCX	Pacific/Asia	0.0800**	0.0657*	-8.5269%	47.7762%	50.3280%	41.3086%	48.0460%	50.5488%	45.3904%
MAPCX	Pacific/Asia	0.3232**	0.3057**	-5.5219%	33.8087%	36.3605%	27.3566%	44.2879%	46.7907%	41.6478%
TGRBX	Pacific/Asia	0.4079**	0.3702**	-6.1890%	45.0355%	47.5873%	38.4705%	50.2486%	52.7513%	47.4955%
FKPGX	Pacific/Asia	0.4211**	0.3849**	-12.1471%	40.0155%	42.5672%	33.4291%	39.0659%	41.5687%	36.2915%
MBEFX	Europe	0.2846**	0.2654**	-11.0500%	14.3631%	16.9149%	7.8216%	12.0624%	14.5651%	9.3328%
SJPNX	Japan	0.2118**	0.1776**	-3.2146%	33.5575%	36.1169%	27.4707%	46.2079%	48.6888%	38.2748%
VPACX	Japan	0.2520**	0.2311**	-5.6843%	27.4119%	29.9713%	21.3109%	30.8596%	33.3404%	22.9123%
EVCGX	Pacific/Asia ex. Japan	0.3516**	0.3210**	-4.8163%	51.0964%	53.6481%	44.4975%	58.6695%	61.1723%	55.8826%
AAIEX	Foreign	0.3957**	0.3742**	-3.9447%	24.0261%	26.5779%	17.5149%	25.9476%	28.4504%	23.2484%

Table 10 Continued

A.1. Large Value Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
SNIVX	Foreign	0.3804**	0.3463**	-5.1226%	24.1957%	26.7474%	17.7305%	28.8016%	31.3044%	26.1484%
HAINX	Foreign	0.3455**	0.3436**	-4.7923%	24.3953%	26.9470%	17.8527%	20.7120%	23.2148%	17.9815%
MSIQX	Foreign	0.3615**	0.3495**	-4.9988%	19.4260%	21.9778%	12.9449%	23.6719%	26.1747%	21.0027%
PFIFX	Foreign	0.3852**	0.3736**	-6.7232%	25.5763%	28.1281%	19.1075%	18.9091%	21.4128%	16.2492%
SCIEX	Foreign	0.2998**	0.2805**	-23.9761%	9.5022%	12.0539%	2.9261%	26.8745%	29.3773%	24.1104%
TEMFX	Foreign	0.2916**	0.2917**	-2.3343%	25.0039%	27.5556%	18.4869%	25.4182%	27.9210%	22.7132%
VTRIX	Foreign	0.2610**	0.2478**	-4.5856%	24.3950%	26.9467%	17.8660%	21.7479%	24.2507%	19.0309%
TECAX	World	0.0923**	0.1084**	-0.0231%	27.0051%	29.5568%	20.5743%	27.9483%	30.4511%	25.3295%
TEPLX	World	0.2021**	0.2073**	-2.3224%	16.7543%	19.3060%	10.2908%	15.8463%	18.3491%	13.1948%
TEMWX	World	0.1900*	0.1968**	-3.2783%	20.9213%	23.4730%	14.5364%	21.8863%	24.3891%	19.3135%
Portfolio		0.4306**	0.4077**	-6.4234%	28.0838%	30.6356%	21.5675%	31.3057%	33.8085%	28.6014%

A.2. Medium Value Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
MADCX	Emerging	0.2738**	0.2643**	-6.0813%	39.8703%	42.4220%	33.2419%	41.1897%	43.6925%	38.3733%
TEDMX	Emerging	0.2899**	0.2917**	-8.4928%	37.3883%	39.9400%	30.7217%	36.1525%	38.6553%	33.2979%
OAKIX	Foreign	0.2306**	0.2286**	2.7379%	33.6178%	36.1695%	27.1399%	27.2982%	29.8010%	24.6323%
MBLTX	Latin	0.0884**	0.1017**	-4.0796%	37.1264%	39.6781%	30.8380%	33.0292%	35.5320%	30.5529%
Portfolio		0.2403**	0.2438**	-3.9789%	37.0007%	39.5524%	30.4854%	34.4174%	36.9202%	31.7141%

Table 10 Continued

A.3. Small Value Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
DFCSX	Europe	0.2184**	0.2187**	-14.5866%	5.4951%	8.0468%	-1.1889%	14.5281%	17.0309%	11.6561%
DFUKX	Europe	0.1142**	0.1171**	-14.8147%	4.0728%	6.6245%	-2.5773%	10.2287%	12.7315%	7.3907%
DFJSX	Japan	0.1736**	0.1499**	-6.3591%	25.4524%	28.0119%	19.4384%	22.7026%	25.1835%	14.8422%
FINEX	Foreign	0.3472**	0.3448**	-2.8221%	21.6150%	24.1668%	14.9477%	22.9545%	25.4573%	20.0992%
TEMGX	World	0.2808**	0.2946**	-8.2732%	15.5895%	18.1413%	9.0483%	17.3857%	19.8885%	14.6564%
Portfolio		0.3139**	0.3095**	-9.3042%	13.9798%	16.5316%	7.3807%	17.3603%	19.8631%	14.5731%

Panel B. Growth Funds

B.1. Large Growth Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
ANEAX	Europe	0.3367**	0.3441**	-6.3359%	26.8703%	29.4221%	20.4829%	36.6048%	39.1076%	34.0294%
FIEUX	Europe	0.3301**	0.3373**	-5.9899%	27.4658%	30.0176%	21.0345%	33.4996%	36.0024%	30.8803%
FEURX	Europe	0.3500**	0.3570**	-10.6237%	43.8428%	46.3946%	37.4087%	56.9255%	59.4282%	54.3034%
EUGBX	Europe	0.3359**	0.3350**	-7.3740%	35.2685%	37.8202%	28.9733%	40.1784%	42.6812%	37.6952%
PEURX	Europe	0.3286**	0.3296**	-3.3858%	33.4907%	36.0425%	26.9206%	45.3720%	47.8749%	42.6140%
PRESX	Europe	0.3397**	0.3461**	-5.6403%	27.5802%	30.1320%	21.1365%	34.5831%	37.0859%	31.9514%
VEURX	Europe	0.3595**	0.3526**	0.4984%	26.8971%	29.4489%	20.6030%	31.7322%	34.2350%	29.2501%
AEIGX	Foreign	0.3532**	0.3335**	-13.6091%	31.9235%	34.4753%	25.4878%	45.4506%	47.9534%	42.8269%
AIIEX	Foreign	0.4305**	0.4234**	-2.7059%	38.1005%	40.6522%	31.6640%	49.4559%	51.9587%	46.8314%
TWIEX	Foreign	0.3205**	0.3037**	-3.5500%	41.6778%	32.7049%	41.3086%	49.2615%	51.7643	46.6524%
INIFX	Foreign	0.3542**	0.3366**	-12.8388%	24.8247%	27.3765%	18.4650%	33.2679%	35.7707%	30.7201%
BAINX	Foreign	0.3715**	0.3651**	-6.2091%	30.8437%	33.3955%	24.3580%	37.8262%	40.3290%	35.1524%
NEFIX	Foreign	0.3388**	0.3245**	-2.3363%	31.4990%	34.0507%	24.9365%	43.2099%	45.7126%	40.4594%
ENIGX	Foreign	0.3447**	0.3255**	-8.0789%	29.2491%	31.8008%	22.7418%	39.9546%	42.4574%	37.2593%
UMINX	Foreign	0.4206**	0.3994**	-4.9331%	39.8669%	42.4186%	33.3878%	49.9182%	52.4210%	47.2511%

Table 10 Continued

B.1. Large Growth Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
FIGRX	Foreign	0.3078**	0.2960**	-2.5153%	27.7362%	30.2879%	21.2737%	33.9470%	36.4498%	31.2966%
GSIFX	Foreign	0.4010**	0.4057**	-7.8229%	32.1823%	34.7340%	25.6156%	39.4475%	41.9503%	36.6928%
CONAX	Foreign	0.2494**	0.2027**	-12.3699%	32.8645%	35.4163%	26.3291%	36.9420%	39.4448%	34.2186%
SNGRX	Foreign	0.3609**	0.3550**	-7.5924%	30.3444%	32.8961%	23.8877%	39.2401%	41.7429%	36.5954%
SBIEX	Foreign	0.4370**	0.4195**	-11.0918%	32.9984%	35.5501%	26.4481%	43.3818%	45.8846%	40.6435%
PRFEX	Foreign	0.3940**	0.3859**	-5.5372%	31.9367%	34.4885%	25.4882%	38.1658%	40.6686%	35.5292%
PRITX	Foreign	0.3885**	0.3831**	-6.0719%	31.6824%	34.2342%	25.2392%	38.3213%	40.8240%	35.6900%
VNEPX	Foreign	0.3818**	0.3762**	-10.2428%	31.0648%	33.6166%	24.5418%	41.2127%	43.7155%	38.5017%
UNCGX	Foreign	0.3347**	0.3362**	-13.7151%	25.5511%	28.1028%	19.0921%	34.8757%	37.3785%	32.2287%
WIBCX	Foreign	0.4026**	0.3897**	-8.2379%	28.1736%	30.7254%	21.7748%	37.2954%	39.7982%	34.7086%
ANWPX	World	0.2317**	0.2333**	1.2209%	26.7002%	29.2520%	20.3680%	30.1844%	32.6872%	27.6642%
IGLGX	World	0.3479**	0.3390**	-7.6942%	19.0583%	21.6101%	12.7897%	27.7154%	30.2181%	25.2587%
FWWGX	World	0.2995**	0.3313**	-17.2712%	17.5584%	20.1102%	11.0985%	15.9107%	18.4135%	13.2628%
FWWFX	World	0.3597**	0.3536**	-3.5079%	21.1820%	23.7338%	14.7699%	21.7177%	24.2205%	19.1177%
FIISX	World	0.2983**	0.2843**	-4.8782%	22.0601%	24.6119%	15.6487%	27.1124%	29.6152%	24.5130%
GAGLX	World	0.0160	0.0169	-5.0685%	16.1958%	18.7475%	10.1550%	17.3042%	19.8070%	15.0755%
FGLOX	World	0.2440**	0.2474**	-12.5681%	19.3182%	21.8700%	13.0689%	21.7461%	24.2488%	19.3087%
MCGLX	World	0.3512**	0.3311**	-8.0503%	24.4213%	26.9731%	17.8576%	23.4860%	25.9887%	20.7343%
JAWWX	World	0.3674**	0.3873**	2.2336%	31.0630%	33.6148%	24.6997%	39.0639%	41.5667%	36.5126%
LAGEX	World	0.3509**	0.3413**	-6.8634%	22.2905%	24.8423%	15.9165%	25.9160%	28.4187%	23.3539%
MWEBX	World	0.2879**	0.2991**	-2.3212%	22.4125%	24.9643%	15.9430%	25.4625%	27.9652%	22.8049%
OPPAX	World	0.2513**	0.2540**	-0.1818%	31.2770%	33.8287%	24.7374%	34.8420%	37.3448%	32.1145%
PRGLX	World	0.3385**	0.3438**	-6.8849%	30.3273%	32.8790%	23.9421%	35.8328%	38.3356%	33.2596%
PEQUX	World	0.3444**	0.3515**	-11.2324%	28.7111%	31.2629%	22.3662%	36.6311%	39.1339%	34.0982%
USAWX	World	0.3096**	0.3177**	-3.2348%	17.4932%	20.0449%	10.9558%	19.1573%	21.6601%	16.4319%
Portfolio		0.4290**	0.4234**	-6.6153%	28.5363%	31.0881%	22.1078%	35.3038%	37.8066%	32.6873%

Table 10 Continued

B.2. Medium Growth Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
ACINX	Foreign	0.4332**	0.4384**	-1.3473%	39.3573%	41.9091%	32.7605%	43.8075%	46.3103%	41.0227%
GSCAX	World	0.1817**	0.1795**	-10.5179%	26.7696%	29.3214%	20.2230%	34.8315%	37.3343%	32.0969%
SGSCX	World	0.2655**	0.2817**	2.2767%	29.4750%	32.0268%	22.9844%	37.5135%	40.0163%	34.8348%
Portfolio		0.3323**	0.3382**	-3.1962%	31.8673%	34.4191%	25.3227%	38.7175%	41.2203%	35.9848%

B.3. Small Growth Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
PRIDX	Foreign	0.4300**	0.3959**	5.0028%	39.6862%	42.2379%	32.9709%	54.3291%	56.8319%	51.4259%
SMCWX	World	0.2243**	0.2429**	-5.3435%	25.8917%	28.4435%	19.3354%	32.9891%	35.4919%	30.2448%
Portfolio		0.3859**	0.3810**	-0.1703%	32.7889%	35.3407%	26.1532%	43.6591%	46.1619%	40.8354%

Panel C. Blend Fund

C.1. Large Blend Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
MGEMX	Diversified Emerging	0.2702**	0.2761**	-7.5559%	43.1711%	45.7229%	36.4706%	50.5897%	53.0925%	47.7012%
FPBFX	Pacific/Asia	0.2425**	0.2318**	1.6372%	40.8606%	43.4124%	34.2705%	50.7379%	53.2407%	47.9598%
PRPBX	Pacific/Asia	0.4013**	0.3630**	-11.5405%	8.1702%	10.7219%	1.5959%	41.9440%	44.4468%	39.1817%
PEUGX	Europe	0.3838**	0.3870**	-2.9133%	35.9932%	38.5450%	29.5676%	42.3318%	44.8346%	39.7181%
PRJPX	Japan	0.1737**	0.1536**	-5.0412%	37.0286%	39.5881%	30.8406%	47.0364%	49.5173%	39.0020%

Table 10 Continued

C.1. Large Blend Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
CNTTX	Pacific/Asia ex. Japan	0.2044**	0.1772**	0.6030%	55.3688%	57.9205%	48.9488%	55.1002%	57.6030%	52.4922%
MBDRX	Pacific/Asia ex. Japan	0.3770**	0.3501**	-9.7078%	52.3159%	54.8676%	45.7695%	54.5935%	57.0963%	51.8592%
MSAEX	Pacific/Asia ex. Japan	0.3424**	0.3249**	-4.9791%	54.9393%	57.4911%	48.0598%	59.9775%	62.4803%	56.9100%
PRASX	Pacific/Asia ex. Japan	0.3854**	0.3581**	1.4135%	53.1101%	55.6619%	46.5505%	59.3270%	61.8297%	56.5794%
AEPGX	Foreign	0.4162**	0.4122**	-0.2436%	33.0460%	35.5977%	26.6742%	41.2095%	43.7123%	38.6498%
PNINX	Foreign	0.3768**	0.3602**	-10.6896%	31.5616%	34.1134%	25.1656%	36.5907%	39.0935%	34.0067%
CWVGX	Foreign	0.4178**	0.4072**	-7.3741%	29.9492%	32.5009%	23.4957%	36.7965%	39.2993%	34.1550%
CMISX	Foreign	0.3768**	0.3597**	-5.8982%	22.4553%	25.0070%	16.0555%	34.1028%	36.6056%	31.5151%
TIEUX	Foreign	0.3622**	0.3368**	-6.1476%	34.0718%	36.6236%	27.6734%	41.1671%	43.6699%	38.5807%
RBIEX	Foreign	0.3635**	0.3633**	-19.0758%	21.2499%	23.8016%	14.7889%	28.9425%	31.4452%	26.2935%
DRGLX	Foreign	0.2179**	0.3082**	-17.9860%	31.4112%	33.9630%	25.4700%	37.8995%	40.4023%	35.3049%
NIEAX	Foreign	0.3390**	0.3257**	-12.8861%	22.0738%	24.6256%	15.6839%	26.8462%	29.3490%	24.2683%
FTITX	Foreign	0.3669**	0.3692**	-4.2503%	33.8186%	36.3704%	27.3376%	47.4508%	49.9536%	44.7818%
FAERX	Foreign	0.3593**	0.3517**	-4.9712%	25.4060%	27.9578%	19.0077%	30.2009%	32.7037%	27.6146%
FICDX	Foreign	0.1149**	0.0999**	1.2383%	14.6465%	17.1983%	8.1912%	15.8172%	18.3200%	13.1739%
FDIVX	Foreign	0.3305**	0.3196**	3.6436%	26.5407%	29.0925%	20.0635%	31.2538%	33.7566%	28.5886%
FOSFX	Foreign	0.3552**	0.3466**	-5.2122%	24.8225%	27.3743%	18.4238%	29.6880%	32.1908%	27.1013%
KNINX	Foreign	0.3503**	0.3214**	-6.7195%	26.6377%	29.1894%	20.1958%	32.2976%	34.8004%	29.6677%
GAMNX	Foreign	0.2678**	0.2614**	-14.9520%	17.8074%	20.3592%	11.5475%	27.9774%	30.4802%	25.5294%
IVINX	Foreign	0.3942**	0.3812**	-15.2706%	18.0201%	20.5718%	11.5117%	21.9888%	24.4916%	19.2924%
MSACX	Foreign	0.3751**	0.3572**	-7.6904%	27.1022%	29.6540%	20.7042%	33.1095%	35.6123%	30.5234%
MUIYX	Foreign	0.2572**	0.2606**	-6.0725%	11.7650%	14.3167%	5.4367%	13.7979%	16.3007%	11.2816%
PHITX	Foreign	0.2982**	0.2917**	-13.3828%	27.1462%	29.6979%	20.6544%	29.6824%	32.1852%	27.0026%
PRWLX	Foreign	0.4375**	0.4176**	-10.0113%	25.0152%	27.5670%	18.5141%	30.2872%	32.7900%	27.5981%
SCINX	Foreign	0.4195**	0.4048**	-7.9774%	30.8888%	33.4405%	24.4099%	38.5338%	41.0366%	35.8669%
SEITX	Foreign	0.3093**	0.2961**	-1.5812%	36.9796%	39.5313%	30.5023%	44.5400%	47.0428%	41.8748%
STISX	Foreign	0.3821**	0.3580**	-5.4426%	42.8806%	45.4324%	36.1967%	59.8109%	62.3137%	56.9389%

Table 10 Continued

C.1. Large Blend Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
USIFX	Foreign	0.3680**	0.3567**	-4.3504%	21.9278%	24.4795%	15.3165%	25.4015%	27.9043%	22.6023%
VWIGX	Foreign	0.4226**	0.4010**	-3.0765%	31.3696%	33.9214%	24.8283%	37.6274%	40.1302%	34.8981%
SRIGX	Foreign	0.4087**	0.3808**	-5.7837%	32.5675%	35.1193%	26.0255%	42.2341%	44.7369%	39.5041%
EGLBX	World	0.2664**	0.2718**	-5.8222%	27.6869%	30.2347%	21.4097%	34.5424%	37.0452%	32.0812%
QVGLX	World	0.2237**	0.2342**	-5.2568%	12.8053%	15.3571%	6.4354%	10.6170%	13.1198%	8.0591%
NWWOX	World	0.2218**	0.2259**	-9.9696%	19.2250%	21.7767%	12.8085%	18.5284%	21.0312%	15.9239%
SCOBX	World	0.3877**	0.3878**	-10.3356%	12.0395%	14.5913%	5.7127%	17.9916%	20.4944%	15.4768%
TEGOX	World	0.3140**	0.2988**	-5.4298%	18.0754%	20.6272%	11.6124%	16.8720%	19.3748%	14.2209%
Portfolio		0.4628**	0.4436**	-6.6699%	29.2232%	31.7750%	22.7503%	35.7981%	38.3009%	33.1372%

C.2. Medium Blend Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
JHWPX	Pacific/Asia	0.4107**	0.3793**	-2.5501%	45.6078%	48.1595%	39.0555%	54.2366%	56.7394%	51.4963%
OPGIX	World	0.2953**	0.2777**	4.7355%	24.8271%	27.3788%	18.4425%	28.2230%	30.7258%	25.6505%
Portfolio		0.4523**	0.4204**	1.0927%	35.2174%	37.7692%	28.7490%	41.2298%	43.7326%	38.5734%

Panel D. International Bond and Hybrid Funds

D.1. International Bond Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
AMMSX	High Short	0.0800**	0.0608*	-4.5956%	-2.0316%	0.5201%	-8.6765%	-0.8551%	1.6477%	-3.6880%

Table 10 Continued

D.1. International Bond Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
ANAGX	Medium Long	0.1072**	0.1018**	-3.3479%	4.5845%	7.1363%	-1.9499%	3.4946%	5.9973%	0.7722%
BEGBX	High Intermediate	0.0770**	0.0748**	-2.5673%	-1.5190%	1.0328%	-8.3380%	-0.5490%	1.9538%	-3.5561%
CWBFX	Medium Intermediate	0.1169**	0.0887**	-2.8390%	-0.2019%	2.3498%	-6.9283%	-0.0230%	2.4797%	-2.9374%
IGBFX	High Intermediate	0.1401**	0.1294**	-2.7796%	-1.1283%	1.4234%	-7.8164%	-0.2403%	2.2625%	-3.1164%
CIFIX	High Intermediate	0.0930**	0.0404	-0.2787%	-1.0237%	1.5281%	-7.6846%	-0.3855%	2.1173%	-3.2344%
TIFUX		0.0409	0.0263	-4.8945%	-5.1769%	-2.6252%	-11.9786%	-3.5780%	-1.0752%	-6.5656%
CGFIX		0.1617**	0.1207**	-3.0351%	2.1850%	4.7368%	-4.4820%	1.8109%	4.3137%	-1.0441%
DFGBX	High Short	0.0882**	0.0552	-1.4056%	-0.0657%	2.4860%	-6.6633%	-1.0723%	1.4305%	-3.8578%
FTIIX	High Intermediate	0.0582*	0.0617*	-4.8439%	-3.1287%	-0.5769%	-9.9802%	-1.2611%	1.2417%	-4.3006%
ICPHX		-0.0714*	-0.0452	-5.7022%	-5.9389%	-3.3872%	-12.7706%	-2.8138%	-0.3110%	-5.8335%
GSGIX		0.1380**	0.1055**	-1.2749%	-0.2060%	2.3457%	-6.8472%	-1.5316%	0.9712%	-4.3608%
LAGIX	High Intermediate	0.1537**	0.1315**	-5.8725%	-1.3789%	1.1729%	-8.0941%	-1.2843%	1.2185%	-4.1875%
MBGOX		0.1038**	0.0892**	-4.5194%	-3.2871%	-0.7354%	-9.9962%	-2.6105%	-0.1080%	-5.5075%
MSGFX		0.0969**	0.0798**	-0.4804%	-0.8021%	1.7497%	-7.5617%	0.0886%	2.5914%	-2.8590%
PFORX	High Intermediate	0.1598**	0.1448**	-0.7121%	4.6224%	7.1741%	-2.0511%	3.3913%	5.8940%	0.5298%
PGGIX		0.1227**	0.1065**	-6.0552%	-0.8418%	0.1710%	-7.5789%	-1.1400%	1.3628%	-4.0651%
SSTGX	High Intermediate	0.0882**	0.0916**	-1.4630%	1.7318%	4.2835%	-5.0036%	1.6976%	4.2004%	-1.2258%
SBGLX		0.1110**	0.0777**	-3.5944%	-2.6205%	-0.0687%	-9.2240%	-1.7917%	0.7111%	-4.5832%
RPIBX	High Intermediate	0.0535	0.0424	-5.1272%	-3.5882%	-1.0365%	-10.4236%	-2.2837%	0.2191%	-5.3071%
TPINX	High Intermediate	0.1746**	0.1310**	-5.1533%	-0.9986%	1.5532%	-7.7082%	0.0981%	2.6009%	-2.2995%

Table 10 Continued

D.2. International Hybrid Fund

Ticker	Fund Category	Correlations with lagged S&P Barra Value Index	Correlations with lagged S&P Barra Growth Index	Buy-and-hold Annual Returns	Trading Strategy Annual Returns (S&P Barra Value Index as signal)			Trading Strategy Annual Returns (S&P Barra Growth Index as Signal)		
					Strategy I	Strategy II	Strategy III	Strategy I	Strategy II	Strategy III
CAIBX	Large Blend	0.1555**	0.1549**	-2.0109%	9.3977%	11.9495%	2.9544%	6.8052%	9.3080%	4.1740%
BPGLX	Large Blend/High Intermediate	0.1425**	0.1234**	-5.7195%	8.4907%	11.0424%	1.9352%	10.1577%	12.6605%	7.4142%
SGENX	Medium Value	0.2483**	0.2309**	-4.2336%	14.4174%	16.9691%	7.8278%	13.1204%	15.6232%	10.3428%
FMAFX	Large Growth	0.1740**	0.1702**	-6.1359%	10.3449%	12.8967%	3.8993%	12.7766%	15.2794%	10.1430%
MALOX	Large Value	0.1792**	0.1678**	-5.1281%	11.6855%	14.2372%	5.1394%	11.2340%	13.7368%	8.4999%
MFWTX	Large Growth	0.2394**	0.2438**	-4.1787%	8.8187%	11.3704%	2.2218%	2.3585%	4.8613%	-0.4264%

Panel D of Table 10 shows that the effects of either of the S&P Barra growth or value index are very little on international bond funds. However, the S&P Barra value index better predicts the bond funds (compared to the S&P Barra growth index). However a few of the sample bond funds provides better strategy returns out of sample when the S&P Barra value index is used trading signal. This is probably because the utilities and other dividend paying stocks in the value index are more interest sensitive.

Sample funds that follow the S&P Barra Value index as trading signal require 249 roundtrip trades during the holdout sample period of 1026 days (on average, one roundtrip trade per 4.12 days). On the other hand, funds following the S&P Barra Growth index require 260 roundtrip trips (i.e. one trade per 3.95 days). However, Japan funds, require 240 and 244 roundtrip trades when they

follow the S&P Barra Value and Growth index respectively.

2.6.6. Practical Limitations of Trading Strategy

2.6.6.1. Market Timing and Fund Prospectus

Mutual fund trade that times the market disrupts the fund's stated portfolio management strategies, increases expenses (transaction costs), results in unwanted taxable capital gains and reduces the investment returns of long-term shareholders. Excessive market timing forces fund managers either to maintain excessive cash reserves or to sell securities unwillingly in order to meet redemption requests. As a result, there arises a lost opportunity cost for fund managers (because if managers do not have enough cash, they might have to sell shares against their better instincts and the one-day inflows of money can boost the fund's cash level). It eventually dilutes the gains long-term investors otherwise would have made that day.

Smart and prudent investors do not want to lock-in for a long time in a fund; however fund managers want to allure investors to invest in their funds. Thus, the incentive mechanism should be made and explained in mutual fund prospectuses to address this dilemma. Section 3 and sub-sections 7 (c) and 8(a)(2) of Form N-1A, the registration form with the ICI, require mutual funds to disclose exchange privileges, redemptions procedures and fees; and redemption restrictions in fund prospectuses and in some cases in the Statement of Additional Information (SAI).

I collected the prospectuses and the SAI of the sample funds of this study and summarize information below regarding market timing, exchange privileges, exchange restrictions, redemption fees etc. In most cases, the prospectuses and the SAI are collected as of 31st October,

2002 (end of sample period); however, some of the contents are verified for recent period. The prospectuses and the SAI of the sample funds are either collected directly from their websites or by calling their customer services telephone numbers.

(a). Switching between different categories of mutual funds (including money market fund) within the same family is allowed by almost all sample funds and usually do not incur transaction costs (like back-end load and redemption fees).[38] However, fees seem to be standard now, except for money market funds. Some funds require minimum (dollar) initial purchases, and load fees are exempted if investors maintain a minimum (dollar) holding. Some funds also limit the transactions by maximum dollar amount. For example, if the account makes one or more exchange purchases in a calendar quarter in an aggregate amount in excess of 1% of the fund's total net assets the fund may refuse that exchange.[39] After the redemption of shares, investors get the privileges of reinvesting the proceeds within a specific time without paying an initial sales charge. Mutual funds in case of exchange privileges do not follow a uniform rule. Accordingly investors get the opportunity to make at least 2 to 24 trades per year without paying redemption fees. However, according to the fund directors' opinion, if the redemption adversely affects interests of the holders of any class or classes of funds, funds may not allow investors to exchange or redeem funds.[40] Thus, many fund prospectuses disclose the current rules and

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[38] Redemption fee is a switching fee for short-term investors and the time limit and size of the fee vary among funds. Redemption fees restrict short-term investors from making excessive trades and profit. Back-end load, on the other hand, is a sales commission paid by investors when they withdraw money from fund investment. Redemption fees are paid directly to the funds and back-end loads are paid to the distributor to compensate for marketing and selling the funds.

[39] *"We may restrict or refuse your exchanges if we receive, or anticipate receiving, simultaneous orders affecting a large portion of a fund's assets or if we detect a pattern of exchanges that suggests a market-timing strategy"* (**The Montgomery Funds Prospectus, October 31, 2002, p. 50**).

[40] Fund managers may modify the exchange privileges, restrict/limit the number and volume of permitted exchanges, impose redemption fees, and/or reserve the right to reject, delay or suspend exchange privileges for identified market timers. For example, to discourage short-term traders to time the market, TIAA-CREF has stopped accepting any trade or exchange order for its global fund after 2.30 PM since October 2002 (**College Retirement**

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procedures to combat market timers.[41] However, some of the rules and policies appear to be subjective as the prospectuses do not explicitly state them.

(b). There is no uniform redemption fee across the fund industry although the fees have become more prevalent over the past few years, especially after 2001. Most of the international funds impose redemption fees, typically 1 to 2 percent of shareholder's assets, if shares are held for less than 15 or 30 or 45 or 60 or 90 or 120 or 180 or 360 days. Even some funds charge different redemption fees for different assessment period. For example, INVESCO charges a redemption fee of 200 bps if investors make more than one trade within 90 days and 100 bps for more than one trade made within 180 days (*Annual Report*, INVESCO Global and International Funds, Inc., October 31, 2002). Fund mangers reserve the right to waive the redemption fees in circumstances at their sole discretion; however these circumstances are not explicitly stated in

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Equities Fund Prospectus, May 1, 2004, P. 45). The SEC recently allows fund managers to delay the execution of any exchange usually until the next business day; however, fund manager may delay the payment of the proceeds from the redemption up to seven days. ('Delayed Exchange of Fund Shares, Investment Company Act of 1940- section 11(a) and Rule 22c-1', Division of Investment Management of the Securities and Exchange Commission: November 13, 2002 Letter to Investment Company Institute at http://www.sec.gov/divisions/investment/guidance/tyle111302.htm)

[41] For example, "*If the manager determines that a shareholder is investing in a fund to profit from day-to-day fluctuations in the fund's net asset value, also known as market timing, the fund may reject any order or terminate the exchange privilege of that shareholder*" (**The American AAdvantage Funds Prospectus, March 1, 2003, p. 41**); "*We do not permit market timing or other abusive trading practices in our funds*" (**The American Century Funds Prospectus, December 20, 2002, p. 16**); "*The funds are not designed for market timing organizations or other entities using programmed or frequent exchanges*" (**BlackRock Funds Equity Portfolio Prospectus, January 28, 2003, p. 151**); "*You will be considered a market timer if you (i) request a redemption of fund shares within 90 days of an earlier purchase request, (ii) make investments of large amounts of $1 million or more followed by a redemption request in close proximity to the purchase or (iii) otherwise seem to follow a timing pattern*" (**Babson Funds Prospectus, September 30, 2002, p. 21**); "*Although the fund attempts to discourage market timing activities, it may be unable to prevent all market timing*" (**Columbia International Stock Fund, Supplement to the prospectus, November 1, 2002**); "*The exchange privileges is not intended as a vehicle for short-term trading. Excessive exchange activity may interfere with portfolio management and have an adverse affect on all shareholders. In order to limit excessive exchange activity and otherwise to promote the best interests of the fund, the fund imposes a redemption fee of 1.00% of the total exchange amount (calculated at market value) on exchanges of shares held less than 90 days. The fund also reserves the right to revise on terminate the exchange privilege, limit the amount or number of exchanges or reject any exchange. The fund into which you would like to exchange may also reject your exchange. These actions may apply to all shareholders or only to those shareholders whose exchanges Putnam Management determines are likely to have a negative effect on the fund or other Putnam funds*" (**Putnam Global Equity Fund Prospectus, February 28, 2003, p. 16-17**).

some prospectuses. This implies that some funds loosely apply redemption fees especially to their favored shareholders. If the benefits from market timing trades are higher than the costs associated with redemption fees, rational investors would likely to exchange funds by paying redemption fees. Zitzewitz (2003a) shows that the loss in NAV for funds with short-term trading fees is 50% less than those without these fees. Zitzewitz's study also shows that redemption fees work as a moderate deterrent to market timers; however, given the industry practice, investors still can generate profits large enough to compensate for such redemption fees. Singal (2004) also documents that redemption fees make the market timing trade less attractive; however even in the presence of redemption fees market timers can beat the returns from a buy-and-hold strategy.

(c). Redemption fees are not applied to retirement plans such as (a) participant-directed defined contribution plans (including 401(k) and 403(b) plans); (b) defined benefit plans (including cash balance plans); and (c) reinvested distributions (dividends and capital gains).[42]

2.6.6.2. Constrained and Conservative Trading Strategy

Empirical findings of this paper so far suggest that investors can profitably trade all categories of international mutual funds by following the proposed trading strategies I, II and III. However the trading strategies allow investors to execute more short-term trades than many funds allow investors to make. As discussed in the previous subsection, investors face exchange and trading constraints, as funds may not always permitted them to move money frequently

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[42] *"The redemption fee may not apply in certain circumstances, such as redemption on certain omnibus accounts, including 401(k) plans, and in the event of shareholder death or disability"* (**Putnam Europe Growth Fund, October 30, 2002, p. 15**).

either from the funds or from one fund to another. The prospectuses of all sample funds of this study state that they permit investors of funds to make some limited trades within the fund.

In order to limit the number of trades, consistent with what is stated in the sample funds' prospectuses, two important trading constraints are imposed on original trading strategy which makes the new trading strategy more conservative: (1) trade only when the index returns increase or decreases by a significant amount in a given day and (2) exchange restrictions. The objective was not to trade only on the basis of positive or negative index returns signals but on the basis of a specific trigger limit. The modified trading rule can be stated as buying (selling) an international fund if the corresponding best-fitted index returns increase (decrease) by at least 1.5% from its previous days close. Then exchange (trading) restrictions, consistent with most of the sample funds' prospectuses, are added and imposed on the conservative trading strategy. Most of the sample funds allow investors to trade mutual funds without paying redemption fees or other transactions costs if the trades are executed after some specific holding period. The conservative trading strategy used either cash, or money market fund or index fund as alternative parking investment when an investor is out of the risky international mutual fund market. In practice, an investor may be in a domestic equity or bond fund (where trading restrictions are less) or even in another international fund.

Accordingly, I propose conservative trading strategies IV (switching in between international fund and cash), conservative trading strategy V (switching in between international fund and money market fund) and conservative trading strategy VI (switching in between international fund and index fund). As noted earlier, the conservative trading strategies IV, V and VI are different from simple trading strategies I, II and III because conservative trading strategies included two trading/exchange constraints.

The results of the conservative trading strategies IV, V and VI are reported in Table 11 using 15 day's round-trip restrictions (i.e. if investors decide to buy international funds when corresponding best-fitted index returns increase by 1.5%; then investors cannot sell international funds within 15 days of initial purchase if they want to avoid redemption fees). Because of the restrictions imposed on investors, the conservative trading strategies IV, V and VI in Table 11 provide less trading opportunities than are reported in Table 6, Table 7 and Table 8 for simple trading strategies I, II and III respectively. However, the results in Table 11 still suggest that using the conservative trading strategy, investors can still earn significantly higher profits.

I perform t-test (to test the null hypothesis of no significant difference in average daily returns between buy-and-hold and conservative trading strategy) and F-test (to test the hypothesis of no significant difference in average daily standard deviation between buy-and-hold and conservative trading strategy) for Table 11. The test results reveal, significant return and risk differences between buy-and-hold and conservative trading strategies IV, V and VI. When I compare the results of the conservative trading strategies IV, V and VI (Table 11) with the results reported for simple trading strategies I, II and III (Table 6, Table 7 and Table 8 respectively), it can be concluded that although the conservative trading strategies IV, V and VI produce less profit than that of for simple trading strategies I, II and III; however, statistically and economically significant profit opportunities can still be made even by following the conservative trading strategies IV, V and VI.

I computed the number of trades (roundtrip) required for trading strategies IV, V and VI. The number of roundtrip trades is same whether investors follow trading strategy IV or V or VI. For example, funds that follow Russell 2000 index as trading signal require 69 trades during the holdout sample period of 1237 days (i.e. one roundtrip trade per 17.93 days). The number of

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Table 11: Returns and Risks of Buy-and-hold and Conservative Trading Strategy with Exchange Restrictions

This table presents the returns and risks of buy-and-hold and conservative trading strategies IV, V and VI. The conservative trading strategy is based on the facts that trades are executed when the US market Index increases or decreases by at least 1.5% and investors cannot trade/exchange within 15 days' of initial purchase of their funds. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of conservative trading strategy IV (switching between international fund and cash); columns six and seven provide mean daily returns and standard deviations of returns of conservative trading strategy V (switching between international fund and money market fund); and columns eight and nine exhibit mean daily returns and standard deviations of returns of conservative trading strategy VI (switching between international fund and index fund). The significance level of t-statistics (to test the differences in mean returns between buy-and-hold and trading strategies) and F-statistics (to test differences in mean variances between buy-and-hold and trading strategies) are presented at 1% (***), 5% (**) and 10% (*) level respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MADCX	-0.0318%	1.3224%	0.0574%***	0.8876%***	0.0663%***	0.8871%***	0.0448%**	1.3377%
MNEMX	-0.0424%	1.3434%	0.0623%***	0.9027%***	0.0712%***	0.9022%***	0.0433%***	1.3438%
MGEMX	-0.0318%	1.4658%	0.0455%***	0.8629%***	0.0578***	0.8599%***	0.0380%	1.4097%
TEDMX	-0.0319%	1.3084%	0.0525%***	0.9518%***	0.0614%***	0.9513%***	0.0398%**	1.3811%**
Portfolio	-0.0345%	1.2831%	0.0626%***	0.8499%***	0.0715%***	0.8493%***	0.0499%***	1.3130%

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FPBFX	-0.0014%	1.3893%	0.0871%***	1.0022%***	0.0960%***	1.0015%***	0.0683%**	1.4129%
GAPCX	-0.0389%	1.4254%	0.0323%***	1.1322%***	0.0401%**	1.1321%***	0.0316%***	1.5063%**
JHWPX	-0.0147%	1.3235%	0.0869%***	0.8320%***	0.0960%***	0.8312%***	0.0843%***	1.3052%
MAPCX	-0.0347%	1.4110%	0.0681%***	0.99810%***	0.0772%***	0.9804%***	0.0659%**	1.4050%
TGRBX	-0.0294%	1.3397%	0.0690%***	0.8624%***	0.0781%***	0.8618%***	0.0664%***	1.3247%
PRPBX	-0.0471%	4.2347%	0.0451%	0.8262%***	0.0540%	0.8259%***	0.0265%	1.2934%***
FKPGX	-0.0512%	1.2696%	0.0448%***	0.8405%***	0.0539%***	0.8401%***	0.0421%***	1.3105%
Portfolio	-0.0310%	1.3295%	0.0631%***	0.9694%***	0.0722%***	0.9689%***	0.0606%***	1.3967%**

Table 11 Continued

C. Europe Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANEAX	-0.0414%	1.5057%	0.0659%***	0.9965%***	0.0748%***	0.9960%***	0.0541%***	1.4128%**
DFCSX	-0.0511%	1.1944%	0.0228%***	0.8827%***	0.0317%***	0.8826%***	0.0100%*	1.3341%***
DFUKX	-0.0592%	1.1280%	-0.0018%**	0.8072%***	0.0073%***	0.8074%***	0.0047%	1.2893%***
FIEUX	-0.0443%	1.3766%	0.0483%***	0.9900%***	0.0572%***	0.9897%***	0.0301%***	1.4040%
FEURX	-0.0666%	1.7461%	0.0327%***	1.2575%***	0.0418%***	1.2573%***	0.0306%***	1.6102%***
MBEFX	-0.0495%	1.5844%	0.0296%**	1.1482%***	0.0385%***	1.1480%***	0.0111%*	1.5192%*
EUGBX	-0.0418%	1.5714%	0.0447%***	1.1611%***	0.0536%***	1.1608%***	0.0332%**	1.5334%
PEURX	-0.0289%	1.3817%	0.0750%***	0.8973%***	0.0839%***	0.8966%***	0.0626%***	1.3444%
PEUGX	-0.0280%	1.3644%	0.0661%***	0.9427%***	0.0750%***	0.9422%***	0.0542%***	1.3753%
PRESX	-0.0370%	1.3908%	0.0575%***	0.9231%***	0.0665%***	0.9226%***	0.0456%***	1.3618%
VEURX	-0.0152%	1.3483%	0.0623%***	0.8886%***	0.0712%***	0.8880%***	0.0509%**	1.3391%
Portfolio	-0.0421%	1.1558%	0.0506%***	0.7750%***	0.0595%***	0.7745%***	0.0386%***	1.2659%***

D. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
DFJSX	-0.0193%	1.5653%	0.0024%	0.9975%**	0.0046%	0.9947%**	-0.1011%	2.5238%
SJPNX	-0.0195%	1.7005%	0.0494%***	1.2026%***	0.0579%***	1.2023%***	0.0504%	1.5485%***
PRJPX	-0.0320%	1.6781%	0.0480%**	1.2356%***	0.0567%***	1.2353%***	0.0519%**	1.5813%**
VPACX	-0.0278%	1.5067%	0.0192%	1.0570%***	0.0280%*	1.0570%***	0.0277%	1.4453%*
Portfolio	-0.0246%	1.4668%	0.0191%	1.0438%***	0.0278%*	1.0437%***	0.0276%	1.4356%

Table 11 Continued

D. Pacific/Asia Ex. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
EVCGX	-0.0309%	1.7032%	0.0544%**	1.0701%***	0.0635%**	1.0698%***	0.0517%*	1.4684%***
CNTTX	-0.0088%	1.7435%	0.1081%***	1.2534%***	0.1170%***	1.2527%***	0.0962%***	1.6046%***
MBDRX	-0.0470%	1.7022%	0.0541%***	1.1701%***	0.0632%***	1.1697%***	0.0515%**	1.5428%***
MSAEX	-0.0237%	1.6030%	0.0607%**	1.0412%***	0.0699%***	1.0407%***	0.0571%**	1.4476%***
PRASX	-0.0025%	1.5777%	0.1107%***	1.0500%***	0.1196%***	1.0491%***	0.0921%**	1.4475%***
Portfolio	-0.0226%	1.5740%	0.0628%**	0.9986%***	0.0719%***	0.9981%***	0.0601%**	1.4171%***

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AEIGX	-0.0742%	1.5644%	0.0376%***	1.2355%***	0.0465%***	1.2353%***	0.0256%***	1.5901%***
AIIEX	-0.0220%	1.2165%	0.0727%***	0.8180%***	0.0816%***	0.8173%***	0.0545%***	1.2888%**
AAIEX	-0.0268%	1.0590%	0.0286%***	0.7644%***	0.0377%***	0.7642%***	0.0262%*	1.2631%***
TWIEX	-0.0285%	1.3708%	0.0702%***	1.0314%***	0.0791%***	1.0309%***	0.0520%***	1.4338%*
AEPGX	-0.0143%	1.0919%	0.0623%***	0.7363%***	0.0712%***	0.7357%***	0.0443%**	1.2386%***
INIFX	-0.0601%	1.4149%	0.0447%***	1.0866%***	0.0537%***	1.0864%***	0.0331%***	1.4777%*
BAINX	-0.0394%	1.1035%	0.0423%***	0.7742%***	0.0514%***	0.7738%***	0.0399%***	1.2691%***
SNIVX	-0.0284%	1.0914%	0.0433%***	0.7700%***	0.0522%***	0.7696%***	0.0313%**	1.2628%***
PNINX	-0.0492%	1.2633%	0.0551%***	0.8483%***	0.0640%***	0.8478%***	0.0433%***	1.3123%*
CWVGX	-0.0371%	1.1629%	0.0537%***	0.8207%***	0.0626%***	0.8202%***	0.0417%***	1.2945%***
NEFIX	-0.0271%	1.1994%	0.0831%***	0.7969%***	0.0920%***	0.7951%***	0.0707%***	1.2790%**
CMISX	-0.0343%	1.2144%	0.0653%***	0.8707%***	0.0742%***	0.8702%***	0.0535%***	1.3270%***
TIEUX	-0.0363%	1.2201%	0.0579%***	0.8893%***	0.0668%***	0.8888%***	0.0461%***	1.3392%***
BIEX	-0.0844%	1.6449%	0.0063%***	1.4122%***	0.0155%***	1.4122%***	-0.0030%***	1.7313%**
DRGLX	-0.0826%	1.6488%	0.0268%***	1.3543%***	0.0357%***	1.3542%***	0.0088%***	1.6806%
NIEAX	-0.0603%	1.4516%	0.0250%***	1.2062%***	0.0339%***	1.2061%***	0.0132%**	1.5674%***
ENIGX	-0.0444%	1.2462%	0.0647%***	0.8558%***	0.0736%***	0.8552%***	0.0525%***	1.3170%**
UMINX	-0.0365%	1.1611%	0.0704%***	0.7724%***	0.0793%***	0.7717%***	0.0520%***	1.2602%***

Table 11 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FTITX	-0.0352%	1.3017%	0.0897%***	0.8805%***	0.0986%***	0.8797%***	0.0776%***	1.3335%
FAERX	-0.0337%	1.2324%	0.0489%***	0.9004%***	0.0578%***	0.9000%***	0.0308%***	1.3424%***
FICDX	-0.0023%	1.2627%	-0.0027%	0.9546%***	0.0063%	0.9548%***	0.0128%	1.2952%
FDIVX	-0.0023%	0.9626%	0.0672%***	0.6803%***	0.0761%***	0.6796%***	0.0488%*	1.2060%***
FIGRX	-0.0179%	1.1354%	0.0603%***	0.8312%***	0.0692%***	0.8306%***	0.0420%**	1.2970%***
FOSFX	-0.0339%	1.2513%	0.0484%***	0.9233%***	0.0573%***	0.9229%***	0.0303%***	1.3579%***
KNINX	-0.0381%	1.1456%	0.0556%***	0.7969%***	0.0645%***	0.7964%***	0.0437%***	1.2796%***
GAMNX	-0.0633%	1.1455%	0.0407%***	0.7445%***	0.0496%***	0.7442%***	0.0293%***	1.2482%***
GSIFX	-0.0433%	1.2583%	0.0514%***	0.9396%***	0.0603%***	0.9392%***	0.0327%***	1.3687%***
HAINX	-0.0243%	1.1808%	0.0307%**	0.8248%***	0.0398%***	0.8246%***	0.0281%*	1.3005%***
IVINX	-0.0698%	1.4221%	0.0313%***	1.1218%***	0.0402%***	1.1216%***	0.0191%***	1.5033%**
ACINX	-0.0212%	1.1016%	0.0640%***	0.6553%***	0.0731%***	0.6545%***	0.0613%***	1.2002%***
CONAX	-0.0543%	1.2062%	0.0096%***	0.9573%***	0.0180%***	0.9573%***	0.0176%**	1.3516%***
MSACX	-0.0380%	1.1313%	0.0484%***	0.7537%***	0.0573%***	0.7533%***	0.0303%**	1.2488%***
MSIQX	-0.0213%	1.1733%	0.0336%***	0.9108%***	0.0425%***	0.9105%***	0.0153%	1.3490%***
MUIYX	-0.0370%	1.2390%	0.0370%***	0.8583%***	0.0459%***	0.8580%***	0.0191%***	1.3146%**
OAKIX	-0.0020%	1.0669%	0.0412%*	0.6943%***	0.0503%**	0.6939%***	0.0388%	1.2220%***
PHITX	-0.0591%	1.3587%	0.0260%***	0.9637%***	0.0351%***	0.9635%***	0.0236%***	1.3928%
PFIFX	-0.0297%	1.1863%	0.0354%***	0.8700%***	0.0444%***	0.8697%***	0.0234%*	1.3261%***
PRWLX	-0.0493%	1.1440%	0.0191%***	0.8398%***	0.0282%***	0.8397%***	0.0167%***	1.3101%***
SCIEX	-0.0979%	2.0448%	-0.0368%***	1.8705%***	-0.0277%***	1.8707%***	-0.0395%**	2.1235%*
SCINX	-0.0409%	1.2615%	0.0638%***	0.8524%***	0.0727%***	0.8519%*v	0.0517%***	1.3149%*
SEITX	-0.0201%	1.1589%	0.0707%***	0.7908%***	0.0796%***	0.7901%***	0.0523%**	1.2716%***
SNGRX	-0.0533%	1.3328%	0.0560%***	0.9279%***	0.0649%***	0.9274%***	0.0377%***	1.3609%
SBIEX	-0.0577%	1.3789%	0.0453%***	0.8388%***	0.0543%***	0.8384%***	0.0427%***	1.3094%**
STISX	-0.0380%	1.4195%	0.0688%***	0.9109%***	0.0779%***	0.9103%***	0.0658%***	1.3567%*
PRFEX	-0.0353%	1.2384%	0.0583%***	0.8614%***	0.0672%***	0.8609%***	0.0401%***	1.3165%**
PRIDX	-0.0015%	1.2128%	0.0844%***	0.9061%***	0.0935%***	0.9054%***	0.0813%***	1.3536%***
PRITX	-0.0375%	1.2400%	0.0591%***	0.8546%***	0.0680%***	0.8541%***	0.0408%***	1.3121%**
TEMFX	-0.0166%	0.9423%	0.0249%**	0.6993%***	0.0340%***	0.6991%***	0.0224%	1.2248%***

Table 11 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FINEX	-0.0142%	0.8438%	0.0384%***	0.6137%***	0.0475%***	0.6133%***	0.0355%*	1.1779%***
USIFX	-0.0228%	1.0414%	0.0535%***	0.7055%***	0.0624%***	0.7050%***	0.0347%**	1.2200%***
VTRIX	-0.0277%	1.1546%	0.0332%***	0.8617%***	0.0421%***	0.8614%***	0.0209%*	1.3205%***
VWIGX	-0.0268%	1.2038%	0.0585%***	0.8358%***	0.0674%***	0.8352%***	0.0399%**	1.2998%***
VNEPX	-0.0417%	1.2982%	0.0708%***	0.8084%***	0.0797%***	0.8077%***	0.0523%***	1.2825%
UNCGX	-0.0628%	1.5055%	0.0225%***	1.2352%***	0.0316%***	1.2351%***	0.0202%***	1.5928%**
SRIGX	-0.0338%	1.1537%	0.0611%***	0.8037%***	0.0700%***	0.8031%***	0.0488%***	1.2836%***
WIBCX	-0.0407%	1.3074%	0.0552%***	0.9119%***	0.0641%***	0.9115%***	0.0434%***	1.3543%
Portfolio	-0.0380%	1.0174%	0.0531%***	0.6870%***	0.0620%***	0.6864%***	0.0347%***	1.2095%***

G. Latin Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MBLTX	-0.0358%	1.7505%	0.0280%***	1.6063%***	0.0333%***	1.6063***	-0.0331%	1.7582%

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
GSCAX	-0.0614%	1.4194%	0.0542%***	1.066%***	0.0601%***	0.9962%***	0.0413%***	1.6511%**
ANWPX	-0.0115%	1.1286%	0.0367%**	0.8523%***	0.0456%***	0.8520%***	0.0188%*	1.3107%***
SMCWX	-0.0386%	1.3354%	0.0024%*	1.0860%***	0.0067%**	1.0501%***	0.0039%**	1.4531%***
AHERX	-0.1966%	5.7550%	-0.1077%	4.1070%***	-0.0995%	4.0909%***	-0.0911%	4.3119%***
IGLGX	-0.0466%	1.3768%	0.0376%***	0.9127%***	0.0467%***	0.9123%***	0.0289%***	1.3559%
FWWGX	-0.0839%	1.5975%	0.0198%***	1.1894%***	0.0291%***	1.18842%***	0.0095%***	1.6012%
EGLBX	-0.0373%	1.3071%	0.0483%***	0.8996%***	0.0574%***	0.8992%***	0.0395%***	1.3472%

Table 11 Continued

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FWWFX	-0.0284%	1.1874%	0.0220%**	0.9147%***	0.0309%***	0.9146%***	0.0038%**	1.3517%***
FIISX	-0.0361%	1.1665%	0.0394%***	0.7873%***	0.0484%***	0.7870%***	0.0276%***	1.2736%***
GAGLX	-0.0347%	1.1259%	0.0199%**	0.7654%***	0.0288%***	0.7652%***	0.0030%**	1.2572%***
FGLOX	-0.0625%	1.2150%	0.0173%***	0.8327%***	0.0262%***	0.8327%***	-0.0003%***	1.2981%**
MCGLX	-0.0444%	1.1753%	0.0290%***	0.8230%***	0.0379%***	0.8228%***	0.0166%***	1.2955%***
JAWWX	-0.0159%	1.3633%	0.0541%**	0.9661%***	0.0632%***	0.9656%***	0.0450%***	1.3921%
LAGEX	-0.0367%	1.1777%	0.0311%***	0.8232%***	0.0400%***	0.8230%***	0.0131%**	1.2917%***
MWEBX	-0.0186%	0.9791%	0.0429%***	0.6939%***	0.0518%***	0.6934%***	0.0246%**	1.2133%***
OPPAX	-0.0203%	1.3836%	0.0395%**	0.9003%***	0.0486%**	0.9000%***	0.0370%**	1.3497%
OPGIX	-0.0114%	1.4375%	0.0639%**	0.9757%***	0.0730%***	0.9752%***	0.0547%***	1.3988%
QVGLX	-0.0336%	1.1754%	-0.0112%	0.9495%***	-0.0021%	0.9497%***	-0.0132%	1.3833%***
NWWOX	-0.0501%	1.3561%	0.0352%***	0.8803%***	0.0441%***	0.8801%***	0.0171%**	1.3288%
PRGLX	-0.0448%	1.4691%	0.0517%***	0.9622%***	0.0606%***	0.9618%***	0.0336%***	1.3847%**
PEQUX	-0.0577%	1.6394%	0.0174%**	1.2779%***	0.0265%***	1.2778%***	0.0084%***	1.6240%
SGSCX	-0.0135%	1.3259%	0.0759%***	0.9123%***	0.08641%***	0.9101%***	0.0516%***	1.3527%
SCOBX	-0.0515%	1.1389%	0.0295%***	0.7463%***	0.0384%***	0.7461%***	0.0117%**	1.2443%***
TECAX	-0.0178%	1.0038%	0.0385%***	0.7093%***	0.0498%***	0.7089%***	0.0201%*	1.3302%***
TEGOX	-0.0387%	1.0452%	0.0201%***	0.8096%***	0.0292%***	0.8095%***	0.0107%**	1.2880%
TEMGX	-0.0371%	0.8336%	0.0294%***	0.6019%***	0.0384%***	0.6016%***	0.0109%*	1.1628%***
TEPLX	-0.0186%	0.9710%	0.0227%**	0.7699%***	0.0316%***	0.7697%***	0.0043%	1.2580%***
TEMWX	-0.0228%	0.9728%	0.0300%***	0.7592%***	0.0389%***	0.7590%***	0.0120%*	1.2519%***
USAWX	-0.0254%	1.1032%	0.0325%**	0.7482%***	0.0415%***	0.7480%***	0.0140%**	1.2449%***
Portfolio	-0.0413%	1.0276%	0.0348%***	0.7020%***	0.0438%***	0.7016%***	0.0167%***	1.2179%***

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AMMSX	-0.0151%	0.1862%	-0.0137%	0.1576%***	-0.0048%***	0.1589%***	-0.0264%	1.0122%***

Table 11 Continued

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANAGX	-0.0128%	0.6116%	-0.0088%	0.4562%***	0.0010%	0.4565%***	-0.0211%	1.0993%***
BEGBX	0.0028%	0.6045%	0.0075%	0.4350%***	0.0166%	0.4351%***	0.0219%	0.9771%***
CWBFX	-0.0041%	0.3786%	0.0059%	0.2618%***	0.0149%**	0.2619%***	0.0206%	0.9131%***
IGBFX	-0.0033%	0.3549%	-0.0003%	0.2385%***	0.0086%	0.2389%***	-0.0130%	1.0281%***
CIFIX	-0.0005%	0.3133%	-0.0053%	0.2678%***	0.0038%	0.2683%***	-0.0083%	1.0403%***
TIFUX	-0.0101%	0.5215%	-0.0022%	0.3814%***	0.0068%*	0.3816%***	0.0122%	0.9545%***
CGFIX	-0.0076%	0.3437%	-0.0044%	0.2622%***	0.0046%*	0.2627%***	0.0104%	0.9133%***
DFGBX	0.0011%	0.3281%	-0.0093%***	0.2959%***	-0.0001%	0.2965%***	-0.0191%	1.0440%***
FTIIX	-0.0056%	0.5530%	0.0093%	0.3878%***	0.0183%**	0.3878%***	0.0235%	0.9570%***
ICPHX	-0.0123%	0.5449%	0.0011%*	0.3899%***	0.0100%**	0.3901%***	-0.0184%	1.0681%***
GSGIX	-0.0043%	0.2792%	-0.0062%	0.2245%***	0.0028%	0.2251%***	-0.0188%	1.0249%***
LAGIX	-0.0156%	0.3666%	-0.0056%	0.2620%***	0.0033%***	0.2625%***	-0.0185%	1.0338%***
MBGOX	-0.0079%	0.4022%	-0.0016%	0.2703%***	0.0073%*	0.2707%***	-0.0144%	1.0359%***
MSGFX	0.0058%	0.4596%	0.0053%	0.3456%***	0.0142%	0.3457%***	-0.0077%	1.0582%***
PFORX	-0.0012%	0.3320%	-0.0024%	0.2376%***	0.0068%	0.2380%***	-0.0125%	1.0290%***
PGGIX	-0.0147%	0.3622%	-0.0059%	0.2695%***	0.0030%**	0.2700%***	-0.0251%	1.0300%***
SSTGX	-0.0005%	0.2829%	0.0011%	0.1983%***	0.0100%*	0.1986%***	-0.0118%	1.0196%***
SBGLX	-0.0090%	0.3525%	-0.0067%	0.2277%***	0.0024%	0.2284%***	-0.0166%	1.0267%***
RPIBX	-0.0083%	0.5263%	0.0023%	0.3659%***	0.0112%*	0.3660%***	-0.0110%	1.0651%***
TPINX	-0.0118%	0.3702%	-0.0024%	0.2389%***	0.0067%**	0.2393%***	-0.0126%	1.0293%***
Portfolio	-0.0064%	0.2792%	-0.0033%	0.1896%***	0.0057%**	0.1903%***	-0.0161%	1.0179%***

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CAIBX	-0.0122%	0.5977%	0.0000%	0.4058%***	0.0092%*	0.4060%***	-0.0093%	1.0807%***

Table 11 Continued

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
BPGLX	-0.0237%	0.7600%	0.0065%***	0.5336%***	0.0157%***	0.5336%***	0.0032%	1.1346%***
SGENX	-0.0123%	0.8839%	0.0167%	0.5534%***	0.0258%*	0.5533%***	0.0140%	1.1476%***
FMAFX	-0.0327%	0.8491%	0.0073%**	0.5820%***	0.0164%***	0.5820%***	-0.0021%*	1.1584%***
MALOX	-0.0281%	0.9170%	0.0033%**	0.7446%***	0.0122%***	0.7447%***	-0.0153%	1.2423%***
MFWTX	-0.0163%	1.8306%	0.0153%**	1.7651%*	0.0242%***	1.7650%***	-0.0034%	2.0260%*
Portfolio	-0.0209%	0.6328%	0.0064%**	0.4899%***	0.0155%***	0.4900%***	-0.0032%	1.1148%***

roundtrip trades required for funds (or portfolios) is provided in the parentheses after the name of the market index that was used as trading signals: S&P 500 (68 for all funds and 66 for Japan funds); Russell 1000 (68 for all funds and 66 for Japan funds); Russell 3000 (68 for all fund and 66 for Japan funds); Wilshire 5000 (70); Dow Composite (63); Dow Industrial (65); Nasdaq (66), MSCI Latin (64); MSCI Emerging Market (65); and Topix Second Section (61).

As discussed earlier, fund prospectuses state that they do not charge any fee if investors make trades after 15 (or 30 or 60 or 90 or 120) days' of initial purchase of the fund. I also replicate Table 11 using 30, 60, 90 and 120 days' exchange restrictions; the results are qualitatively similar to the results found in Table 11 and reported in Table A-6, Table A-7, Table A-8 and Table A-9 respectively of appendix. In generally, the results of Table A-6 through A-9 suggest that the higher the holding periods the lower the profitable opportunities from trading mutual funds.

2.7. Recent Scandals in the Mutual Fund Industry and New Proposals

The recent widespread mutual fund scandals suggest that part of the mutual fund industry operates on a double standard. It has been reported that fund authorities manipulate the trading system by offering illegal after-hour (late trading) and market timing trading opportunities to favored companies and individuals in exchange for payments and other inducements. A series of allegation, investigation and lawsuit against the trading practices of some funds diminish the reputation of fund industry. Table A-10 of appendix lists some of the major market timing and late trading scandals recently reported in the financial news and media. These stories make it clear that the problem was saying one thing in a prospectus and doing another thing. Zitzewitz (2003b) recently shows that late trading incurs an annual loss of 5 basis points (or $400 million) to long-term shareholders of international stock funds.

In a recent survey by the SEC, the commission sent information requests to 88 of the largest mutual fund complexes and 4100 individual funds or portfolios under management and 50% of the fund groups that responded to the information requests admitted that they have market timing arrangements with certain shareholders. The survey also revealed that 30% of the funds disclosed portfolio information to certain shareholders.[43] The selective portfolio information disclosures provide opportunities to short-term investors to trade on knowledge affecting a particular company.[44] The SEC adopted a fair disclosure rule (known as 'Regulation FD') in 2000 to eliminate the practice of selective disclosures. Regulation FD requires that the

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[43] 'Proposed Rule: Disclosure Regarding Market Timing and Selective Disclosure of Portfolio Holdings', Securities and Exchange Commission, 17 CFR Parts 239 and 274, [Release Nos. 33-8343; IC-26287; File No. S7-26—03]; RIN 3235-AI99 (http://www.sec.gov/rules/proposed/33-8343.htm), December 11, 2003.

[44] One of the trades based on selective portfolio disclosure is know as 'front running' (trading individual stock positions ahead of a big mutual fund). A big mutual fund requires days or weeks to accumulate or divest itself of a sizable position. If other investors knew in advance that the fund was making such a trade, they could buy or sell ahead of the fund, anticipating that the fund's trades may move the prices of underlying stocks.

public should have access to any information at the same time as institutional investors and analysts have.[45] Mutual funds are exempted from Regulation FD (by rule 101(b) of Regulation FD) and some funds took the advantages by disclosing portfolio information to selective market timers.

It is difficult to track a particular market timer because a majority of mutual fund shares are bought and sold through intermediaries ((brokers, financial planners, insurance agents, financial advisers and employer-sponsored retirement plans). According to 2003 Mutual Fund Fact Book of the ICI, 85-90 percent of mutual fund purchases are made through intermediaries. Transactions through intermediaries often involve the uses of 'omnibus accounts' (single accounts that combine the accounts of hundreds of long-term individual investors and institutions such as retirement plans).

Late trading is completely illegal. However, market timing, while legal may violate representations made by the fund that it does not permit frequent trading. The SEC Chairman, William H. Donaldson, issued a statement on October 9, 2003 to combat market timing and late trading.[46] Accordingly, the ICI recommended the following three proposals to combat mutual fund trading abuses: (1) to lock the window of late trading, a firm 4.00 PM ET deadline for all trades to be reported to mutual funds; (2) a mandatory, industry-wide minimum 2 percent redemption fee should be imposed on the sale of all mutual funds (except money market funds and funds specifically designed for timers) for a minimum of 5 days following purchases; and (3) with respect to short-term purchases and sales by senior industry executives, all mutual funds

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[45] 'Final Rule: Selective Disclosures and Insider Trading', Securities and Exchange Commission, 17 CFR Parts 240, 243 and 249, [Release Nos. 33-7881, 34-43154, IC-24599, File No. S7-31-99]; RIN 3235-AH82. Also available at Regulation FD [17 CFR 243.100 et seq.]; Investment Company Release No. 24599, Aug. 15, 2000, 65 FR 51716 (Aug. 24, 2000) (http://www.sec.gov/rules/final/33-7881.htm).
[46] 'SEC Chairman Donaldson Releases Statement Regarding Initiatives to Combat Late Trading and Market Timing of Mutual Funds', (http://www.sec.gov/news/press/2003-136.htm), October 9, 2003.

should clarify or amend their codes of ethics to include oversight of all trading activities in mutual funds offered or sponsored by the company (this includes the abolition of all third-party soft-dollar arrangements and prohibition of the practice of directed brokerage).[47]

The House approved a bill (*The Mutual Funds Integrity and Fee Transparency Act, H.R. 2420*) similar to the recommendations proposed by the ICI on November 19, 2003. The bill was initially proposed by Rep. Richard H. Baker (R – Louisiana) and approved by the Financial Services Committee on July 23, 2003 (before the New York Attorney General Eliot Spitzer charged Canary Capital Management LLP); however the bill was amended on November 19, 2003 to reflect widespread late trading and market timing problems. Among other things, the bill proposed to allow funds to charge higher than the current limit of two percent redemption fees in order to discourage market-timing trades.[48] Baker said that the aim of the new rule was to "*help bring the bright light of truth into fund fees, clean up the way funds are managed, and eliminate the conflicts of interest and utter disregard of [fund directors'] duty to mutual fund investors that plague this industry*". Senator Peter Fitzgerald (R – Illinois), Joseph I. Lieberman (D – Connecticut) and Deniel K. Akaka (D – Hawaii) have introduced the bill that requires that 75 percent of board's directors be independent (up from a 50 percent requirement under the current SEC rule). The independent directors (who are not interested persons of the fund), as opposed to management-dominated board of directors, are expected to better serve as an effective check on fund management and ensure better governance practices (to combat late trading, inappropriate market timing activities and misuse of nonpublic information about fund portfolios). The

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[47] 'ICI Urges Specific Changes to Combat Trading Abuses'.
(http://www.ici.org/statements/nr/03_news_reforms_stmt.html), November 3, 2003 and 'Mutual Fund Leaders Take Hard Stand on Soft Dollars', http://www.ici.org/statements/nr/03_news_soft.html, December 15, 2003.
[48] 'House Approves Baker Bill to Reform Mutual Fund Industry', available at
(http://financialservices.house.gov/News.asp?FormMode=release&ID=427)

proposed bill requires that board chairmen of mutual fund be completely independent from the companies managing the funds – a reversal of the SEC's previous position.[49]

Since September 2003, the SEC has either proposed or adopted twelve new regulatory initiatives directly related to mutual funds scandal (chronological details of these regulations can be found either at http://www.ici.org or at http://www.sec.gov). These include better fund governance; code of ethics of investment advisors; enhanced disclosures of mutual fund fees and transactions costs to shareholders; enhanced disclosure regarding market timing, pricing and portfolio holdings etc.

I think that the proposed recommendations and rules are necessary and will certainly deter late trading and to some extent market timing trading strategies; however these rules are not sufficient to combat day traders who exploit stale pricing components of international funds. Besides, it is difficult for mutual funds to take appropriate measure to prohibit market timers in retirement plans because Employee Retirement Income Security Act (ERISA) does not provide regulatory guidance on market timing transactions. Moreover ERISA requires plan fiduciaries to take care of the interests of plan participants and there is not enough regulatory guidance. The ICI recently requested the US Department of Labor to issue clarifying guidance in this area to combat market timers in retirement plans.[50]

I reported in a previous subsection that some prospectuses did not explicitly state their policies, if any to prevent market timing trades. The SEC recently proposed for improved

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[49] The SEC also proposed a rule recently that requires 75% independent directors in the fund board (including an independent Chairman of the board). For details see, 'Proposed Rule: Investment Company Governance', 17 CFR Part 270, Release No. IC – 26323; File No. S7-03-04, RIN 3235-AJ05, Securities and Exchange Commission, January 16, 2004.

[50] 'Market Timing in Retirement Plans', (http://www.ici.org/statements/cmltr/04_dol_mkt_timing_com.html), January 21, 2004 and 'ICI Requests Guidance to Address Market Timing in Retirement Plans', (http://www.ici.org/statements/cmltr/04_dol_mkt_timing_cvr.html), January 22, 2004. According to section 404 (c) of ERISA, a pension plan permits a participant to exercise control over assets in that account; however the fiduciary will not be responsible for any loss or breach resulted from such exercise of control by participants.

disclosures in fund prospectuses. The SEC emphasized that fund prospectus should contain clear and unambiguous information (in plain English language) in order to prevent frequent trading and redemptions of fund shares by either individual investors or intermediaries.[51] The SEC also proposed that fund prospectus should explain the circumstances under which the fund will use fair value pricing and also explain the effects of using fair value pricing. Even though fair value pricing may eliminate part of the stale pricing problem (as discussed in section two of this essay), implementing the fair value pricing is costly and somewhat subjective. Investors would still be able to profit from the mutual fund pricing errors, if they know in details about the fair value methodology and when the funds will use it. Moreover, it was also discusses in section two with reference to Madhavan (2003) that fair value pricing has both model risks and estimation risks.

2.8. Empirical Test of the Five-day Two percent Redemption Fee Proposal

As stated in last section, the SEC proposed and the ICI recommended a two percent mandatory redemption fee if the funds are sold within five days of initial purchase. This section argues that the proposed rule may reduce profits from frequent trading because to avoid redemption fees some profitable opportunities to sell within five days of purchase will be sacrificed by investors. But profit may still be possible and realized by trading funds that are separated by on average more than five days.

I have modeled a trading strategy that requires investors to buy-and-hold fund at least for five days after purchase and then sell it on the day when there is a sell signal. I assume three

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[51] 'Final Rule: Disclosure Regarding Market Timing and Selective Disclosure of Portfolio Holdings', 17 CFR Parts 239 and 274, [Release nos. 33-8408; IC-26418; File no. S7-26-03], RIN 3235-AI99; available at
 http://www.sec.gov/rules/final/33-8408.htm#IIb, April 19, 2004.

alternative parking places of investment when investors sell the mutual funds. Accordingly the following three trading strategies are used under the basic trading strategy that requires investors to buy-and-hold funds at least for 5-days after purchasing funds: trading strategy VII (switching in between international funds and cash), trading strategy VII (switching in between international funds and money market funds) and trading strategy IX (switching in between international funds and index funds).

The results of the trading strategy VII, VIII and IX are shown in Table 12 and the results suggest that the trading strategy provides higher mean daily returns and lower standard deviations (risks) than that of a buy-and-hold strategy for all categories of international funds (especially for equity funds). For example, the average daily returns. and risks of Strong International Stock Fund (STISX) were –0.0380% and 1.4195% respectively for a buy-and-hold investor. But investors may increase the average daily returns and reduce the average daily risks of STISX by following the proposed trading strategies VII, VIII and IX. The trading rule mean daily returns of STISX were enhanced to 0.1154%, 0.1193% and 0.0401% for trading strategy VII, trading strategy VIII and trading strategy IX respectively (equivalent to an annualized return of 28.84%, 29.83% and 21.68% respectively assuming 250 trading days in a year). The mean daily standard deviations (risks) of STISX were also reduced to 1.1924%, 1.1921% and 1.4091% for trading strategies VII, VIII and IX respectively.

I also computed the number of trades (roundtrip) required for trading strategies VII, VIII and IX. For example, funds that follow Russell 2000 index as trading signal require 136 trades during the holdout sample period of 1237 days (i.e. one roundtrip trade per 9.10 days) The number of roundtrip trades required for funds (or portfolios) is provided in the parentheses after

Table 12: Returns and Risks of Buy-and-hold and a Trading strategy that requires a Minimum of five-day Holding after Initial Purchases

This table presents the returns and risks of buy-and-hold and a trading strategy that requires investors to buy-and-hold fund at least for five days after initial purchases and then sell it on the day when there is a sale signal. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations (SD) of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of trading strategy VII (switching between international fund and cash); columns six and seven provide mean daily returns and standard deviations of returns of trading strategy VIII (switching between international fund and money market fund); and columns eight and nine exhibit mean daily returns and standard deviations of returns of trading strategy IX (switching between international fund and index fund). The significance level of t-statistics (to test the differences in mean returns between buy-and-hold and trading strategies) and F-statistics (to test differences in mean variances between buy-and-hold and trading strategies) are presented at 1% (***), 5% (**) and 10% (*) level respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MADCX	-0.0318%	1.3224%	0.0743%***	1.1304%***	0.0782%***	1.1302%***	0.0228%*	1.3609%
MNEMX	-0.0424%	1.3434%	0.0728%***	1.1535%***	0.0768%***	1.1533%***	0.0307%***	1.3758%
MGEMX	-0.0318%	1.4658%	0.0818%***	1.2140%***	0.0964%***	1.1236%***	-0.0131%	1.3823%**
TEDMX	-0.0319%	1.3084%	0.0609%***	1.1126%***	0.0648%***	1.1125%***	0.0126%	1.3886%**
Portfolio	-0.0345%	1.2831%	0.0701%***	1.0889%***	0.0740%***	1.0887%***	0.0251%**	1.3405%*

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FPBFX	-0.0014%	1.3893%	0.1003%***	1.1467%**	0.1043%***	1.1464%***	0.0770%***	1.3909%
GAPCX	-0.0389%	1.4254%	0.0749%***	1.2055%***	0.0789%***	1.2053%***	-0.0153%	1.4920%*
JHWPX	-0.0147%	1.3235%	0.0959%***	1.1144%***	0.0999%***	1.1141%***	0.0654%**	1.3464%
MAPCX	-0.0347%	1.4110%	0.0538%***	1.2553%***	0.0578%***	1.2552%***	0.0754%***	1.3163%***
TGRBX	-0.0294%	1.3397%	0.0843%***	1.1536%***	0.0883%***	1.1533%***	0.0652%***	1.3596%
PRPBX	-0.0471%	4.2347%	-0.0308%	2.9726%***	-0.0268%	2.9726%***	0.0542%	1.3390%***
FKPGX	-0.0512%	1.2696%	0.0524%***	1.0763%***	0.0564%***	1.0762%***	0.0412%***	1.3177%*
Portfolio	-0.0310%	1.3295%	0.0613%***	1.0900%***	0.0652%***	1.0898%***	0.0617%**	1.2965%

Table 12 Continued

C. Europe Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANEAX	-0.0414%	1.5057%	0.0591%***	1.3128%***	0.0630%***	1.3126%***	0.0254%**	1.4658%
DFCSX	-0.0511%	1.1944%	0.0175%***	1.0053%***	0.0214%***	1.0053%***	-0.0310%	1.4589%***
DFUKX	-0.0592%	1.1280%	0.0077%***	0.9519%***	0.0116%***	0.9520%***	0.0115%**	1.2990%***
FIEUX	-0.0443%	1.3766%	0.0557%***	1.1862%**	0.0597%***	1.1860%***	0.0209%***	1.4010%
FEURX	-0.0666%	1.7461%	0.0886%***	1.5152%***	0.0925%***	1.5150%***	0.0209%**	1.5041%***
MBEFX	-0.0495%	1.5844%	0.0129%***	1.4478%***	0.0169%***	1.4478%***	-0.0163%	1.6565%*
EUGBX	-0.0418%	1.5714%	0.0859%***	1.3059%***	0.0898%***	1.3057%***	0.0381%**	1.4848%**
PEURX	-0.0289%	1.3817%	0.0854%***	1.1685%***	0.0893%***	1.1683%***	0.0373%**	1.3932%
PEUGX	-0.0280%	1.3644%	0.0884%***	1.1429%***	0.0923%***	1.1426%***	0.0313%**	1.3871%
PRESX	-0.0370%	1.3908%	0.0563%***	1.2073%***	0.0601%***	1.2071%***	0.0167%*	1.4263%
VEURX	-0.0152%	1.3483%	0.0606%***	1.1320%***	0.0645%***	1.1318%***	0.0315%*	1.3813%
Portfolio	-0.0421%	1.1558%	0.0533%***	0.9744%***	0.0572%***	0.9743%***	0.0144%**	1.2931%***

D. Japan Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
DFJSX	-0.0193%	1.5653%	0.0010%	1.3561%***	0.0037%	1.3561%***	0.0618%***	1.3753%**
SJPNX	-0.0195%	1.7005%	0.0656%***	1.4390%***	0.0695%***	1.4389%***	0.1370%***	1.5250%***
PRJPX	-0.0320%	1.6781%	0.0411%***	1.4599%***	0.0450%***	1.4598%***	0.0808%***	1.6035%*
VPACX	-0.0278%	1.5067%	0.0156%*	1.2815%***	0.0194%**	1.2815%***	0.0830%***	1.4913%
Portfolio	-0.0246%	1.4668%	0.0369%***	1.2613%***	0.0407%***	1.2612%***	0.0988%***	1.4681%

Table 12 Continued

D. Pacific/Asia Ex. Japan Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
EVCGX	-0.0309%	1.7032%	0.0952%***	1.4589%***	0.0992%***	1.4587%***	0.0450%*	1.5257%***
CNTTX	-0.0088%	1.7435%	0.0939%***	1.4956%***	0.0978%***	1.4954%***	0.0766%**	1.5887%***
MBDRX	-0.0470%	1.7022%	0.0842%***	1.4846%***	0.0882%***	1.4844%***	0.0509%**	1.4647%***
MSAEX	-0.0237%	1.6030%	0.1126%***	1.3413%***	0.1165%***	1.3410%***	0.0746%**	1.4790%***
PRASX	-0.0025%	1.5777%	0.1151%***	1.3540%***	0.1191%***	1.3537%***	0.0662%*	1.5210%*
Portfolio	-0.0226%	1.5740%	0.1022%***	1.3412%***	0.1062%***	1.3410%***	0.0567%**	1.4551%***

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AEIGX	-0.0742%	1.5644%	0.0516%***	1.2531%***	0.0555%***	1.2530%***	0.0170%***	1.4523%***
AIIEX	-0.0220%	1.2165%	0.1009%***	0.9907%***	0.1049%***	0.9903%***	0.0390%**	1.3231%***
AAIEX	-0.0268%	1.0590%	0.0532%***	0.9186%***	0.0571%***	0.9184%***	0.0367%**	1.2268%***
TWIEX	-0.0285%	1.3708%	0.1026%***	1.1253%***	0.1066%***	1.1250%***	0.0270%**	1.4620%**
AEPGX	-0.0143%	1.0919%	0.0681%***	0.9406%***	0.0721%***	0.9403%***	0.0320%*	1.2965%***
INIFX	-0.0601%	1.4149%	0.0450%***	1.2656%***	0.0488%***	1.2655%***	0.0242%***	1.3981%
BAINX	-0.0394%	1.1035%	0.0618%***	0.9383%***	0.0658%***	0.9381%***	0.0303%**	1.2564%***
SNIVX	-0.0284%	1.0914%	0.0490%***	0.9567%***	0.0529%***	0.9566%***	0.0150%	1.2856%***
PNINX	-0.0492%	1.2633%	0.0608%***	1.0191%***	0.0647%***	1.0189%***	0.0265%**	1.3247%**
CWVGX	-0.0371%	1.1629%	0.0503%***	0.9919%***	0.0542%***	0.9917%***	0.0179%*	1.3029%***
NEFIX	-0.0271%	1.1994%	0.0781%***	1.0224%***	0.0820%***	1.0221%***	0.0437%**	1.2981%***
CMISX	-0.0343%	1.2144%	0.0564%***	1.0803%***	0.0603%***	1.0802%***	0.0341%**	1.3319%***
TIEUX	-0.0363%	1.2201%	0.0672%***	1.0512%***	0.0711%***	1.0510%***	0.0296%**	1.3535%***
RBIEX	-0.0844%	1.6449%	0.0358%***	1.4615%***	0.0398%***	1.4615%***	0.0042%***	1.6310%
DRGLX	-0.0826%	1.6488%	0.0445%***	1.4357%***	0.0485%***	1.4356%***	0.0131%***	1.6371%
NIEAX	-0.0603%	1.4516%	0.0332%***	1.3100%***	0.0371%***	1.3100%***	0.0095%**	1.5463%**
ENIGX	-0.0444%	1.2462%	0.0619%***	1.0451%***	0.0658%***	1.0449%***	0.0316%***	1.3290%**
UMINX	-0.0365%	1.1611%	0.0889%***	0.9804%***	0.0929%***	0.9801%***	0.0455%***	1.3040%***
FTITX	-0.0352%	1.3017%	0.0928%***	1.0908%***	0.0967%***	1.0905%***	0.0403%**	1.3586%*

Table 12 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FAERX	-0.0337%	1.2324%	0.0475%***	1.0524%***	0.0515%***	1.0522%***	0.0273%**	1.3243%***
FICDX	-0.0023%	1.2627%	0.0344%**	1.1065%***	0.0383%**	1.1064%***	0.0182%	1.2306%
FDIVX	-0.0023%	0.9626%	0.0768%***	0.8103%***	0.0809%***	0.8100%***	0.0447%*	1.2095%***
FIGRX	-0.0179%	1.1354%	0.0693%***	0.9784%***	0.0733%***	0.9782%***	0.0439%**	1.2944%***
FOSFX	-0.0339%	1.2513%	0.0469%***	1.0738%***	0.0509%***	1.0737%***	0.0272%**	1.3386%***
KNINX	-0.0381%	1.1456%	0.0481%***	0.9788%***	0.0519%***	0.9787%***	0.0224%**	1.2942%***
GAMNX	-0.0633%	1.1455%	0.0394%***	0.9650%***	0.0432%***	0.9649%***	0.0151%**	1.2986%***
GSIFX	-0.0433%	1.2583%	0.0674%***	1.0546%***	0.0714%***	1.0544%***	0.0237%**	1.3771%***
HAINX	-0.0243%	1.1808%	0.0560%***	1.0332%***	0.0599%***	1.0331%***	0.0275%*	1.2501%**
IVINX	-0.0698%	1.4221%	0.0223%***	1.2913%***	0.0262%***	1.2913%***	0.0115%**	1.3235%***
ACINX	-0.0212%	1.1016%	0.1001%***	0.8356%***	0.1040%***	0.8352%***	0.0501%**	1.2315%***
CONAX	-0.0543%	1.2062%	0.0073%***	1.0849%***	0.0112%***	1.0849%***	0.0461%***	1.1932%
MSACX	-0.0380%	1.1313%	0.0563%***	0.9020%***	0.0603%***	0.9018%***	0.0331%**	1.2666%***
MSIQX	-0.0213%	1.1733%	0.0496%***	1.0174%***	0.0536%***	1.0173%***	0.0333%*	1.3259%***
MUIYX	-0.0370%	1.2390%	0.0134%***	1.0375%***	0.0174%***	1.0375%***	0.0002%*	1.3019%**
OAKIX	-0.0020%	1.0669%	0.0830%***	0.8311%***	0.0869%***	0.8308%***	0.0399%	1.2395%***
PHITX	-0.0591%	1.3587%	0.0404%***	1.2131%***	0.0444%***	1.2130%***	0.0183%**	1.3529%
PFIFX	-0.0297%	1.1863%	0.0392%***	1.0796%***	0.0430%***	1.0795%***	0.0180%	1.2849%***
PRWLX	-0.0493%	1.1440%	0.0510%***	0.9749%***	0.0549%***	0.9748%***	0.0355%***	1.2258%***
SCIEX	-0.0979%	2.0448%	-0.0054%***	1.9509%**	-0.0014%***	1.9509%**	-0.0425%**	2.1342%*
SCINX	-0.0409%	1.2615%	0.0657%***	1.0805%***	0.0696%***	1.0803%***	0.0482%***	1.2935%
SEITX	-0.0201%	1.1589%	0.0858%***	0.9823%***	0.0898%***	0.9820%***	0.0476%**	1.2868%***
SNGRX	-0.0533%	1.3328%	0.0559%***	1.0879%***	0.0599%***	1.0877%*v	0.0149%**	1.3386%
SBIEX	-0.0577%	1.3789%	0.0612%***	1.2156%***	0.0652%***	1.2154%***	0.0359%***	1.3208%*
STISX	-0.0380%	1.4195%	0.1154%***	1.1924%***	0.1193%***	1.1921%***	0.0401%**	1.4091%
PRFEX	-0.0353%	1.2384%	0.0693%***	1.0307%***	0.0733%***	1.0305%***	0.0265%**	1.3415%***
PRIDX	-0.0015%	1.2128%	0.1109%***	0.8942%***	0.1149%***	0.8938%***	0.0400%	1.3811%***
PRITX	-0.0375%	1.2400%	0.0677%***	1.0319%***	0.0717%***	1.0317%***	0.0259%**	1.3395%***
TEMFX	-0.0166%	0.9423%	0.0484%***	0.8227%***	0.0523%***	0.8225%***	0.0144%	1.2300%***
FINEX	-0.0142%	0.8438%	0.0588%***	0.7049%***	0.0628%***	0.7046%***	0.0341%*	1.1991%
USIFX	-0.0228%	1.0414%	0.0554%***	0.8951%***	0.0594%***	0.8949%***	0.0278%**	1.2463%***

Table 12 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
VTRIX	-0.0277%	1.1546%	0.0282%***	0.9899%***	0.0320%***	0.9898%***	0.0130%	1.3093%***
VWIGX	-0.0268%	1.2038%	0.0738%***	1.0025%***	0.0778%***	1.0022%***	0.0287%**	1.3247%***
VNEPX	-0.0417%	1.2982%	0.0648%***	1.1466%***	0.0688%***	1.1464%***	0.0355%**	1.3968%***
UNCGX	-0.0628%	1.5055%	0.0617%***	1.1425%***	0.0656%***	1.1423%***	-0.0128%**	1.6205%***
SRIGX	-0.0338%	1.1537%	0.0714%***	0.9909%***	0.0752%***	0.9906%***	0.0405%***	1.2962%***
WIBCX	-0.0407%	1.3074%	0.0527%***	1.1447%***	0.0565%***	1.1446%***	0.0340%**	1.3359%
Portfolio	-0.0380%	1.0174%	0.0600%***	0.8556%***	0.0640%***	0.8553%***	0.0299%***	1.2381%***

G. Latin Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MBLTX	-0.0358%	1.7505%	0.0898%***	1.3795%***	0.0944%***	1.3792%***	-0.0259%	1.7984%

H. World Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
GSCAX	-0.0614%	1.4194%	0.0130%***	1.2054%***	0.0176%***	1.2054%***	0.0104%***	1.8092%***
ANWPX	-0.0115%	1.1286%	0.0638%***	0.8970%***	0.0678%***	0.8968%***	0.0161%	1.3201%***
SMCWX	-0.0386%	1.3354%	0.0335%***	1.0134%***	0.0380%***	1.0133%***	0.0308%**	1.6874%***
AHERX	-0.1966%	5.7550%	-0.0407%*	4.9481%***	-0.0362%*	4.9481%***	-0.0447%*	5.1288***
IGLGX	-0.0466%	1.3768%	0.0306%***	1.2139%***	0.0346%***	1.2138%***	0.0100%**	1.3380%
FWWGX	-0.0839%	1.5975%	-0.0154%***	1.3800%***	-0.0108%***	1.3801%***	-0.0177%*	1.9301%***
EGLBX	-0.0373%	1.3071%	0.0662%***	1.1662%***	0.0702%***	1.1660%***	0.0437%***	1.2964%
FWWFX	-0.0284%	1.1874%	0.0424%***	0.9130%***	0.0464%***	0.9129%***	-0.0081%	1.3479%***
FIISX	-0.0361%	1.1665%	0.0317%***	0.9817%***	0.0356%***	0.9816%***	0.0256%***	1.2402%**
GAGLX	-0.0347%	1.1259%	0.0298%***	0.9217%***	0.0338%***	0.9216%***	0.0048%**	1.2744%***

Table 12 Continued

H. World Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FGLOX	-0.0625%	1.2150%	0.0071%***	1.0467%***	0.0111%***	1.0467%***	0.0016%***	1.3117%***
MCGLX	-0.0444%	1.1753%	0.0179%***	1.0007%***	0.0218%***	1.0006%***	-0.0033%**	1.2929%***
JAWWX	-0.0159%	1.3633%	0.0805%***	1.1277%***	0.0845%***	1.1274%***	0.0190%*	1.4022%
LAGEX	-0.0367%	1.1777%	0.0431%***	0.9834%***	0.0471%***	0.9833%***	0.0125%**	1.2551%**
MWEBX	-0.0186%	0.9791%	0.0511%***	0.8239%***	0.0551%***	0.8237%***	0.0200%*	1.2307%***
OPPAX	-0.0203%	1.3836%	0.0646%***	1.0971%***	0.0685%***	1.0969%***	0.0311%*	1.2691%***
OPGIX	-0.0114%	1.4375%	0.0392%**	1.2570%***	0.0432%***	1.2569%***	0.0241%	1.4149%
QVGLX	-0.0336%	1.1754%	0.0114%***	1.0720%***	0.0154%***	1.0720%***	0.0133%*	1.2150%
NWWOX	-0.0501%	1.3561%	0.0204%***	1.2358%***	0.0244%***	1.2358%***	-0.0076%**	1.4827%***
PRGLX	-0.0448%	1.4691%	0.0383%***	1.2775%***	0.0423%***	1.2774%***	-0.0153%	1.4996%
PEQUX	-0.0577%	1.6394%	0.0593%***	1.3161%***	0.0633%***	1.3160%***	0.0155%**	1.3992%***
SGSCX	-0.0135%	1.3259%	0.0423%***	1.1202%***	0.0469%***	1.1200%***	0.0399%*	1.7537%***
SCOBX	-0.0515%	1.1389%	0.0183%***	0.9816%***	0.0223%***	0.9816%***	0.0267%**	1.1756%
TECAX	-0.0178%	1.0038%	0.0392%***	0.8640%***	0.0438%***	0.8638%***	0.0370%***	1.6024%***
TEGOX	-0.0387%	1.0452%	0.0314%***	0.8961%***	0.0354%***	0.8960%***	-0.0136%	1.2936%***
TEMGX	-0.0371%	0.8336%	0.0282%***	0.7095%***	0.0322%***	0.7094%***	0.0067%*	1.1756%***
TEPLX	-0.0186%	0.9710%	0.0243%***	0.8599%***	0.0283%***	0.8598%***	0.0034%	1.2658%***
TEMWX	-0.0228%	0.9728%	0.0388%***	0.8535%***	0.0429%***	0.8534%***	0.0096%	1.2476%***
USAWX	-0.0254%	1.1032%	0.0339%***	0.9415%***	0.0379%***	0.9414%***	0.0124%**	1.2704%***
Portfolio	-0.0413%	1.0276%	0.0350%***	0.8608%***	0.0390%***	0.8607%***	0.0069%***	1.2347%***

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AMMSX	-0.0151%	0.1862%	-0.0122%*	0.1766%***	-0.0083%***	0.1771%***	-0.0243%	0.7970%***
ANAGX	-0.0128%	0.6116%	-0.0009%	0.5382%***	0.0030%*	0.5382%***	-0.0127%	0.9457%***
BEGBX	0.0028%	0.6045%	0.0051%	0.5317%***	0.0090%	0.5317%***	0.0131%	0.8020%***
CWBFX	-0.0041%	0.3786%	0.0037%	0.3258%***	0.0077%**	0.3259%***	0.0121%	0.6830%***
IGBFX	-0.0033%	0.3549%	0.0024%	0.3039%***	0.0062%*	0.3040%***	-0.0099%	0.8347%***

Table 12 Continued

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CIFIX	-0.0005%	0.3133%	0.0026%	0.1990%***	0.0066%	0.1992%***	-0.0259%	0.7950%***
TIFUX	-0.0101%	0.5215%	-0.0098%	0.4580%***	-0.0058%	0.4582%***	-0.0017%	0.7553%***
CGFIX	-0.0076%	0.3437%	-0.0002%	0.3001%***	0.0037%**	0.3002%***	0.0083%	0.6711%***
DFGBX	0.0011%	0.3281%	-0.0035%	0.2965%***	0.0005%	0.2967%***	-0.0242%	0.8306%***
FTIIX	-0.0056%	0.5530%	-0.0036%	0.4796%***	0.0004%	0.4797%***	0.0044%	0.7686%***
ICPHX	-0.0123%	0.5449%	-0.0085%	0.4693%***	-0.0045%	0.4694%***	-0.0276%	0.9116%***
GSGIX	-0.0043%	0.2792%	-0.0003%	0.2510%***	0.0035%**	0.2511%***	-0.0124%	0.8169%***
LAGIX	-0.0156%	0.3666%	-0.0090%	0.3128%***	-0.0052%*	0.3130%***	-0.0214%	0.8378%***
MBGOX	-0.0079%	0.4022%	-0.0078%	0.3494%***	-0.0039%	0.3496%***	-0.0201%	0.8522%***
MSGFX	0.0058%	0.4596%	0.0020%	0.3851%***	0.0059%	0.3852%***	-0.0105%	0.8676%***
PFORX	-0.0012%	0.3320%	0.0122%***	0.2920%***	0.0162%***	0.2920%***	-0.0087%	0.8293%***
PGGIX	-0.0147%	0.3622%	-0.0060%	0.3156%***	-0.0020%**	0.3158%***	-0.0249%	0.8428%***
SSTGX	-0.0005%	0.2829%	0.0072%*	0.2419%***	0.0111%***	0.2420%***	-0.0052%	0.8143%***
SBGLX	-0.0090%	0.3525%	-0.0058%	0.3347%***	-0.0018%**	0.3349%***	-0.0265%	0.8449%***
RPIBX	-0.0083%	0.5263%	-0.0089%	0.4544%***	-0.0050%	0.4545%***	-0.0217%	0.9005%***
TPINX	-0.0118%	0.3702%	-0.0020%**	0.3262%***	0.0020%***	0.3264%***	-0.0230%	0.8415%***
Portfolio	-0.0064%	0.2792%	-0.0029%	0.2415%***	0.0010%*	0.2417%***	-0.0152%	0.8140%***

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy VII		Trading Strategy VIII		Trading Strategy IX	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CAIBX	-0.0122%	0.5977%	0.0205%***	0.5113%***	0.0245%***	0.5112%***	0.0120%	1.1101%***
BPGLX	-0.0237%	0.7600%	0.0177%***	0.6134%***	0.0217%***	0.6133%***	0.0169%	1.1273%***
SGENX	-0.0123%	0.8839%	0.0250%***	0.7840%***	0.0290%***	0.7839%***	0.0290%	1.0939%***
FMAFX	-0.0327%	0.8491%	0.0158%***	0.7076%***	0.0198%***	0.7075%***	-0.0013%*	1.1949%***
MALOX	-0.0281%	0.9170%	0.0138%***	0.7382%***	0.0178%***	0.7382%***	-0.0049%	1.2824%***
MFWTX	-0.0163%	1.8306%	0.0253%***	1.7974%	0.0293%***	1.7973%	0.0137%	1.1615%***
Portfolio	-0.0209%	0.6328%	0.0217%***	0.5493%***	0.0257%***	0.5493%***	0.0091%	1.1010%***

the name of the market index that was used as trading signals: S&P 500 (143 for all funds and 132 for Japan funds); Russell 1000 (141 for all funds and 132 for Japan funds); Russell 3000 (142 for all fund and 131 for Japan funds); Wilshire 5000 (140); Dow Composite (143); Dow Industrial (144); Nasdaq (144), MSCI Latin (133); MSCI Emerging Market (125); and Topix Second Section (119).

Empirical results suggest that short-term investors may benefit from the trading strategy even after the SEC's proposed rule is implemented. Some funds are arguing that the two percent redemption fee should not be a fixed level of redemption fee. The SEC should allow funds to establish multi-level redemption fees based on the holding period of funds. I also recommend that the redemption fees should be inversely related to the holding period of funds. A significant larger holding period (such as 60, 90, 120 or more) reduces profit from frequent trading; however, whatever holding period a fund uses will not eliminate all profits because market-timers may program their trades and make profit accordingly.

Some of the mutual funds already have their own policies to combat short-term trading; accordingly they impose different redemptions fees over a time period of their choosing. Therefore, it precludes the need for a third party to set up a standard redemption fees. If a mutual fund thinks that short-term trading is not adversely affecting the funds' shareholders, then it should be up to the fund to set its own policy. In fact, imposing redemption fees does not eliminate the stale pricing problems (or inefficiencies in funds' NAV computations) of mutual funds.

The proposed two percent mandatory redemption fee is exempted for (a) redemption of $2,500 or less (*de minimis* exception); (b) redemption of money market fund shares; (c) redemption of fund shares that are listed on a national securities exchange; (d) redemption of

funds that are designed for short-term trading. In case of unanticipated emergency situation, the rule provides opportunities to redeem fund shares of $10,000 without paying redemption fee. There are debates regarding *de minimis* exception and unanticipated emergency situation because these are susceptible to abuse and market timers may take advantages of these exceptions.

2.9. Conclusion

This paper provides evidence of mutual fund predictability and the exploitations of funds' returns. Informed investors may be able to exploit the predictability and earn abnormal profits since costs of trading a mutual fund are much lower than the costs of trading a portfolio of individual stocks. I examine all categories of international equity, bond and hybrid mutual funds to investigate whether these funds exhibit predictable return patterns. Using 2,479 daily return observations for international mutual funds, this paper explores the pattern of returns and potential exploitability of those returns. This exploration splits the sample, uses the initial sub-sample to investigate return patterns and develop trading rules, and tests those rules out of sample. Regressions of mutual fund returns on both the US and foreign indices are presented showing the presence of statistically significant regularities, especially for international equity funds by following major US indices. Calculations of potential returns are then presented to show that the returns are of economically significant in magnitude, beating a buy-and-hold strategy significantly. Empirical results also suggest that both load and no load funds are subject to similar kind of exploitation. It was empirically shown that investors could have profitably traded the US-based international mutual funds even at the presence of various trading/exchange restrictions.

It is obvious that the 24-hours real-time trading for all securities in the world will eliminate the stale pricing problem of the US-based international mutual funds and consequently there will be no need for fair valuing underlying securities of mutual funds. However, this is not feasible under the current global security markets trading systems. While mutual funds compute the NAVs once a day, the Exchange Traded Funds (ETF) update their NAVs throughout the day (usually in every 15 seconds). Investors buy the ETFs not from the fund companies but from the secondary markets (AMEX, NASDAQ, or NYSE) and the price of an ETF share is updated throughout the day, and is determined by the supply and demand of underlying shares. Like individual stocks, the ETFs are continuously traded and priced throughout the trading day. The intraday pricing mechanism of the ETFs reduce the stale pricing problems of underlying shares as the market forces determine the prices. It may be argued that mutual funds could use the intraday pricing mechanism of ETFs as it could have smaller pricing errors. However, this requires large institutional, legal and structural changes in the mutual fund industry.

I think, excessive and tight trading/exchange restrictions may reduce the profit of market timers but will not eliminate stale pricing problem. If investors find a profitable trading strategy (even after facing exchange restrictions and paying redemption fees), investors will exploit the strategy and dilute the funds' returns. There are debates among policy makers whether ex-ante (such as fair valuing funds' NAV) or ex-post (such as restricting number of round trip trades or imposing redemption fees) policies will best solve problems related to stale pricing components of international funds. I think, international mutual funds could price its NAV at 4 PM ET on the day t+1 following the day t in which the trade order was placed.[52] Under t+1 pricing, NAVs

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[52] Varela (2002) and Bhargava et. al. (1998) suggest to compute fund prices taking next-day opening (morning) prices. I think, it's a partial solution because it will work only if an international fund invests in a single foreign market or markets with similar time zone. However most international funds (global, foreign, emerging, Latin funds

calculated on transactions occurring after the orders are placed (or cancelled). The next-day or t+1 pricing represents the prices the fund will receive when it trades in response to an inflow and outflow of money. The t+1-pricing rule should reflect the latest information released after the order was initiated. The next day pricing along with fair-value pricing will eliminate the basic and inherent problems of computing mutual funds' NAV and greatly reduce the stale pricing and pricing error problems of the US-based international open-end mutual funds.

The t+1 pricing also reduces the risks associated with panic selling by most of the investors of a fund. For example, under the current pricing system, if most investors sell funds as the US market declines today because of any bad news, then the remaining shareholders of the fund will suffer tomorrow. Because investors who sell funds today get today's price; however the remaining shareholders will loose money or may be wiped out because of a massive decline tomorrow (in fact, funds will sell their underlying shares tomorrow to send cash or checks to the shareholders who redeemed funds today and that will accentuate the price decline tomorrow).[53] But t+1 pricing will eliminate the risks because the NAVs of the funds will be priced as of t+1 closing value.

The t+1 pricing rule is effective to eliminate short-term speculative trades because investors will get the prices of the US-based international mutual funds on day t+1 even though they make the trade orders on day t. Moreover most stale prices should have been updated over a two-day span. The t+1-pricing rule may reduce the costs and subjective evaluation of fair value

etc.) have underlying shares invested in different countries or different time zones. Different markets open at different times and funds have to wait to price their funds until all markets open. Besides it would be a problem if funds settle prices at different points in time.

[53] When an investor of the US-based international mutual fund sells his fund today, fund managers will have to raise money tomorrow by selling the underlying shares of the funds. As a result there will be selling pressures tomorrow that may depress the prices of underlying shares. Besides if the market declines tomorrow for any bad news, the price of underlying shares will further decline. Consequently, fund managers have to sell most of the underlying shares (in other word, most of the existing mutual funds) to raise the money to be sent to the investors who sold funds yesterday at yesterday's NAVs.

pricing because the current subjective fair value method results in computing different prices of the same security on the same day. However fair value pricing may still be needed for securities not traded within the two-day window. Under t+1 pricing rule, funds may also limit the number of exchanges to eliminate current market timing practices. In such a situation, the current proposal of imposing industry-wide 2% redemption fee may not be needed. The next day or t+1 pricing may eliminate the dilution effects and protect the interests of remaining shareholders of funds. Redemption fees may reduce the dilution; but they are imperfect and have high administrative costs.

One can argue that the t+1 pricing may impose some costs on investors because investors will have more price uncertainty as they have to wait for an additional day to get the price of their funds. Since prices must be known before money can move there may be another day for issuing checks or wire transfers of their money. I think, over a long horizon this will not cost buy-and-hold investors heavily because few investors use mutual funds as store of emergency money. However, over a short horizon, investors have to bear the psychological pressures associated with important information that may affect the market. Besides, in case of emergency cash, investors will have to wait for one extra day. The liquidity problem can be solved, if funds permit strictly limited number and limited amount of same-day withdrawal provisions and the rest will be paid after the NAVs are determined next day.

The t+1 pricing may be a problem in case of differential holidays in foreign markets and the NYSE. For example, the NYSE is open on Easter Monday, Boxing Day, Chinese New Year, and the Golden Week in Japan and other national holidays in foreign markets but the foreign markets are closed on those days. *Fair value pricing* and *delay in pricing* can be simultaneously used to compute fund's NAV in case of differential holidays between foreign markets and the

NYSE. Delaying prices to compute funds NAV is an effective way to solve the stale pricing problem.

The t+1 pricing will reduce the opportunities of insider trading in mutual fund. Because of one-day lag, insider trading in mutual fund will, in general, no longer be profitable. Finally, funds should strictly regulate the insiders who have inside information about the order flows. Because, inside information about the order flows of the fund may provide investors' knowledge about the trading patterns of fund on day t+1 and traders accordingly may exploit this knowledge. Late trading is assumed to be illegal; however t+1 pricing will eliminate most of the potential profit from abusive late trading.

CHAPTER 3

THE WEEKEND TRADING PROFITABILITY FROM INTERNATIONAL MUTUAL FUNDS

Abstract

There are ample evidences of the weekend effect on stock returns. The weekend effect is described as the tendency for Monday security returns to be low (or negative) compared to other days of the week. The weekend effect is theoretically interesting because of its deviations from market efficiency and practically appealing if investors can exploit it to earn excess returns. The weekend effect may not be exploited by trading individual stocks because of transactions costs. However, the institutional characteristics of the US-based international open-end mutual funds may allow investors to exploit the weekend effect. This is important because mutual funds lack much of the transactions costs associated with individual stocks. This paper extends the study of Compton and Kunkel (1999), Varela (2002), and Miller, Prather and Mazumder (2003) by examining the weekend predictability and profitable trading opportunities for the US-based international open-end mutual funds. The rationale behind the weekend predictability and profitability of international funds lies on the fact that the Net Asset Values (NAVs) of the US-based international open-end mutual funds are computed from the stale prices of the underlying assets of these funds which are located in security markets abroad. The sample is divided into two sub-samples and the initial sub-sample is used to test the day of the week effects in

international mutual funds and to develop trading strategies. Returns of trading strategies are then evaluated out-of-sample and compared with the returns of buy-and-hold strategy.

Empirical tests of this study document that investors can exploit international mutual funds following daily dynamic trading strategies. Empirical results also document that trading strategies based on the weekend effect produce higher risk-adjusted returns. The proposed weekend trading strategies provide improved Sharpe and Treynor measures; besides Jensen's alpha is positive. Finally market timing models are also tested for returns from trading strategies and the Treynor-Mazuy and Henriksson-Merton timing measures are positive and statistically significant. Moreover, the trading rules and techniques of this study are important and useful in future if fair value pricing or other institutional regulations eliminates the profitable trading opportunities based on the US signals.

3. 1. Introduction

There are ample evidences of the day-of-the-week or weekend effect on stock returns. This effect is described as the tendency for Monday security returns to be low (or negative) compared to other days of the week. This evidence is also observed before or after the holidays. Though it has been reported that the weekend affect has been diminished recently, however, the weekend effect is theoretically interesting because of its deviations from market efficiency and practically appealing if smart investors can exploit it to earn excess returns.

Several studies report that the autocorrelations are the greatest over the weekend (Friday-Monday) than over other pairs of days. Assuming this effect still exists (and it may not) it would suggest a profitable trading strategy, namely investing in the US market on Fridays when the market appeared likely to close high (based on one of the indices that is available during the day, and hence available just before the market closes) and being out of the market on other days or being in the market on all days except Mondays. Because of spreads and commissions the trading strategy might not be profitable when applied to buying individual stocks. However, if implemented through mutual funds families (or retirement funds or annuities) that permit switching from one fund to another with no charge, higher risk-adjusted returns may be possible. Compton and Kunkel (1999) show that higher risk-adjusted returns can be earned by switching within TIAA-CREF's retirement annuity accounts. Miller, Prather and Mazumder (2003) investigate the day-of-the-week effects among mutual fund asset classes and document trading strategies that produce higher risk-adjusted returns. The institutional characteristics of mutual funds may permit exploiting the well-documented day-of-the-week patterns by using international open-end mutual funds. This paper investigates the predictability of the day-of-the-

week returns for the US-based international open-end mutual funds for which the underlying shares are located in foreign countries.

The intuition behind the day-of-the-week (or weekend) predictability and profitable trading opportunities can be explained as follow: if a major Japanese market index provides positive Friday returns and negative Monday returns then the US-based Japan mutual funds should also exhibit negative Monday and positive Friday returns because the underlying shares of the US-based Japan mutual funds follow major Japanese index (i.e. NAV of a Japan fund is calculated at 4 PM ET based on the last closing values of underlying shares of that particular Japan fund). The US investors can form a simple trading strategy - sell the US-based Japan mutual funds on Friday and shift investment to a money market fund to avoid negative Monday returns from Japan funds. The US-investors may also use a complex trading strategy by shifting their investment out of risky Japan funds and into money market funds on days(s) of the week when the major Japan index historically exhibits negative returns. Investors require no transactions costs to exchange one mutual fund for other fund(s) within fund families, retirement accounts or variable annuities (although some mutual fund families and variable annuities impose restrictions on frequent exchanges, these time-dependent trades can be executed within retirement accounts without transactions costs).

Using 2,479 daily return observations from all categories of 117 international equity mutual funds and 6 international hybrid funds, this essay explores the weekend predictability and potential exploitability of those returns. This exploration splits the sample, uses the initial sub-sample to investigate return patterns and develops trading strategies, and tests those strategies on the holdout sample. This paper proposes several trading strategies to exploit the weekend effect for international funds. The risk-adjusted returns of the proposed trading strategies are calculated

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and evaluated out of sample. Empirical results suggest that the institutional features of international mutual funds allow investors to exploit the weekend effect and achieve higher risk-adjusted returns. This paper uses Treynor and Mazuy and Henriksson and Merton market timing models since the proposed trading strategies require time-dependent purchases and sales. The market timing models reveal positive and statistically significant timing measures for the weekend trading strategies.

The rest of the paper is organized as follows: section two discusses the predictability of mutual fund returns and limitations of self-correcting forces, section three discusses the relevant literature on the weekend effect; section four discusses sample data and analyzes the methodology; section five documents empirical results, develops trading strategies, analyzes the risk-adjusted returns of trading strategies, and tests the returns of trading strategies using market timing models. Section six presents possible future research and extensions of this study and finally, section seven concludes the paper.

3.2. Predictability of Mutual Fund Returns and Limitations of Self-Correcting Forces

Mutual funds are portfolios that gather assets from investors and collectively invest those assets in stocks, bonds or money market funds. Therefore the effect that produces the predictability in the stock prices would also produce predictability in the NAVs of a mutual funds or retirement annuities.

Miller and Prather (2000) and Miller, Prather and Mazumder (2003) argue that the day-of-the-week effects in mutual funds, or retirement annuities lack the self-correcting nature of trading in stocks. If an investor of stock market finds a rule that predicts that stock's closing

prices will rise by a significant amount from Thursday to Friday, he will buy stocks at Thursday's closing price and sell stocks at Friday's closing price. This will provide him some profits. However if many investors find out this profitable trading rule (a violation of weak form of market efficiency), they will execute it. Their trading will eliminate the profit by bidding the Thursday's closing price up (demand pressure) and lowering the Friday's closing price down (supply pressure). Therefore, any effort to exploit predictabilities by trading individual stocks tends to eliminate the predictability, and quickly reduce them to the level where the remaining trading profits are offset by transactions costs.

Similar to individual stock investor, an investor of mutual fund might also be able to make profits by buying the mutual fund or retirement annuity at Thursday's NAV and selling it at Friday's NAV. However the trading strategy would not eliminate the effect observed in stocks if the trading was done in mutual funds or retirement annuities. It is because that the fund manager does not have the influx of funds until after Thursday 4 PM ET when the funds' NAVs are calculated and the trades are actually done. If the fund manager takes no action until the new funds are received, the effect may continue because no action is taken to affect stock prices. As an alternate, if the fund manager responds to the influx of new funds by buying more stocks immediately then either of the following may happen; (1) if fund manger's buying is too little to affect the prices, the effect will continue or (2) if fund manager's buying is large enough to affect prices, it will increase the closing Friday prices of the underlying stocks of the mutual funds, and eventually fund's NAV will be even higher on Friday. The fund trading actually accentuates the price change. Thus, day-to-day predictabilities could persist even if they were known.

3.3. Literature on the Day of the Week Effects

3.3.1. Evidence from the US Markets

In a recent survey article Pettengill (2003) documents that the day-of-the-week effect in stock markets dates back to 1930s. Fields (1931) identifies the effect and concludes that the Dow Jones Industrial Average (DJIA) index returns are positive on Saturdays and negative on Mondays.[54] Cross (1973) finds that the Standard and Poor's (S&P) index returns during 1953-1970 are significantly negative on Mondays (-0.18%) and positive on Fridays (0.12%). French (1980) examines the daily seasonal of S&P 500 during 1953-1977 and finds statistically significant negative Monday returns. Gibbons and Hess (1981) examine the S&P 500, CRSP value and equally-weighted indices and 30 individual stocks of the DJIA and document that Monday returns are significantly negative not only for stock indices but also for individual stocks. Keim and Stambaugh (1984) find statistically significant negative Monday returns and positive returns on the last trading day of the week for the S&P composite index during 1928-1982. Negative Monday returns are also documented by Lakonishok and Smidt (1988) for the DJIA index and by Lakonishok and Maberly (1990) for the NYSE index.

Rogalski (1984) examines the negative Monday effect in terms of trading (Friday close-to-Monday close) and non-trading (Friday close to Monday open) day returns and documents that irrespective of firm sizes the day-of-the-week effect occurs during non-trading period. Using intra-day returns similar findings (negative overnight weekend returns) are documented by Smirlock and Starks (1986) for the DJIA index (1963-1983); Dyl and Maberly (1986) for the S&P 500 futures index; Harris (1986) and Jain and Joh (1988) for the NYSE index; and Chow,

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[54] The US markets were open on Saturdays every month before 1946 and non-summer months before 1953.

Hsiao and Solt (1997) for the S&P 500 index.

Siegel (1998) provides the longest time frame (112 years) of investigation on the day-of-the-week effect for the DJIA index. From 1885 to 1997, he reports that the average daily return has been .024%, while the average return for Mondays has been a minus 0.110%. He documents negative Monday returns in all sub-periods: -0.087%, -0.211% and -0.089% during 1885-1925, 1926-1945 and 1946-1997 respectively.

Recent studies document a shift (higher and positive Monday returns) in the day-of-the-week effect especially for large firms. Connolly (1989) shows some degree of Monday shifts for the US markets during mid-1970s. Kamara (1997) examines the S&P 500 index and small-cap index of the NYSE from 1962 through 1993 and finds that the Monday effect has declined significantly for large stocks after the introduction of the S&P 500 futures in 1982. Brusa, Liu and Schulman (2000) find a reverse weekend effect for the S&P500, NYSE, DJIA and CRSP value-weighted indices (dominated by large-cap portfolios) during 1990-1994. However, negative Monday effect still dominates for small-firms. Steeley (2001) and Sun and Tong (2002) also document a shift in the Monday effect. Al-Rjoub, Hassan and Varela (2004) also show that the weekend effect seems to reverse in January, especially in the first week of January irrespective of sizes.

3.3.2. Evidence from the Foreign Markets

Monday is a poor day, not only in the United States, but also in other parts of the World. Jaffe and Westerfield (1985a) examine the day-of-the-week effect for Australia, Canada, Japan, UK and USA and document negative Monday returns although the weekend effect is slightly

weaker in Australia and Japan (the lowest mean returns occur on Tuesday for Australia and Japan). Jaffe and Westerfield (1985b) also find negative Tuesday returns for Japan during 1970-1983.

International evidence of the day-of-the-week effect is also investigated for UK [Board and Sutcliffe (1988), Draper and Paudyal (2002)]; European Countries [Santesmases (1986) for Spain, Solnik and Bousquet (1990) for France]; developed countries [Condoyanni, O'Hanlon and Ward (1987) and Dubois and Louvet (1996)]; both emerging and developed markets from Asia [Aggarwal and Rivoli (1989), Lee, Pettit and Swankoski (1990), Clare, Ibrahim and Thomas (1998), Mookerjee and Yu (1999)]. Most of these studies document negative and the lowest Monday returns; however, some of these studies also document negative Tuesday returns especially for some Asian markets.

One possible explanation for difference in the international weekend effect is the time differences between international markets and the US markets. Time zone hypothesis states that markets situated in different time zone of the world follow the US. Thus, negative US Monday returns are followed by negative Far Eastern Tuesday returns. Condoyanni, O'Hanlon and Ward (1987) and Aggarwal and Rivoli (1989) find results consistent with this hypothesis. However, Jaffe and Westerfield (1985b) reject the time-zone hypothesis as they find insignificant cross-correlation between US Monday returns and Japan Tuesday returns. Even though day-of-the-week effects in foreign currency markets are documented in literature [Coats (1981), McFarland, Pettit and Sung (1982), Thatcher and Blenman (2001)], but Jaffe and Westerfield (1985a,b) show that currency seasonal (returns on the Yen to a US investor are high on Mondays and Tuesdays and low on Thursdays and Fridays) does not offset the stock market seasonal.

3.3.3. Day-of-the-Week Serial Correlation

In most of the studies on security return prediction, autocorrelation and cross-autocorrelation patterns in portfolio returns are treated as sources of predictability. Nonsynchronous or infrequent trading can result in significant small stock portfolio autocorrelations [Lo and MacKinlay (1990)]. Cross (1973) documents strong correlations between Friday and Monday returns. Keim and Stambaugh (1984) show that the mean autocorrelation between Friday and Monday returns is higher. Abraham and Ikenberry (1994) examine the 1963-1991 CRSP data and also find positive correlations between Friday and Monday returns. In particular they show that Monday's return is positive (negative) with a mean return of 0.11 (-0.61) percent when Friday's return is positive (negative).

Since there is a significant autocorrelation pattern around weekends Besembinder and Hertzel (1993) associate this pattern with the weekend effect. They examine the serial dependence of stock and futures markets around non-trading days and find patterns of significant daily return autocorrelations that vary with the day-of-the-week. They find that (a) the autocorrelation of returns between the first and second days after weekends or holidays is the lowest and sometimes negative; and (b) the autocorrelation of returns between other successive days of the week is also low except Friday. They document abnormally large positive return autocorrelations between the last day before and the first day after weekends or holidays for over 100 years (1885-1989) for both the DJIA stock and futures markets. They also find similar results for the Tokyo Stock Exchange.

Higgins and Peterson (1999) show large first-order autocorrelations between the returns on Friday and Monday for the NYSE and Amex Securities during 1963-1994. Tong (2000)

documents high weekend correlations for 23 countries from Asia, Europe and North America. Although Tong points out that down Fridays are only minorities of Fridays, his findings confirm the tendency of markets to go down on Mondays if Fridays are down.

3.3.4. Trading Strategies based on the Weekend Effect

If daily returns of any security are predictable, investors can form trading strategies to exploit the daily seasonal effect. Based on the low (negative) Monday and high (positive) Friday returns, several studies propose different trading strategies to exploit the weekend effect and the day-to-day serial correlations. French (1980) suggests that investors should sell the S&P500 on Friday afternoon and buy it back on Monday afternoon and hold the cash over the weekend. This strategy earns a 13.4% annualized average returns as opposed to a 5.5% annualized average return from a buy-and-hold strategy. However, French (1980) concludes that active trading strategy based on the negative expected Monday returns would not have been profitable because of transactions costs.

Kim (1988) documents that stock returns on Monday are low for the US, UK and Canada and returns are low on both Monday and Tuesday for Japan, Korea and Australia. Accordingly, he proposes a strategy (buy on Monday and sell on Friday) that produces high returns in absence of transactions costs.

Bessembinder and Hertzel (1993) show potentially exploitable regularities, which involve opening a long (short) position over the weekend if Friday's stock return is positive (negative). The day-to-day sales decision on Monday and Friday conditional on previous day's returns apparently yields 24.1% annual returns as opposed to 9.7% buy-and-hold annual returns for the

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DJIA index. But a small transaction cost (0.13%) eliminates profits generated by the strategy. However, they document that the trading strategy may generate profit in futures markets even in the presence of some transaction costs.

Ko & Lee (1993) propose a conditional weekend trading rule (sell at Friday's close if the index returns in previous week is down and reenter at Mondays close; otherwise stay in the market) for 19 international markets. This strategy works in most countries (including the US). They do incorporate what they consider reasonable transactions costs (about ½%) and show that the transactions costs eliminate excess returns for most countries and conclude that institutional investors with low transactions costs are benefited mostly from their weekend trading strategy.

Chow, Hsiao and Solt (1997) propose (a) a negative trading strategy (open a short position over the weekend only if the Friday return is negative and (b) a sorting trading strategy (open a short position over the weekend if and only if the negative Friday return is below a negative cut-off benchmark value). Using hourly index returns for the S&P500 from 1970 through 1993, they find positive returns for their trading strategies in absence of transactions costs. However, the sorting strategy (when Friday's prior return is below a cut-off value in between −0.70 and −1.00) provides the highest returns in terms of risk-return tradeoff. The sorting strategy also generates sufficient profit to compensate the transaction fees.

None of the previous studies, however, discuss the possibility of exploiting the weekend predictability using retirement funds, annuities, and mutual fund families that usually permit switching between in and out of portfolios at almost zero cost. Recently Compton and Kunkel (1999) examine the possibility of exploiting the weekend effect of stock markets by employing a switching strategy within a tax-deferred, no transfer cost retirement accounts (TIAA-CREF's stock and money market accounts). They propose a trading strategy that permits investors to

switch to CREF's stock account on Monday and then switch back to CREF's money market account on Friday. The rationale behind their trading strategy is that the money market funds earn 3 days (Saturday through Monday) returns over the weekend and this avoids the Monday declines. Their strategy provides higher risk-adjusted returns in absence of transactions costs and taxes associated with account switching. They also suggest that their trading strategy can be applied to similar kind of retirement accounts and variable annuities.

Miller, Prather and Mazumder (2003) extend the evidence of the day-of-the-week effects by examining the return patterns of mutual fund asset classes. Their empirical results reveal that daily dynamic trading strategies exist that can reduce risk and increase returns resulting in improved Sharpe and Treynor measures and positive Treynor-Mazuy and Henriksson-Merton timing measures.

Of course with most mutual funds one could not make short sales, but getting out of markets based on the day's action might still be workable. Investors require instructions before the close to give them time to invest in the incoming funds that day. Probably there is a even better rule which optimally combines how Tokyo and other markets did with how New York did and at 3:55 PM (or immediately before the close of the US markets) and decides whether to be in a international funds or not. Probably the most useful serial correlations would be over the weekend, since if Friday is up, shifting out of international funds would give three days of money market (or bond) returns while avoiding a likely down Monday. This paper extends the weekend literature on security market returns by examining the weekend predictability and profitable trading opportunities for the US-based international mutual funds.

3.4. Data and Methodology

3.4.1. Mutual Fund Data

This study requires the development of daily mutual fund return databases and breaking the results down by the day-of-the-week. The initial sample of international funds comes from both *Morningstar Principia Pro* and *CDA Weisenberger* at the end of the period (October 2002). To be included in our study, the fund must have been in continuous operation during the period January 4, 1993 through October 31, 2002.[55] Since open-end mutual funds are permitted to change the objective if shareholders approve the change, both *Morningstar* and *CDA* are consulted to eliminate any international fund that changed objectives during the period of study. The purpose of eliminating these funds is to ensure, as much as possible, the homogeneity of funds representing each category of international funds. This is important since I want to capture the uniqueness of the return properties of each international fund in each category. For multiple share classes within the same fund family, I use the share class, which was incepted first. If the inception date is same for multiple share classes, I chose the share class that begins with the first alphabet after the fund's name (this situation only occurred for one Latin fund).

However, the sample includes funds that are 'closed to new investors' (an indication of whether or not a security investment has eligible shares for issue to new investors). It is important because one of the main objectives of this study is to develop trading strategy that permits investors to switch from this type of funds to a money market fund (or cash) without any purchase constraints or with a few purchase constraints. These funds (closed to new investors) are interesting as the prevailing investors can still use them by switching most of their money

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[55] As stated in chapter 2 of this dissertation, the disappearance (survivorship bias) of some funds may not be a problem in this study. One reason for this belief is that disappearing funds would likely be poor performing funds.

from these funds and keep small percentages of shares in these funds.

The final sample consists of 2,479 daily returns of 117 international equity mutual funds from the following *Morningstar* categories: Diversified Emerging market fund (4), Diversified Pacific/Asia fund (7), Europe fund (11), Foreign fund (56), Japan fund (4), Pacific/Asia excluding Japan fund (5), Latin America fund (1), World fund (29). The sample also includes 6 International Hybrid funds.[56] Overall, this essay also uses the same US-based international sample mutual funds listed in Table A-1 of appendix except international bond funds.

I begin the analysis with equal-weighted fund portfolios for each *Morningstar* international fund category and then analyze the empirical results for individual funds. The fund portfolio or indices offer the advantage of having less residual variance (less idiosyncratic risk) and therefore more precise parameter estimates. This is useful in making inferences about possible patterns. Then, I check whether these patterns also exist for individual international funds.

3.4.2. Mutual Fund Return computation

Using Dial Data's daily NAV and distribution data for each of the selected funds, I compute daily returns for each fund. To ensure the quality of the data I follow the screening procedure of Busse (1999).[57] Continuously compounded daily returns are computed for each

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[56] When I screen the sample international funds, which are incepted on or before January 4, 1993 I found more funds than the actual sample of this study. This is due to the difference between the funds' inception dates and the data beginning dates. Even though some funds are incepted on or before January 4, 1993, however the NAV data of these funds began in different times after January 4, 1993. These funds (even if they were incepted before January 4, 1993) are excluded from the sample.

[57] Missing NAVs and errors in distributions dates account for less than 1% of Dial Data sample. For example, distributions are recorded one day or two days before or after the actual distributions date (ex-dividend date). Following Busse (1999), I use *Moody's Dividend Record: Annual Cumulative Issue* to verify and correct the missing NAVs for which distributions records are found in *Moody's Dividend Record*.

international fund by taking the natural logarithm of the change in daily value for each of the

2,479 days in my sample, as shown in equation (5)

$$R_{i,t} = \ln \frac{value_{i,t}}{value_{i,t-1}} \qquad (5)$$

where $R_{i,t}$ is the return on fund i during the period t, $value_{i,t}$ is the value of an investment in fund i

at time t.

After the returns for each international fund were computed, an equally weighted index

return for each international fund category is computed by summing the returns of individual

funds (i) within the international fund category (c), and computing their average daily return

using equation (6).

$$R_{c,t} = \frac{\sum_{i=1}^{n} R_{i,t}}{n} \qquad (6)$$

$R_{c,t}$ is the average return on international fund category (c) during the period t. Accordingly, I

develop equally weighted daily return indices for each international fund category.

3.4.3 Foreign Index Return Data

This study requires the data development for appropriate foreign indices to investigate the

day-to-day predictability of sample international funds, the underlying shares of which are

invested in foreign countries. I choose the foreign indices on the basis of the approximate regional or country composition of underlying shares of each international fund sample.[58] Funds for which the major underlying shares are located in a single country (for example, Japan funds), I use the corresponding country index because changes in Japanese indices may have some impacts on the NAVs of Japan funds. For example, I use the major Japanese indices (Nikkei 225, Topix 1st and 2nd Sections etc.) as benchmark indices for T. Rowe Price Japan Fund (Ticker: PRJPX), which invests approximately 95% of underlying assets in Japanese securities. But I use different categories of the Morgan Stanley Capital International (MSCI) indices for most of the regional and diversified funds because the MSCI indices represent many countries and these indices possibly are the closest to the theoretical market index.[59]

The MSCI offers real-time data for the *MSCI indices* and the *MSCI free indices*. The MSCI free indices are the most appropriate benchmarks for regional or diversified international funds because the MSC free indices exclude shares of companies that are not readily available for foreign investors. I use the *MSCI free indices* for this study.

A regional or diversified mutual fund does not necessarily invest in all countries, which constitute either of the MSCI indices or the MSCI free indices. For example, Merrill Lynch

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[58] Approximate regional or country composition of each mutual fund at the end of the sample period is provided in Table A-1 of appendix. As stated earlier, except Japan funds, all other sample funds are composed of portfolios of assets from more than one country or region. It may also be mentioned that the Fidelity Canada fund also invests mostly in Canada. Since daily data on mutual fund's portfolio shares compositions are not disclosed to public, it is not possible to match the daily portfolio of shares of a mutual fund with any of its corresponding country or regional index. Although fund companies rebalance their portfolios over time, however the percentage composition of shares from a region or a country does not vary widely. The analysis section of various issues of '*Morningstar Mutual Fund*' is used to verify it and I notice that the regional or country portfolio composition of a fund does not usually vary more than 5-25% during the sample period. Thus, I assume that the approximate regional or country composition at the end of the sample period remain almost same over the entire sample period.
[59] By regional and diversified mutual funds, I refer to the international funds for which the underlying shares are not concentrated in a single country; rather the underlying shares of these funds are diversified from a small region (for example, Diversified Pacific/Asia fund or Foreign fund) to a continent (for example, Europe fund) or to the entire world (for example, World fund).

Developed Capital Markets A (MADCX) fund belongs to *Morningstar's* Diversified Emerging Market category. As of the end of sample period, the regional portfolio composition of MADCX fund consists of shares from Asia-Pacific region (60%), Europe (15%) and Latin America (15%). The approximate country portfolio composition of MADCX fund at the end of sample period consists of Brazil (5%), Mexico (10%), South Korea (25%) and Taiwan (25%) etc. No single country dominates the underlying shares of MADCX fund; therefore I assume that any MSCI emerging market index that mostly invests in the emerging markets of Asia and Latin America would serve as a benchmark (possibly the closest to the theoretical market index) for MADCX fund.[60] But a single country index may be used as a benchmark for a country fund (for example, the Japanese market indices represent as the benchmarks indices for Japan funds).

Data for the foreign indices are obtained from DRI. Continuously compounded daily returns for each foreign index are computed by taking the natural logarithm of the change in daily closing prices of each foreign market index.

3.4.4. Methodology

To mitigate (or reduce) the data-snooping bias, initially I divide the sample of International mutual funds and foreign indices into two sub samples with an approximately equal number of observations: sub sample I has 1242 daily observations from January 4, 1993 through November 28, 1997 and sub sample II (holdout sample) has 1237 daily observations from

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[60] According to this data selection procedure, different kinds of the relevant MSCI free indices are used as benchmark indices for most of the regional and diversified funds (Diversified Pacific/Asia, Europe, Foreign, Pacific/Asia ex. Japan and World fund categories), provided no single country dominates these funds. However initially I also use the local country index (indices) as benchmark index (indices) for some of these regional and diversified funds provided the funds invest a significant amount of shares in a single country during the sample period. But the empirical results are reported only for the MSCI free indices because the MSCI free indices emerge as the dominant benchmark indices for the regional and diversified mutual funds.

December 1, 1997 through October 31, 2002. I use the initial sample to investigate the day-of-the-week (or weekend) predictability and to develop trading strategies. The holdout sample is used to evaluate the risk-adjusted returns of trading strategies and test the market timing models.

Following Varela (2002), I match the fund returns with the returns of foreign indices. This is important because the NAVs of international funds are computed from the closing values of the underlying foreign securities. Since changes in the returns of international funds depend on the changes in the returns of foreign index (because the underlying shares of international funds are located in foreign countries); I match the returns of each market index to the returns of each international fund for the entire sample period. I use the following OLS regression equation to investigate the relationship between a fund and a foreign index.

$$R_{i,t} = \alpha + \beta I_{i,t} + \varepsilon_t \qquad\qquad (7)$$

where $R_{i,t}$ is fund i's return on day t; $I_{i,t}$ is foreign Index i's return on day t; α, β and ε_t are intercept, slope coefficient and error term respectively.

Once the relationship between a fund and a foreign index is established, I then investigate the differences in daily mean returns for a particular foreign index that emerges as the best benchmark index for each international fund category. If the foreign index exhibits the weekend effect, investors may exploit international funds by following the daily market movements of the foreign index. I use the following standard day-of-the-week regression model to examine the degree, to which the daily mean returns of other weekdays are significantly different from Mondays,

$$R_t = \alpha_0 + \sum_{j=1}^{4} \alpha_j D_j + \varepsilon_t \qquad (8)$$

where, R_t is foreign index returns on day t and D_j is dummy variables indicating the day of the week. For example, D takes the value of 1 for a specific day of the week or 0 otherwise (i.e. $j = 1$ for Tuesday, $j = 2$ for Wednesday, $j = 3$ for Thursday, $j = 4$ for Friday). If the return occurs on Friday, $D_4 = 1$ and all other dummies are zero ($D_1 = D_2 = D_3 = 0$). The intercept α_0 represents Monday's mean returns. Coefficients α_1, α_2, α_3 and α_4 represent the differences between the mean returns for a particular day and Monday's mean returns. ε_t is an error term.

I also compute the first-order serial correlations of each foreign index for each pair of days of the week. This is important because mutual fund investors may exploit the higher serial correlations and increase their profit. Monday serial correlation refers to the degree of association between the returns of Friday and the returns of the following Monday. Tuesday serial correlation represents the association between Tuesday's returns and previous Monday's returns. Similarly, I calculate serial correlations for Wednesday, Thursday and Friday. The higher the Monday correlations for foreign indices, the higher the weekend predictability of returns; accordingly investors may follow trading strategies during the weekend to exploit international funds.

3.5. Empirical Results

3.5.1. Relationship between International Mutual Fund and Foreign Index

The slope coefficients, T-statistics and R^2 of the regression equation (7) are presented in Table 13 for individual as well as portfolios of international funds. Since the intercepts of the regression in all cases are extremely low and insignificant, I have not reported them. The results of Table 13 document that all slope coefficients are greater than zero and less than one and significant at one percent level. For example, Morgan Stanley Emerging Market A (MGEMX) fund has a slope coefficient of 0.8735 when the MSCI Emerging market index is used as an independent variable in regression equation (7). The finding refers to a strong same day relationship between MGEMX fund and the MSCI Emerging market index. Moreover, slope coefficient is significant at one percent level and the R^2 of the regression is also high (0.7044).

The results of Table 13 suggest that there is strong relationship between a fund and its corresponding foreign index. The strongest relationship is observed between a (a) Diversified Emerging market fund and the MSCI Emerging market index; (b) Diversified Pacific/Asia fund and the MSCI Pacific Free Index; (c) Europe fund and the MSCI Europe index; (d) Japan fund and all the Japanese indices (especially with the TOPIX 2nd section); (e) Pacific/Asia excluding Japan fund and the MSCI Pacific Free ex Japan index as well as the MSCI Far East Free ex Japan index; (f) Foreign fund and the MSCI Europe, Asia and Far East (EAFE) index (except Fidelity Canada fund which mostly invests in Canadian shares); (g) Latin fund and the MSCI Latin index; (h) World fund and the MSCI World index; and (i) International Hybrid fund and

Table 13: Relationships between International Mutual Funds and Foreign Indices

The table documents the results of regression equation (7): $R_{i,t} = \alpha + \beta I_{i,t} + \varepsilon_t$. Column one lists the ticker symbol of sample funds. The MSCI Emerging Market Free Index, Europe Free Index, EAFE Free Index, and Latin America Free Index are used as benchmark indices for Diversified Emerging Market fund, Europe fund, Foreign fund and Latin America fund respectively. The MSCI Far East Free index and Pacific Free Index are used as benchmark indices for Diversified Pacific/Asia fund. The MSCI Far East Free excluding Japan index and Pacific Free excluding Japan Index are used as benchmark indices for Pacific/Asia excluding Japan fund. The MSCI World Free Index is used as benchmark index for World fund and International Hybrid fund. For Japan fund, the benchmark indices used are the Topix 1st section, the Topix 2nd section and the Nikkei 225. Columns two through four of the table present the slope coefficients, T-statistics of slope coefficients and R-square of the regression respectively. The significance of T-statistics are represented by ***, ** and * for 1%, 5% and 10% respectively. The sample period is from January 4, 1993 through November 28, 1997.

A. Diversified Emerging Market Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
MADCX	0.7429	51.68***	0.6831
MNEMX	0.8247	59.03***	0.7377
MGEMX	0.8735	54.34***	0.7044
TEDMX	0.6517	45.36***	0.6242
Portfolio	0.7732	75.47***	0.8213

B. Diversified Pacific/Asia Fund

Ticker	MSCI Far East Free			MSCI Pacific Free		
	Slope Coefficient	T-Statistics	R-Square	Slope Coefficient	T-Statistics	R-Square
FPBFX	0.5099	32.05***	0.4533	0.5409	32.61***	0.4619
GAPCX	0.4067	5.19***	0.0213	0.4391	5.34***	0.0225
JHWPX	0.4761	27.10***	0.3721	0.5166	28.54***	0.3967
MAPCX	0.6576	51.99***	0.6857	0.6967	53.36***	0.6968
TGRBX	0.4133	20.02***	0.2445	0.4503	21.01***	0.2627
PRPBX	0.4505	32.16***	0.4550	0.4840	33.51***	0.4754
FKPGX	0.3788	21.20***	0.2661	0.4150	22.45***	0.2892
Portfolio	0.4704	28.14***	0.3899	0.5061	29.25***	0.4085

C. Europe Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
ANEAX	0.8770	51.99***	0.6856
DFCSX	0.5758	25.27***	0.3401
DFUKX	0.4110	13.79***	0.1331
FIEUX	0.7213	35.60***	0.5056
FEURX	0.8501	45.43***	0.6248
MBEFX	0.8159	30.07***	0.4219
EUGBX	0.8203	37.17***	0.5272
PEURX	0.7297	34.86***	0.4952
PEUGX	0.7969	36.34***	0.5159
PRESX	0.8396	61.35***	0.7523
VEURX	0.9807	111.80***	0.9098
Portfolio	0.7571	74.30***	0.8167

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Table 13 Continued

D. Japan Fund

Ticker	Topix 1st			Topix 2nd			Nikkei 225		
	Slope Coeff	T-Statistics	R-Square	Slope Coeff	T-Statistics	R-Square	Slope Coeff	T-Statistics	R-Square
DFJSX	0.8204	33.58***	0.4896	0.9405	31.32***	0.4548	0.6367	29.54***	0.4260
SJPNX	0.7124	34.44***	0.5022	0.8727	28.10***	0.4018	0.5462	29.57***	0.4264
PRJPX	0.7673	35.67***	0.5197	0.8474	24.50***	0.3380	0.6033	31.92***	0.4642
VPACX	0.8630	53.02***	0.7051	0.8258	24.85***	0.3442	0.6686	43.00***	0.6113
Portfolio	0.7908	44.77***	0.6303	0.9072	30.54***	0.4423	0.6137	37.79***	0.5483

E. Pacific/Asia ex. Japan Fund

Ticker	MSCI Far East Free Ex. Japan			MSCI Pacific Free Ex. Japan		
	Slope Coefficient	T-Statistics	R-Square	Slope Coefficient	T-Statistics	R-Square
EVCGX	0.9412	56.04***	0.7171	0.9568	52.01***	0.6859
CNTTX	0.8728	20.97***	0.2619	0.8974	21.32***	0.2684
MBDRX	0.9440	84.78***	0.8530	0.9604	74.44***	0.8173
MSAEX	0.9041	68.96***	0.7933	0.8834	53.89***	0.7010
PRASX	0.8718	69.78***	0.7972	0.8945	65.67***	0.7768
Portfolio	0.9468	70.99***	0.8027	0.9448	64.68***	0.7715

F. Foreign Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
AEIGX	0.7247	35.47***	0.5038
AIIEX	0.6514	40.33***	0.5677
AAIEX	0.6011	35.18***	0.4997
TWIEX	0.5429	22.25***	0.2855
AEPGX	0.5239	31.53***	0.4452
INIFX	0.7748	31.66***	0.4472
BAINX	0.6631	43.38***	0.6030
SNIVX	0.6604	42.97***	0.5985
PNINX	0.7096	48.15***	0.6518
CWVGX	0.6069	38.46***	0.5441
NEFIX	0.7822	50.10***	0.6695
CMISX	0.7080	42.57***	0.5939
TIEUX	0.8754	55.21***	0.7110
RBIEX	0.6431	35.35***	0.5022
DRGLX	0.4634	18.13***	0.2096
NIEAX	0.9672	111.05***	0.9087
ENIGX	0.6570	27.07***	0.3716
UMINX	0.6960	47.51***	0.6457
FTITX	0.6999	33.87***	0.4808
FAERX	0.6320	37.20***	0.5276
FICDX	0.1351	2.58**	0.0053
	0.6593 (with Canada TSE)	11.08***	0.0919
FDIVX	0.5532	33.17***	0.4704
FIGRX	0.5410	34.87***	0.4954
FOSFX	0.6379	36.37***	0.5164
KNINX	0.7669	49.91***	0.6678
GAMNX	0.5505	16.97***	0.1886

Table 13 Continued

F. Foreign Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
GSIFX	0.5658	28.69***	0.3992
HAINX	0.6352	33.16***	0.4702
IVINX	0.6100	32.80***	0.4647
ACINX	0.4113	31.30***	0.4416
CONAX	0.3042	12.61***	0.1137
MSACX	0.6955	36.19***	0.5139
MSIQX	0.6495	33.10***	0.4693
MUIYX	0.4924	23.97***	0.3169
OAKIX	0.4239	12.09***	0.1055
PHITX	0.5987	23.97***	0.3169
PFIFX	0.5194	26.07***	0.3542
PRWLX	0.5413	30.15***	0.4232
SCIEX	0.6678	22.95***	0.2983
SCINX	0.6940	43.84***	0.6080
SEITX	0.6849	31.24***	0.4406
SNGRX	0.6385	38.72***	0.5476
SBIEX	0.5728	33.77***	0.4793
STISX	0.5234	27.14***	0.3728
PRFEX	0.7004	48.79***	0.6577
PRIDX	0.4736	30.34***	0.4263
PRITX	0.7009	44.95***	0.6199
TEMFX	0.3920	18.67***	0.2196
FINEX	0.4449	20.66***	0.2562
USIFX	0.5883	37.45***	0.5310
VTRIX	0.7734	30.35***	0.4265
VWIGX	0.7441	56.10***	0.7169
VNEPX	0.6459	34.75***	0.4936
UNCGX	0.5813	19.60***	0.2367
SRIGX	0.6654	43.01***	0.5989
WIBCX	0.5635	32.50***	0.4602
Portfolio	0.6120	58.27***	0.7326

G. Latin America Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
MBLTX	0.8087*	89.73	0.8666

H. World Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
GSCAX	0.6646	15.38***	0.1604
ANWPX	0.7405	33.78***	0.4794
SMCWX	0.5675	17.72***	0.2022
AHERX	0.7405	8.23***	0.0518
IGLGX	0.7224	30.02***	0.4211
FWWGX	0.6645	32.25***	0.4563
EGLBX	0.8087	23.16***	0.3020
FWWFX	0.6400	32.50***	0.4603
FIISX	0.8205	31.44***	0.4437
GAGLX	0.5279	1.91*	0.0029

Table 13 Continued

H. World Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
FGLOX	0.9398	28.78***	0.4007
MCGLX	0.6776	23.77***	0.3132
JAWWX	0.6984	28.36***	0.3937
LAGEX	0.7190	32.20***	0.4556
MWEBX	0.6643	24.88***	0.3332
OPPAX	0.6812	18.56***	0.2176
OPGIX	0.5776	20.51***	0.2534
QVGLX	0.7569	31.78***	0.4490
NWWOX	0.8116	22.59***	0.2917
PRGLX	0.8436	32.97***	0.4673
PEQUX	0.8009	37.52***	0.5319
SGSCX	0.6203	29.74***	0.4166
SCOBX	0.7294	38.94***	0.5504
TECAX	0.6201	6.04***	0.0286
TEGOX	0.6727	24.45***	0.3254
TEMGX	0.5008	18.44***	0.2154
TEPLX	0.6017	18.58***	0.2179
TEMWX	0.6752	17.42***	0.1968
USAWX	0.7715	45.24***	0.6229
Portfolio	0.6986	39.37***	0.5558

I. International Hybrid Fund

Ticker	Slope Coefficient	T-Statistics	R-Square
CAIBX	0.4532	29.40***	0.4109
BPGLX	0.3303	15.75***	0.1668
SGENX	0.2948	16.94***	0.1881
FMAFX	0.5446	22.96***	0.2985
MALOX	0.3374	16.79***	0.1854
MFWTX	0.4952	27.58***	0.3804
Portfolio	0.4092	38.35***	0.5428

the MSCI World index.[61]

For the US-based Japan mutual funds, three Japanese indices are used separately as independent variables in regression equation (7). The highest slope coefficients are found when

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[61] Table 13 documents the strongest relationship between a fund and its corresponding foreign index. As discussed in sub-section 3.4.3., all of the sample international funds, except Japan funds, invest in more than one country or region. As a result, I use foreign index (in regression equation 7) from countries or regions, where the sample funds have significant portfolio shares. Table B-1 of Appendix reports the results. A comparison between Table 13 and Table B-1 of appendix reveals that most of the international funds have strong relationship with their corresponding MSCI indices. Even though some of the international funds have significant portfolio shares in a single country, but regression coefficients results in Table B-1 of appendix document that the relationship between fund and the market index from a relevant country is far less than that of for the relevant MSCI index.

the TOPIX 2nd section is used as an independent variable. However, the R^2 of the regression is relatively higher when the TOPIX 1st section and the Nikkei 225 indices are used. To develop trading strategies for Japan funds, TOPIX 2nd index is used because it has the strongest relationship with Japan funds.

For Diversified Pacific/Asia funds, I use both the MSCI Far East free and the MSCI Pacific free Index because both indices hold portfolios of shares from countries where Diversified Pacific/Asia funds in generally invest. For similar reason, both the MSCI Far East free ex. Japan index and the MSCI Pacific Free ex. Japan index are used as independent variable in regression equation (7) for Pacific/Asia ex. Japan funds. The slope coefficients and R^2 of the regression for Diversified Pacific/Asia funds in equation (7) are higher when the MSCI Pacific free index is used as an independent variable; however the MSCI Pacific free index provides the highest slope coefficients and R^2 values. Both the MSCI Far East free ex. Japan index and the MSCI Pacific free ex. Japan index provide high slope coefficients and R^2 values; however the MSCI Pacific free ex. Japan index provides the highest slope coefficients and the MSCI Far East free index provides the highest R^2 values. The MSCI Pacific free index and the MSCI Pacific free ex. Japan index are used to develop trading strategies for Diversified Pacific/Asia funds and Pacific/Asia ex. Japan funds respectively.

I use the foreign indices that provide the highest slope coefficients to investigate the day-of-the-week predictability and to develop trading strategy to exploit international funds. As mentioned earlier, for trading strategies, I only use the foreign indices, which has the strongest relationship (the highest slope coefficient) with each fund category.

3.5.2. The Day-of-the-Week Effects in Foreign Indices

The day-of-the-week regression results of equation are reported in Table 14. According to calendar time hypothesis developed by French (1980), investors should earn returns of at least 3 times on Monday because capital is invested for three days (Friday close to Monday close) and investors also bear more uncertainties and risks during the weekend. As opposed to calendar time hypotheses, Table 14 documents evidence of negative Monday effect for many foreign indices, but not for all. Table 14 also reveals that there are differences in the daily mean returns between Mondays and non-Monday days of the week. According to trading time hypothesis, stock returns are generated only in trading hours (i.e. mean overnight returns should be zero). This implies that there is no day-of-the-week effect i.e. the alpha coefficients in equation (8) are not significantly different from zero. The F-value from equation (8) measures the joint significance of the coefficients and a significant F-value would reject the hypothesis that returns are equal across days. Empirical results of Table 14 reject the trading time hypothesis as there are differences in daily mean returns. F-values are also statistically significant for some indices (though not for all). These differences in returns appear large enough to be potentially exploitable for international funds. For example, negative Monday returns are observed for the MSCI Emerging Market, MSCI Pacific, MSCI Far East, MSCI Latin and all Japanese Indices. Monday returns are also the lowest for the MSCI EAFE index. Since the returns of the Emerging market funds are positive on non-Monday days of the week, it suggests that investors might have incentives to be in international funds without Monday effect over the weekend and in Emerging markets in other days of the week.

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Table 14: Day-of-the-week Effects in Foreign Indices

This table reports the results of day-of-the-week regression equation (8): $R_t = \alpha_0 + \sum_{j=1}^{4} \alpha_j D_j + \varepsilon_t$. Column one reports names of the Foreign Index. Columns two through six document the coefficient values of the regression. D_1 through D_4 represent the dummy variables for non-Monday weekdays. Column seven reports the F-test values to test the joint significance of the coefficients. Coefficient α_0 measures the mean Monday return, and α_1 through α_4 measure the difference in returns between other weekday and Monday. $\alpha_0 + \alpha_1$, $\alpha_0 + \alpha_2$, $\alpha_0 + \alpha_3$, and $\alpha_0 + \alpha_4$ are the actual mean returns on Tuesday, Wednesday, Thursday and Friday respectively. Significance level at the 1%, 5% and 10% level are denoted by ***, ** and * respectively. The sample period is from January 4, 1993 through November 28, 1997.

Indices	α_0	α_1	α_2	α_3	α_4	F-Test
	(Mon)	(Tue)	(Wed)	(Thu)	(Fri)	
MSCI Emerging	-0.1418***	0.1632**	0.2479***	0.1227*	0.2660***	4.1150***
MSCI Pacific	-0.0535	0.0574	0.0837	0.0821	0.0706	0.2329
MSCI Far East	-0.0577	0.0658	0.0832	0.0830	0.0728	0.2144
MSCI Europe	0.0782*	-0.0205	0.0085	-0.0615	-0.0156	0.3825
MSCI EAFE	0.0116	0.0269	0.0506	0.0185	0.0303	0.1552
MSCI Latin	-0.1896*	0.3403**	0.2463*	0.1832	0.4033***	2.3526*
MSCI Far East Ex. Japan	-0.0811	0.0340	0.2688***	-0.0355	0.1648*	3.1969**
MSCI Pacific Ex. Japan	-0.0346	-0.0027	0.2079**	-0.0579	0.1258	2.5486**
MSCI World	0.0498	0.0413	0.0041*	-0.0350	-0.0078	0.6058
Japan Topix 1st	-0.1680**	0.2117**	0.1915*	0.2281**	0.1729**	1.5419
Japan Topix 2nd	-0.1975***	0.1453*	0.2161***	0.2620***	0.2171***	3.6486***
Nikkei 225	-0.1815**	0.2648**	0.2228*	0.2567***	0.1331	1.5745

Note: All of the MSCI indices used in this Table are the MSCI free indices.

The day of the week effect can usually not be exploited for individual stocks because of risks and transactions costs. However, Miller, Prather and Mazumder (2003) document that mutual fund can be exploited by following daily dynamic trading strategies. Many mutual funds can be traded without transactions costs. Mutual funds invested in retirement accounts are real transactions-free and investors may realize the gains from the day-of-the-week (or weekend) trading strategy if they invest in tax-sheltered retirement funds and annuities. Empirical results of Table 14 suggest that the weekend effect can be exploited using international mutual funds.

3.5.3. First Order Serial Correlations in Foreign Indices

Table 15 reports the first order serial correlations in foreign indices. The results of serial correlations suggest that the weekend serial correlations are higher for some of the indices, which can potentially be exploitable. The last column of Table 15 also shows that most of the foreign indices used in this study exhibit positive first-order serial correlations.

The first order serial correlations in returns for foreign indices are in generally higher and statistically significant for Friday-Monday pair. For example, the highest serial correlations for the MSCI Emerging market, MSCI Pacific Asia excluding Japan and MSCI World indices are found for Friday-Monday pair (i.e. Monday serial correlation). Monday serial correlations are also higher for other indices. The weekend serial correlations are also economically significant since investors can exploit them. The implication of higher serial correlations is that if Friday's return is up (down), the returns on the following Monday will also be up (down).

Investors may use the knowledge of serial correlations in foreign indices to form trading strategies. Investors require watching the market and being able to make decisions based on the

Table 15: First Order Serial Correlations in Foreign Indices

This table documents serial correlations in daily returns of foreign indices. Column one reports the names of the Foreign Index. Column two through six document serial correlations for Monday, Tuesday, Wednesday, Thursday and Friday respectively. Monday serial correlation refers to the degree of association between the returns of Friday and the returns of the following Monday. Tuesday serial correlation represents the association between Tuesday returns and previous Monday returns. Similarly, serial correlations are calculated for Wednesday, Thursday and Friday. Column seven presents serial correlations for all days. Significance level at the 1%, 5% and 10% level are denoted by ***, ** and * respectively. The sample period is from January 4, 1993 through November 28, 1997.

Indices	Mon	Tue	Wed	Thu	Fri	All Days
MSCI Emerging	0.4634***	0.2461***	0.2710***	0.3312***	-0.0284	0.2845***
MSCI Pacific	-0.0066	-0.1307**	-0.1565**	0.0574	-0.0346	-0.0162
MSCI Far East	-0.0151	-0.1426**	-0.1480**	0.0487	-0.0259	-0.0197
MSCI Europe	0.0756	0.0380	0.0894	0.0131	0.1155	0.0514*
MSCI EAFE	0.0637	-0.0468	-0.0548	0.0801	0.0521	0.0383
MSCI Latin	0.3281***	-0.0658	0.1855***	0.3385***	-0.1052	0.1522***
MSCI Far East Ex. Japan	0.2850***	0.1210	-0.1000	0.3061***	-0.2013***	0.1459***
MSCI Pacific Ex. Japan	0.2487***	0.0747	-0.1413**	0.2037***	-0.2297***	0.0875***
MSCI World	0.2784***	-0.0476	0.2264***	0.1279**	-0.0165	0.1669***
Japan Topix 1st	0.0703	-0.0962	-0.0152	0.0269	0.2386***	0.0417
Japan Topix 2nd	0.4368***	0.2487***	0.4250***	0.3759***	0.5249***	0.3892***
Nikkei 225	-0.0561	-0.1170	-0.1119	-0.1358***	0.0680	-0.0610**

Note: All of the MSCI indices are the MSCI Free Indices.

same days' foreign index (data) value. However, some investors may not able to do that. For instance, some annuities and retirement accounts have started penalizing frequent traders by requiring them to place order by mail. This kills a serial correlation trading strategy based on the indices (however, investors who follow a calendar pattern trading strategy may send orders by mail and use calendar day trading strategy). If foreign indices are serially correlated, the wealth maximizing trading strategy is close to be in international funds if the day before was up; otherwise be out from international funds. The next subsection proposes the trading strategies based on the empirical results of the day-of-the-week effects and serial correlations in foreign indices.

3.5.4. *Development of Trading Strategies*

Table 13 reports the same-day strong relationship between an international fund and its corresponding foreign index; this otherwise implies that changes in the returns of an international fund depend on the changes in the returns of its corresponding foreign index. Based on the day-of-the-week mean returns results of Table 14 and serial correlations results of Table 15 for foreign indices, this study proposes several trading strategies: (1) following French (1980), Kim (1988), Chow, Hsiao and Solt (1997) and Compton and Kunkel (1999), I propose a ***simple weekend trading strategy (strategy 1)*** that allows investors of an international fund to shift their money into a money market fund on Friday to avoid negative Monday return and then switch back into the risky international fund on Monday. This is similar to selling international funds on Fridays as foreign indices historically exhibit high returns on Fridays and buying international funds on Mondays as foreign indices historically exhibit low returns on Mondays; (2) following

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Miller, Prather and Mazumder (2003), I follow a **complex trading strategy (strategy 2)** that allows investors of an international fund to shift their money into a money market fund on day(s) of the week when its underlying foreign index historically exhibits negative (or the lowest) mean returns and then switch back into the risky international fund on day(s) when the foreign index historically exhibits positive mean returns; (3) since most of the foreign indices exhibit higher serial correlations during the weekend, I also propose a **restricted weekend trading strategy (strategy 3)** that allows investors of an international fund to sell the fund (and shift their investment into a money market fund) on Fridays if the foreign index return on Fridays is down or hold an international fund on Fridays if the foreign index return on Fridays is up.[62] Money market fund is considered as an alternative parking investment under all three trading strategies proposed. In all cases, switching to a money market fund allows investors to enjoy the low but less-risky returns.

Table 16 presents the proposed trading strategies. Strategy 1 and 3 are common trading strategies applied to all categories of international funds. Strategy 2 is a complex and conservative trading strategy that allows investors to escape the negative mean returns of the funds for day(s) of the week with negative returns. For example, investors of a Diversified

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[62] Bessembinder and Hertzel (1993), Boudoukh, Richardson and Whitelaw (1994) and Safvenblad (2000) document that the autocorrelations are significantly higher between Friday and Monday returns. The weekend serial correlation can not be explained by non-synchronous trading since information generated during the weekend is incorporated in stock prices on Monday morning. A strong weekend serial correlation implies that investors would more likely to close their positions before the weekend (i.e. on Friday afternoon), when they risk a weekend nontrading and possible losses. Probably the best strategy would be investing in international funds if serial correlations are the highest for any pair of the days of the week and of course if foreign index returns are up on the earliest day of any pair; otherwise sell international funds if the index returns on the earliest day are down. For example, most benchmark indices exhibit the highest serial correlations during the weekends (Friday – Monday pair). This implies a restricted weekend trading strategy (i.e. strategy 3). However, not all indices exhibit the highest serial correlations during the weekends (for example, the highest serial correlations for the MSCI Pacific index are observed for Wed – Thu pair). Probably investors of Diversified Pacific/Asia funds should hold funds if Wednesday's returns are up and sell funds if Wednesday's returns are down. But for simplicity, I follow a common restricted weekend trading strategy (strategy 3) for all categories of international funds.

Emerging market fund would likely switch into money market funds to avoid negative returns on Mondays and Thursdays because the MSCI Emerging index displayed negative returns on Mondays and Thursdays. Investors of Diversified Emerging market funds would be out of a Diversified Emerging market fund on Monday and Thursdays and would hold the Diversified Emerging market fund on Tuesdays, Wednesdays and Fridays. It should be noted here that trading strategy 1 and 2 are similar for Diversified Pacific/Asia fund and Foreign fund because investors are out of these two funds during the weekend under both trading strategies.

Table 15 exhibits that most of the foreign indices exhibit positive first-order serial correlations. It was also reported in Table 2 of Chapter Two of this dissertation that most of the sample funds exhibit statistically significant positive serial correlations. Besides Table 5 of Chapter Two of this dissertation also documents positive cross-correlations between sample funds and their benchmarked foreign indices. The positive serial correlation in mutual funds refers that if the NAV of a fund went up one day, it was more likely to go up the next day (or if the NAV goes down one day, it is more likely to go down the next day). Since funds and their benchmarked foreign indices have strong same day positive relationships (Table 13) and funds and their benchmarked indices have positive cross-correlations (Table 5 of Chapter 2), the results in turn suggest that buying on an up move in a foreign index should be profitable for the US-based international mutual funds. In other words, based on the observed first-order serial correlations of Table 15, I also propose a ***Serial Correlation Trading Strategy*** that suggests to be in (i.e. buy-and-hold) the US-based international mutual funds on days when the fund's benchmarked index is up and to be out of (i.e. sell) the international funds on days when the fund's benchmarked index is down. One important limitations of the proposed serial correlation

Table 16: Trading Strategies for International Mutual Funds

This table presents the proposed trading strategies. Column one lists the sample fund categories. Column two presents trading strategy 1 (simple weekend trading strategy) applicable to all categories of international mutual funds. Column two presents trading strategy 2 (a complex trading strategy). Column 2 is divided into two sub-columns: sub-column one lists the days of the week when an investor of a particular fund category will be in the fund whereas sub-column two lists the day(s) of the week when an investor will be out of the international mutual fund (alternatively will be in the money market fund). Column three lists trading strategy 3 (restricted weekend trading strategy) applicable to all sample international fund categories.

Fund Categories		Strategy 1 (Simple Weekend Trading Strategy)	Strategy 2 (Complex Trading Strategy)		Strategy 3 (Restricted Weekend Trading Strategy)
			Days In-international Fund	Days Out-of-international-Fund	
Diversified Emerging		Sell international funds on Friday and shift investment to a money market fund; then shift investment to an international fund on Monday from money market fund.	Tue, Wed, Fri	Mon, Thu	Sell international Funds and shift investment to a Money market fund on Fridays if Friday returns of foreign indices are down; If Friday foreign index returns are high, then hold international funds
Diversified Pacific/Asia			Tue, Wed, Thu, Fri	Mon	
Europe			Mon, Tue, Wed, Fri	Thu	
Japan	Signal: Topix 1st		Tue, Wed, Thu, Fri	Mon	
	Signal: Topix 2nd		Wed, Thu, Fri	Mon, Tue	
	Signal: Nikkei 225		Tue, Wed, Thu	Mon, Fri	
Pacific/Asia Ex Japan			Wed, Fri	Mon, Tue, Thu	
Foreign			Tue, Wed, Thu, Fri	Mon	
Latin			Tue, Wed, Fri	Mon, Thu	
World			Mon, Tue, Wed, Fri	Thu	
International Hybrid			Mon, Tue, Wed, Fri	Thu	

Note: For Diversified Pacific/Asia and Foreign funds, trading strategy 1 and trading strategy 2 are similar because Monday is the only day documenting either negative or the lowest returns for the MSCI Pacific Free Index and MSCI EAFE Free index.

trading strategy is that investors may not make many trades that a serial correlations trading strategy requires and fund companies eventually may restrict investors. Varela (2002) uses foreign indices to form trading rule for Japan, China, and New Zealand funds; however I extend his work by examining and proposing trading strategies, based on the serial correlations in foreign indices, not only Asia-Pacific funds but also other categories of international funds.

3.5.5. Returns and Risks of Trading Strategies

The daily mean returns and standard deviations (risks) of buy-and-hold and the proposed trading strategies 1 (simple weekend strategy), 2 (complex strategy) and 3 (restricted weekend strategy) of this study are reported in Table 17. The results of Table 17 suggest that higher returns are achieved from the trading strategies. In generally, the proposed trading strategies 1, 2 and 3 provide higher daily mean returns than the buy-and-hold daily mean returns. However, trading strategy 1 and trading strategy 3 (both forms of weekend trading strategies) emerge as the most profitable trading strategies for international mutual funds. This is an extremely important result because under both strategies investors are out of the risky investment over the weekend and Monday. This is also a strong evidence that the weekend effect is stronger, and therefore more exploitable, than the other, possibly more transitory, days of the week.

More specifically, trading strategy 2 and strategy 3 provide higher daily mean returns and lower daily standard deviations for Diversified Emerging Market funds. On a portfolio basis strategy 2 provides the highest daily mean returns and the lowest daily mean standard deviations for Diversified Emerging Market funds. On individual fund basis, the results are mixed. The daily mean returns and risks of Merrill Lynch Dev Cap Market A (MADCX) fund are –0.0318%

and 1.3224% respectively for buy-and-hold investors. But investors may increase the daily mean returns and reduce the daily average risks of MADCX fund by following all of the proposed trading strategies. However, the daily mean returns of MADCX fund are the highest (0.0436%) and the daily mean standard deviations are the lowest (0.9606%) for trading strategy 2. Similar results are found for Montgomery Emerging Market R (MNEMX) fund following strategy 2. For Morgan Stanley Institutional Emerging Market A (MGEMX) and Templeton Developing Market A (TEDMX) funds, the highest daily mean returns are observed when investors follow trading strategy 3. However the lowest daily average risks for both MGEMX and TEDMX funds are found for strategy 2 because investors need to be out of these two funds more often under trading strategy 2.

Trading strategy 1 (i.e. simple weekend strategy) provides the highest daily mean returns and the lowest daily average risks for Diversified Pacific/Asia funds both on portfolio and individual fund basis. The daily mean returns and risks of Diversified Emerging Market fund portfolio are –0.0310% and 1.3295% respectively for buy-and-hold investors. The daily mean returns are increased and risks are reduced for Diversified Emerging Market fund portfolio following strategy 1. On individual fund basis, for example, the buy- and-hold daily mean returns and risks of Fidelity Pacific Basin (FPBFX) fund are –0.0014% and 1.3893% respectively. However, strategy 1 generates higher daily mean returns (0.0490%) and lower daily average risks (1.1799%) for FPBFX fund.

Trading strategy 3 (restricted weekend strategy) provides the highest daily mean returns for most of the Europe, Foreign, World and International Hybrid funds. On a portfolio basis, for example, the daily mean returns of portfolios of Europe, Foreign, World and International Hybrid funds are –0.0421%, –0.0380%, –0.0413% and –0.0209% respectively. But trading

Table 17: Returns and Risks of Buy-and-hold and the Proposed Trading Strategies 1, 2, and 3

This table presents the returns and risks of buy-and-hold, trading strategy 1 (*simple weekend strategy*), trading strategy 2 *(complex strategy)*, and trading strategy 3 *(restricted weekend strategy)*. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations (SD) of returns of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of trading strategy 1; Columns six and seven present mean daily returns and standard deviations of returns of trading strategy 2; and Columns eight and nine present mean daily returns and standard deviations of returns of trading strategy 3. The significance level of t-statistics (to test the differences in mean returns between buy-and-hold and trading strategies) and F-statistics (to test differences in mean variances between buy-and-hold and trading strategies) are presented at 1% (***), 5% (**) and 10% (*) level respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
MADCX	-0.0318%	1.3224%	0.0267%***	1.1214%***	0.0436%***	0.9606%***	0.0388%***	1.2276%***
MNEMX	-0.0424%	1.3434%	0.0026%**	1.1537%***	0.0305%***	0.9815%***	0.0258%***	1.2613%**
MGEMX	-0.0318%	1.4658%	0.0183%**	1.2319%***	0.0417%***	1.0706%***	0.0442%***	1.3493%*v
TEDMX	-0.0319%	1.3084%	0.0102%**	1.1037%***	0.0209%**	0.9607%***	0.0263%***	1.1974%***
Portfolio	-0.0345%	1.2831%	0.0145%**	1.0785%***	0.0342%***	0.9176%***	0.0338%***	1.1857%***

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)				Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD			Mean Daily Returns	Mean Daily SD
FPBFX	-0.0014%	1.3893%	0.0490%**	1.1799%***			0.0344%***	1.3004%***
GAPCX	-0.0389%	1.4254%	0.0002%*	1.2317%***			-0.0101%**	1.3305%***
JHWPX	-0.0147%	1.3235%	0.0426%***	1.1049%***			0.0251%***	1.2464%**
MAPCX	-0.0347%	1.4110%	0.0137%**	1.1635%***			-0.0036%*	1.2539%***
TGRBX	-0.0294%	1.3397%	0.0304%***	1.1354%***			0.0071%***	1.2460%***
PRPBX	-0.0471%	4.2347%	0.0733%	3.1439%***			-0.0169%***	4.2208%
FKPGX	-0.0512%	1.2696%	0.0095%***	1.0808%***			-0.0121%***	1.1811%***
Portfolio	-0.0310%	1.3295%	0.0312%***	1.0989%***			0.0034%***	1.2602%**

Table 17 Continued

C. Europe Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
ANEAX	-0.0414%	1.5057%	-0.0228%	1.3541%***	-0.0164%	1.3261%***	-0.0113%**	1.4258%**
DFCSX	-0.0511%	1.1944%	-0.0272%**	1.1311%**	-0.0544%	1.1381%**	-0.0212%***	1.1718%
ANEAX	-0.0414%	1.5057%	-0.0228%	1.3541%***	-0.0164%	1.3261%***	-0.0113%**	1.4258%**
DFCSX	-0.0511%	1.1944%	-0.0272%**	1.1311%**	-0.0544%	1.1381%**	-0.0212%***	1.1718%
DFUKX	-0.0592%	1.1280%	-0.0474%	1.0839%*	-0.0684%	1.0841%*	-0.0420%***	1.1059%
FIEUX	-0.0443%	1.3766%	0.0019%**	1.1530%***	-0.0373%	1.2401%***	-0.0150%**	1.3002%**
FEURX	-0.0666%	1.7461%	0.0167%*	1.4500%***	-0.0524%	1.5769%***	-0.0057%***	1.5394%***
MBEFX	-0.0495%	1.5844%	-0.0333%	1.4713%***	-0.0398%	1.4695%***	-0.0269%**	1.5311%
EUGBX	-0.0418%	1.5714%	-0.0250%	1.4310%***	-0.0258%	1.4116%***	-0.0208%*	1.5016%*
PEURX	-0.0289%	1.3817%	-0.0122%	1.2263%***	-0.0123%	1.2239%***	0.0010%**	1.3063%**
PEUGX	-0.0280%	1.3644%	0.0014%	1.1902%***	-0.0099%	1.2208%***	0.0062%**	1.2654%***
PRESX	-0.0370%	1.3908%	-0.0200%	1.2366%***	0.0033%**	1.1935%***	-0.0139%*	1.3108%**
VEURX	-0.0152%	1.3483%	0.0021%	1.1929%***	0.0055%	1.2028%***	0.0052%	1.2647%**
Portfolio	-0.0421%	1.1558%	-0.0181%	1.0187%***	-0.0280%	1.0319%***	-0.0131%***	1.0865%**

D. Japan Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
DFJSX	-0.0193%	1.5653%	0.0073%	1.3665%***	0.0040%	1.1761%***	0.0176%**	1.4840%**
SJPNX	-0.0195%	1.7005%	0.0202%*	1.5087%***	0.0106%	1.3300%***	0.0249%***	1.6123%**
PRJPX	-0.0320%	1.6781%	0.0080%*	1.5069%***	-0.0010%	1.3269%***	0.0043%**	1.6020%*
VPACX	-0.0278%	1.5067%	0.0207%**	1.3452%***	0.0187%*	1.1931%***	0.0001%**	1.4396%*
Portfolio	-0.0246%	1.4668%	0.0140%*	1.2938%***	0.0081%	1.1292%***	0.0117%***	1.3917%**

Table 17 Continued

E. Pacific/Asia ex. Japan Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
EVCGX	-0.0309%	1.7032%	0.0432%***	1.3927%***	0.0428%*	1.0280%***	0.0276%***	1.6057%**
CNTTX	-0.0088%	1.7435%	0.0485%**	1.4490%***	0.0603%*	1.0654%***	0.0396%***	1.6436%**
MBDRX	-0.0470%	1.7022%	0.0491%***	1.3111%***	0.0443%**	0.9987%***	0.0286%***	1.4980%***
MSAEX	-0.0237%	1.6030%	0.0631%***	1.3143%***	0.0656%**	0.9751%***	0.0326%***	1.5161%**
PRASX	-0.0025%	1.5777%	0.0791%***	1.3129%***	0.0701%**	1.0055%***	0.0445%***	1.4933%**
Portfolio	-0.0226%	1.5740%	0.0548%***	1.2835%***	0.0566%**	0.9656%***	0.0346%***	1.4761%**

F. Foreign Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)				Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD			Mean Daily Returns	Mean Daily SD
AEIGX	-0.0742%	1.5644%	-0.0335%	1.2907%***			-0.0182%**	1.3577%***
AIIEX	-0.0220%	1.2165%	0.0026%	1.0702%***			0.0180%***	1.1404%**
AAIEX	-0.0268%	1.0590%	0.0018%**	0.9376%***			0.0076%***	1.0019%**
TWIEX	-0.0285%	1.3708%	0.0191%**	1.0789%***			0.0319%***	1.1618%***
AEPGX	-0.0143%	1.0919%	0.0106%*	0.9544%***			0.0234%***	1.0207%***
INIFX	-0.0601%	1.4149%	-0.0283%	1.2061%***			-0.0236%***	1.3502%*
BAINX	-0.0394%	1.1035%	-0.0111%*	0.9567%***			-0.0035%***	1.0368%**
SNIVX	-0.0284%	1.0914%	-0.0073%	0.9827%***			-0.0003%***	1.0429%*
PNINX	-0.0492%	1.2633%	-0.0260%	1.1440%***			-0.0124%***	1.2044%**
CWVGX	-0.0371%	1.1629%	-0.0063%*	1.0136%***			0.0023%***	1.1004%**
NEFIX	-0.0271%	1.1994%	-0.0048%	1.0569%***			0.0100%***	1.1353%**
CMISX	-0.0343%	1.2144%	0.0107%**	0.9817%***			0.0046%***	1.1593%*
TIEUX	-0.0363%	1.2201%	-0.0034%*	1.0015%***			0.0147%***	1.0736%***
RBIEX	-0.0844%	1.6449%	-0.0319%	1.1925%***			-0.0463%***	1.5985%
DRGLX	-0.0826%	1.6488%	-0.0300%*	1.2358%***			-0.0415%***	1.5966%
NIEAX	-0.0603%	1.4516%	-0.0329%*	1.3498%***			-0.0224%***	1.4005%
ENIGX	-0.0444%	1.2462%	-0.0160%*	1.0978%***			-0.0060%***	1.1769%**
UMINX	-0.0365%	1.1611%	-0.0145%	1.0120%***			0.0031%***	1.0944%**

Table 17 Continued

F. Foreign Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)	Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD		Mean Daily Returns	Mean Daily SD
FTITX	-0.0352%	1.3017%	-0.0109%	1.1566%***		0.0051%***	1.2364%**
FAERX	-0.0337%	1.2324%	0.0077%**	1.0494%***		0.0066%***	1.1582%**
FICDX	-0.0023%	1.2627%	0.0182%	1.1036%***		0.0228%*	1.1723%***
FDIVX	-0.0023%	0.9626%	0.0270%*	0.8185%***		0.0326%***	0.9012%**
FIGRX	-0.0179%	1.1354%	0.0236%**	0.9318%***		0.0197%***	1.0686%**
FOSFX	-0.0339%	1.2513%	0.0100%**	1.0491%***		0.0055%***	1.1811%**
KNINX	-0.0381%	1.1456%	-0.0014%**	1.0137%***		0.0059%***	1.0751%**
GAMNX	-0.0633%	1.1455%	-0.0285%**	1.0074%***		-0.0320%***	1.0807%**
GSIFX	-0.0433%	1.2583%	-0.0135%*	1.1113%***		-0.0027%***	1.1742%***
HAINX	-0.0243%	1.1808%	-0.0023%	1.0478%***		0.0061%***	1.1168%**
IVINX	-0.0698%	1.4221%	-0.0359%**	1.2992%***		-0.0306%***	1.3665%*
ACINX	-0.0212%	1.1016%	0.0166%**	0.8723%***		0.0353%***	0.9541%***
CONAX	-0.0543%	1.2062%	-0.0351%	1.1022%***		-0.0173%***	1.1514%*
MSACX	-0.0380%	1.1313%	-0.0194%	1.0193%***		-0.0091%***	1.0790%**
MSIQX	-0.0213%	1.1733%	0.0014%*	1.0727%***		0.0054%***	1.1346%
MUIYX	-0.0370%	1.2390%	-0.0121%	1.1077%***		-0.0054%***	1.1719%**
OAKIX	-0.0020%	1.0669%	0.0330%*	0.8512%***		0.0467%***	0.9356%***
PHITX	-0.0591%	1.3587%	-0.0309%	1.2094%***		-0.0272%***	1.2968%*
PFIFX	-0.0297%	1.1863%	-0.0090%	1.0743%***		0.0020%***	1.1470%
PRWLX	-0.0493%	1.1440%	-0.0279%	1.0246%***		-0.0111%***	1.0772%**
SCIEX	-0.0979%	2.0448%	-0.0648%*	1.9569%*		-0.0559%***	1.9956%
SCINX	-0.0409%	1.2615%	-0.0215%	1.1346%***		-0.0052%***	1.1984%**
SEITX	-0.0201%	1.1589%	0.0076%*	1.0146%***		0.0211%***	1.0883%**
SNGRX	-0.0533%	1.3328%	-0.0244%*	1.1917%***		-0.0143%***	1.2664%**
SBIEX	-0.0577%	1.3789%	-0.0347%	1.2619%***		-0.0210%***	1.3285%*
STISX	-0.0380%	1.4195%	-0.0104%	1.2652%***		0.0037%***	1.3451%**
PRFEX	-0.0353%	1.2384%	-0.0108%	1.0939%***		0.0012%***	1.1642%**
PRIDX	-0.0015%	1.2128%	0.0235%	1.0879%***		0.0398%***	1.1483%**
PRITX	-0.0375%	1.2400%	-0.0129%	1.0960%***		-0.0007%***	1.1665%**
TEMFX	-0.0166%	0.9423%	0.0179%***	0.8189%***		0.0197%***	0.8848%**
FINEX	-0.0142%	0.8438%	0.0144%**	0.7170%***		0.0216%***	0.7806%***

Table 17 Continued

F. Foreign Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)				Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD			Mean Daily Returns	Mean Daily SD
USIFX	-0.0228%	1.0414%	0.0146%**	0.8981%***			0.0129%***	0.9790%**
VTRIX	-0.0277%	1.1546%	0.0055%*	0.9461%***			0.0189%***	1.0141%***
VWIGX	-0.0268%	1.2038%	0.0139%**	1.0086%***			0.0238%***	1.0952%***
VNEPX	-0.0417%	1.2982%	-0.0077%*	1.1468%***			0.0086%***	1.2121%***
UNCGX	-0.0628%	1.5055%	-0.0504%	1.4102%**			-0.0309%***	1.4583%
SRIGX	-0.0338%	1.1537%	-0.0059%*	1.0165%***			0.0049%***	1.0875%**
WIBCX	-0.0407%	1.3074%	-0.0073%**	1.1654%***			-0.0050%***	1.2483%*
Portfolio	-0.0380%	1.0174%	-0.0079%**	0.8860%***			0.0008%***	0.9522%**

G. Latin Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
MBLTX	-0.0358%	1.7505%	0.0149%**	1.5861%***	0.0403%**	1.3374%***	0.0143%***	1.6812%*

H. World Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
GSCAX	-0.0614%	1.4194%	-0.0108%**	1.2409%***	-0.0434%	1.2267%***	0.0079%***	1.3037%***
ANWPX	-0.0115%	1.1286%	0.0040%	1.0048%***	0.0065%	0.9644%***	0.0344%***	1.0558%***
SMCWX	-0.0386%	1.3354%	0.0061%***	1.2078%***	-0.0427%	1.2266%***	0.0195%***	1.2725%**
AHERX	-0.1966%	5.7550%	-0.1140%	5.2239%***	-0.2888%	5.1143%***	-0.1696%	5.5020%*
IGLGX	-0.0466%	1.3768%	-0.0280%	1.2279%***	-0.0287%	1.2472%***	-0.0004%***	1.3132%**
FWWGX	-0.0839%	1.5975%	-0.0538%*	1.4939%***	-0.0707%	1.5058%**	-0.0305%***	1.5462%
EGLBX	-0.0373%	1.3071%	-0.0235%	1.1735%***	-0.0072%	1.1049%***	0.0198%***	1.2419%**
FWWFX	-0.0284%	1.1874%	0.0194%**	0.9212%***	-0.0244%	1.0853%***	0.0355%***	1.0059%***
FIISX	-0.0361%	1.1665%	-0.0201%	1.0595%***	-0.0180%	1.0239%***	0.0046%***	1.1097%**

Table 17 Continued

H. World Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
GAGLX	-0.0347%	1.1259%	-0.0132%	1.0099%***	-0.0225%	1.0084%***	-0.0021%***	1.0631%**
FGLOX	-0.0625%	1.2150%	-0.0303%**	1.0587%***	-0.0375%	1.0911%***	-0.0128%***	1.1372%**
MCGLX	-0.0444%	1.1753%	-0.0126%*	1.0274%***	-0.0338%	1.0496%***	0.0064%***	1.1044%**
JAWWX	-0.0159%	1.3633%	0.0134%	1.1787%***	-0.0069%	1.2194%***	0.0465%***	1.2531%***
LAGEX	-0.0367%	1.1777%	-0.0237%	1.0573%***	-0.0175%	1.0680%*v	-0.0063%***	1.1231%**
MWEBX	-0.0186%	0.9791%	0.0051%*	0.8501%***	-0.0113%	0.8862%***	0.0225%***	0.9222%**
OPPAX	-0.0203%	1.3836%	-0.0004%	1.2573%***	-0.0178%	1.2925%***	0.0251%***	1.3342%*
OPGIX	-0.0114%	1.4375%	0.0200%*	1.2810%***	-0.0134%	1.3196%***	0.0371%***	1.3729%*
QVGLX	-0.0336%	1.1754%	-0.0014%	0.9005%***	-0.0196%	1.0997%***	0.0023%***	1.1335%
NWWOX	-0.0501%	1.3561%	-0.0334%	1.2546%***	-0.0191%	1.1488%***	-0.0081%***	1.3043%*
PRGLX	-0.0448%	1.4691%	-0.0319%	1.3205%***	-0.0344%	1.3444%***	-0.0015%***	1.3920%**
PEQUX	-0.0577%	1.6394%	-0.0311%	1.5061%***	-0.0501%	1.5178%***	-0.0098%***	1.5788%*
SGSCX	-0.0135%	1.3259%	0.0018%	1.1747%***	-0.0108%	1.1995%***	0.0354%***	1.2570%**
SCOBX	-0.0515%	1.1389%	-0.0417%	1.0613%***	-0.0290%	1.0242%***	-0.0141%***	1.0995%
TECAX	-0.0178%	1.0038%	0.0148%**	0.8310%***	-0.0072%	0.9048%***	0.0308%***	0.9414%**
TEGOX	-0.0387%	1.0452%	-0.0028%**	0.8707%***	-0.0286%	0.9524%***	0.0061%***	0.9704%***
TEMGX	-0.0371%	0.8336%	0.0026%***	0.6798%***	-0.0332%	0.7569%***	0.0039%***	0.7777%***
TEPLX	-0.0186%	0.9710%	0.0094%**	0.8366%***	-0.0131%	0.8910%***	0.0159%***	0.9214%**
TEMWX	-0.0228%	0.9728%	0.0097%**	0.8129%***	-0.0161%	0.8931%***	0.0188%***	0.9154%**
USAWX	-0.0254%	1.1032%	0.0107%**	0.9640%***	-0.0192%	0.9776%***	0.0206%***	1.0383%**
Portfolio	-0.0413%	1.0276%	-0.0123%**	0.9015%***	-0.0331%	0.9205%***	0.0048%***	0.9600%***

I. International Hybrid Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
CAIBX	-0.0122%	0.5977%	-0.0070%	0.5469%***	-0.0134%	0.5402%***	0.0002%***	0.5731%*
BPGLX	-0.0237%	0.7600%	-0.0083%**	0.7136%**	-0.0234%	0.7152%**	0.0006%***	0.7363%
SGENX	-0.0123%	0.8839%	0.0076%**	0.8137%***	-0.0016%	0.6656%***	0.0134%***	0.8377%**

Table 17 Continued

I. International Hybrid Fund

Ticker	Buy-and-hold Strategy		Strategy 1 (Simple Weekend Strategy)		Strategy 2 (Complex Strategy)		Strategy 3 (Restricted Weekend Strategy)	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
FMAFX	-0.0327%	0.8491%	-0.0133%*	0.7716%***	-0.0185%	0.7311%***	-0.0029%***	0.8035%**
MALOX	-0.0281%	0.9170%	-0.0115%*	0.8638%**	-0.0119%	0.8030%***	-0.0030%***	0.8936%
MFWTX	-0.0163%	1.8306%	0.0315%	1.3587%***	-0.0162%	1.8143%	0.0046%***	1.8223%
Portfolio	-0.0209%	0.6328%	-0.0002%**	0.5505%***	-0.0142%	0.5738%***	0.0021%***	0.6052%*

Note: Trading Strategy 1 and trading strategy 2 are similar for Diversified Pacific/Asia Fund and Foreign Fund.

strategy 3 enhances the daily mean returns of portfolios of Europe, Foreign, World and International Hybrid funds to –0.0131%, 0.0008%, 0.0048% and 0.0021% respectively. Even though the returns from portfolio of Europe funds following strategy 3 are negative, however it still outperforms the buy-and-hold returns. Thus, investors of Europe funds can reduce the negative buy-and-hold returns following trading strategy 3. The daily average risks of portfolios of Europe, Foreign, World and International Hybrid funds are 1.1558%, 1.0174%, 1.0276%, and 0.6328% respectively. But trading strategy 3 reduces the daily average risks of portfolios of Europe, Foreign, World and International Hybrid funds to 1.0865%, 0.9522%, 0.9600% and 0.6052% respectively. For individual funds, all Europe funds provide the highest returns following strategy 3 except Fidelity Europe (FIEUX), Invesco European Investment (FEURX), T. Rowe Price European Stock (PRESX) and Vanguard Euro Stock Index (VEURX) funds. Both FIEUX and FEURX funds provide the highest daily mean returns under strategy 1; however both PRESX and VEURX funds provide the highest daily mean returns under trading strategy 2 (complex strategy).

All Foreign funds provide the highest daily average returns under strategy 3 except for Columbia Stock International (CMISX), Credit Suisse International (RBIEX), Dreyfus Premier International Growth A (DRGLX), Fidelity Overseas T (FAERX), Fidelity International Growth and Inc (FIGRX), Fidelity Overseas (FOSFX), GAM International A (GAMNX) and USAA International (USIFX) funds. Strategy 1 generates the highest daily mean returns for CMISX, RBIEX, DRGLX, FAERX, FIGRX, FOSFX, GAMNX and USIFX funds. Trading strategy 3 also generates the highest daily mean returns for all individual World funds except American Heritage (AHERX) fund, for which trading strategy 1 provides the highest daily mean returns. Trading strategy 3 also generates the highest daily mean returns for all individual International Hybrid funds except MFS Global Total Return A (MFWTX) fund, for which strategy 1 produces the highest daily mean returns. Overall strategy 3 emerges as the best strategy to investors of Europe, Foreign, World and International Hybrid funds to increase their daily average returns from these funds (ignoring few exceptions for which strategy 1 generates the highest mean daily returns).

Both forms of weekend trading strategies (i.e. trading strategies 1 and 3) in generally provide higher daily mean returns for Japan funds. On a portfolio basis, trading strategy 1 (simple weekend strategy) provides the highest daily mean returns and the lowest daily average risks for Japan funds. The buy-and-hold portfolio daily average returns and risks of Japan funds are –0.0246% and 1.4668% respectively; however trading strategy 1 generates the highest daily mean returns of 0.0140% and additionally risks are also reduced to 1.2938%. For individual Japan funds, trading strategy 1 generates the highest daily mean returns for T. Rowe Price Japan (PRJPX) and Vanguard Pacific Stock Index (VPACX) funds and trading strategy 3 provides the

highest daily mean returns for DFA Japanese Small Company (DFJSX) and The Japan Fund-Adv S (SJPNX) funds. Moreover, average risks are also reduced for these funds under both strategies.

Trading Strategy 1 (simple weekend strategy) and trading strategy 2 (complex strategy) provide the highest daily mean returns for most of the Pacific/Asia ex. Japan funds. On a portfolio basis trading strategy 2 generates the highest daily mean returns (0.0566%) for Pacific/Asia ex. Japan funds. For individual fund Pacific/Asia ex. Japan funds, trading strategy 2 provides the highest daily mean returns for Liberty Newport Tiger T. (CNTTX) and Morgan Stanley Institutional Asian Equity A (MSAEX) funds. However, strategy 1 generates the highest daily mean returns for Eaton Vance Greater China Growth A (EVCGX), Merrill Lynch Dragon Fund B (MBDRX) and T. Rowe Price New Asia (PRASX) funds. The daily average risks are also lower for these funds under both trading strategies 1 and 2 as opposed to the buy-and-hold strategy.

Finally trading strategy 2 (complex strategy) provides the highest daily mean returns and the lowest daily average risks for Latin fund. The daily mean returns and risks of Merrill Lynch Latin America B (MBLTX) fund are –0.0358% and 1.7505% respectively for buy-and-hold investors. Following strategy 2, investors may increase the daily mean returns and reduce the daily average risks of MBLTX fund to 0.0403% and 1.3374% respectively.

Table 17 also documents the results for the paired t-test to test the null hypothesis of no significant difference in daily mean returns between buy-and-hold and trading strategies. The F-test is also conducted to test the hypothesis of no significant difference in daily mean standard deviations (risks) between buy-and-hold and trading strategies. The results of t-test suggest that

there is statistically significant difference in daily average returns between buy-and-hold strategy and the trading strategies for almost all categories of international funds (except when investors follow trading strategy 2 for Europe, Japan, World and International Hybrid funds; however, this is not important here, because trading strategy 2 is not the dominant trading strategy for Europe, Japan, World or International Hybrid Funds). Finally, the results of F-test suggest that there is statistically significant difference in daily mean standard deviations between buy-and-hold and trading strategies for all categories of international mutual funds.

The buy-and-hold daily mean returns for most of the sample funds are negative because the holdout sample covers a period dominated by global bear markets. Most of the stock markets around the world performed poorly during the holdout sample period (1997-2002) and eventually caused negative buy-and-hold returns in sample funds. Most of the daily mean returns from the proposed trading strategies are positive; even though the daily mean returns from trading strategies are negative for few funds, however these negative daily mean returns from trading strategies are still higher than the buy-and-hold daily mean returns.

Table 17 also documents that risks are reduced for the trading strategies in each of the sample funds studied. This is not surprising since the proposed trading strategies require being out of the market for some day(s) or during the weekend. Overall, the trading strategies dominate the buy-and-hold strategy in terms of returns and risks. Therefore, due to the result that the returns of the trading strategies are higher than the returns of buy-and-hold strategy, and risks should be lower, the trading strategies may be very beneficial to investors because it may permit generating higher returns per unit of risks. This suggests that investors could be made better off

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by using such trading strategies. This would leave the investors better off (i.e., investors reach a combination of risk and return that is preferred).

I computed the number of trades (roundtrip) required for the proposed trading strategies. The number of roundtrip trades required during the holdout sample period under trading strategy 1 (simple weekend strategy) is 233 (i.e. one trade per 5.31 days) for all funds except Japan funds for which the number of trades is 211.

The number of roundtrip trades required under trading strategy 2 (complex trading strategy) is provided in the parentheses after the name of each fund category: Diversified Emerging Market (473); Diversified Pacific/Asia (233); Europe (249); Foreign (233); Hybrid (249); Japan (249); Latin (473); Pacific/Asia excluding Japan (495) and World (295).

The number of roundtrip trades required under trading strategy 3 (restricted weekend strategy) is provided in the parentheses after the name of each fund category: Diversified Emerging Market (103); Diversified Pacific/Asia (114); Europe (96); Foreign (106); Hybrid (104); Japan (81); Latin (108); Pacific/Asia excluding Japan (105) and World (104).

3.5.6. Sharpe, Treynor and Jensen Measures for Trading Strategies

Sharpe (1966), Treynor (1965) and Jensen (1968) measures are used to evaluate risk-adjusted returns of the proposed trading strategies. This is important because it has been discussed in previous sub-section (Table 17) that the daily mean returns are increased and risks are reduced especially under trading strategies 1 (simple weekend strategy) and 3 (restricted weekend strategy). However, Table 17 does not provide information whether the returns from trading strategies 1 and 3 are superior to buy-and-hold returns given the risks are adjusted. This

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is important because risks are also reduced for most of the funds under trading strategy 2 (complex strategy) even though trading strategy 2, in generally is not the best trading strategy for investors of international funds. The Sharpe, Treynor and Jensen measures will provide information regarding the superior risk-adjusted returns.

The Sharpe (S) and Treynor (T) measures are computed using equations (9) and (10) respectively:

$$S = \frac{R_p - R_f}{\sigma_p} \qquad (9)$$

$$T = \frac{R_p - R_f}{\beta_p} \qquad (10)$$

where R_p is portfolio return, R_f is risk-free return, σ_p is portfolio standard deviation and β_p is portfolio systematic risk.

Excess returns above the risk free returns on portfolio adjusted for total risks (measured by standard deviations) are computed by the Sharpe measure. Total risks consist of both systematic and unsystematic risks. The Treynor measure is used to compute excess returns on a portfolio adjusted for systematic or market risks (beta). A high and positive Sharpe or Treynor measure refers to superior risk-adjusted performance of a fund.

The Jensen (1968) measure of risk-adjusted returns is computed (as a test of robustness) using equation (11) to determine whether the positive risk-adjusted returns are statistically significant:

$$R_p - R_f = \alpha + \beta\left(R_m - R_f\right) + \varepsilon \qquad\qquad (11)$$

where R_p is portfolio return, R_f is risk-free return, α and β are selectivity (risk-adjusted return) and systematic risk coefficients respectively, R_m is market return and ε is the error term. The intercept α is also known as Jensen's alpha and is based on the excess return of a security or portfolio relative to that of the excess return of the market. A positive (negative) and statistically significant α indicates superior (inferior) performance above (below) that of the market. The estimated risk-parameter (β) coefficient of the Jensen regression will be biased downward in the presence of market timing ability and the estimated selectivity parameter (α) will be biased upward in the presence of risk-adjusted returns.

To analyze the Sharpe, Treynor and Jensen measures, money market fund, instead of T-bill, is used as a proxy for the risk-free rate. Because shifting to T-bills requires more than one day (selling the mutual funds, obtaining cash after the sale has settled and then buying T-bills). Besides T-bills cannot be bought at all if the funds are in variable annuities or many types of retirement accounts. However investors in mutual funds, retirement accounts or variable annuities especially can shift from international funds to money market funds within the same day.

Table 18 and 19 report the Sharpe and Treynor measures respectively. A closer inspection of the Sharpe and Treynor measures documents that all of the proposed trading strategies of this study absolutely outperform the buy-and-hold strategy in terms of the Sharpe and Treynor measures.

The Sharpe measures in Table 18 suggest that for Diversified Emerging market funds trading strategy 2 (complex strategy) provides the highest Sharpe measures for all but Templeton Developing Markets A (TEDMX) for which trading strategy 3 (restricted weekend strategy) provides the highest Sharpe measure. The buy-and-hold Sharpe measure for Diversified Emerging market portfolio of funds is –0.0407; however trading strategy 2 generates the highest and positive Sharpe measure of 0.0178. The highest Sharpe measures are found for Diversified Pacific/Asia funds under trading strategy 1 (simple weekend strategy); the result is consistent for portfolio of funds as well as for individual Diversified Pacific/Asia funds.

Trading strategy 3 provides the highest Sharpe measures for all Europe funds except Fidelity Europe (FIEUX) and T. Rowe Price European Stock (PRESX) funds. This is not surprising because it has been shown in Table 17 that strategy 3 provides the highest mean returns for all but four (FIEUX, FEURX, PRESX and VEURX) Europe funds. Once I adjust the risk using Sharpe measure, it appears that all but two (FIEUX and PRESX) Europe funds provide the highest risk-adjusted returns under strategy 3.

Trading strategy 3 also provides the highest Sharpe measures for all foreign funds except Columbia Stock International (CMISX), Fidelity International Growth and Inc (FIGRX), Fidelity Overseas (FOSFX), GAM International A (GAMNX) and USAA International (USIFX) funds. Strategy 1 provides the highest Sharpe measures for CMISX, FIGRX, FOSFX, GAMNX and USIFX funds. The highest Sharpe measures are also found using trading strategy 3 for World and International Hybrid funds. All Sharpe measures are higher under trading strategy 3 for World fund except American Heritage (AHERX) fund, for which trading strategy 1 produces the highest Sharpe measures.

Table 18: The Sharpe Measures for Returns of Buy-and-hold and Trading Strategies

This table reports the Sharpe measure of equation (9): $S = \dfrac{R_p - R_f}{\sigma_p}$. Column 1 shows the ticker symbols of sample funds. Columns two through five report the Sharpe measures (S) for buy-and-hold strategy, trading strategy 1 *(simple weekend strategy)*, trading strategy 2 *(complex strategy)*, and trading strategy 3 *(restricted weekend strategy)* respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
MADCX	-0.0375	0.0079	0.0268	0.0171
MNEMX	-0.0448	0.0132	0.0129	0.0063
MGEMX	-0.0338	0.0004	0.0223	0.0196
TEDMX	-0.0380	-0.0069	0.0032	0.0070
Portfolio	-0.0407	-0.0031	0.0178	0.0134

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2
FPBFX	-0.0138	0.0264	0.0127
GAPCX	-0.0398	-0.0143	-0.0210
JHWPX	-0.0246	0.0224	0.0059
MAPCX	-0.0372	-0.0035	-0.0171
TGRBX	-0.0352	0.0110	-0.0086
PRPBX	-0.0153	0.0176	-0.0082
FKPGX	-0.0543	-0.0077	-0.0253
Portfolio	-0.0367	0.0122	-0.0114

C. Europe Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
ANEAX	-0.0394	-0.0301	-0.0258	-0.0204
DFCSX	-0.0577	-0.0398	-0.0635	-0.0333
DFUKX	-0.0683	-0.0602	-0.0796	-0.0541
FIEUX	-0.0451	-0.0134	-0.0445	-0.0253
FEURX	-0.0484	-0.0238	-0.0445	-0.0153
MBEFX	-0.0425	-0.0348	-0.0392	-0.0292
EUGBX	-0.0380	-0.0300	-0.0309	-0.0257
PEURX	-0.0339	-0.0245	-0.0246	-0.0129
PEUGX	-0.0336	-0.0138	-0.0227	-0.0092
PRESX	-0.0394	-0.0306	-0.0122	-0.0242
VEURX	-0.0245	-0.0132	-0.0103	-0.0100
Portfolio	-0.0519	-0.0353	-0.0444	-0.0285

D. Japan Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
DFJSX	-0.0236	-0.0076	-0.0117	-0.0005
SJPNX	-0.0218	0.0017	-0.0053	0.0045
PRJPX	-0.0296	-0.0064	-0.0141	-0.0083
VPACX	-0.0301	0.0023	0.0009	-0.0122
Portfolio	-0.0288	-0.0028	-0.0085	-0.0042

Table 18 Continued

E. Pacific/Asia ex. Japan Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
EVCGX	-0.0286	0.0182	0.0243	0.0061
CNTTX	-0.0153	0.0212	0.0398	0.0132
MBDRX	-0.0381	0.0238	0.0265	0.0072
MSAEX	-0.0259	0.0344	0.0490	0.0097
PRASX	-0.0129	0.0398	0.0519	0.0178
Portfolio	-0.0257	0.0288	0.0401	0.0113

F. Foreign Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 3
AEIGX	-0.0588	-0.0398	-0.0265
AIIEX	-0.0327	-0.0143	0.0001
AAIEX	-0.0422	-0.0171	-0.0102
TWIEX	-0.0338	0.0012	0.0121
AEPGX	-0.0294	-0.0076	0.0055
INIFX	-0.0551	-0.0382	-0.0307
BAINX	-0.0519	-0.0303	-0.0205
SNIVX	-0.0424	-0.0256	-0.0174
PNINX	-0.0531	-0.0383	-0.0251
CWVGX	-0.0472	-0.0238	-0.0141
NEFIX	-0.0375	-0.0215	-0.0069
CMISX	-0.0429	-0.0073	-0.0114
TIEUX	-0.0443	-0.0213	-0.0029
RBIEX	-0.0621	-0.0418	-0.0401
DRGLX	-0.0609	-0.0387	-0.0371
NIEAX	-0.0538	-0.0376	-0.0287
ENIGX	-0.0500	-0.0309	-0.0203
UMINX	-0.0468	-0.0320	-0.0134
FTITX	-0.0408	-0.0249	-0.0103
FAERX	-0.0418	-0.0097	-0.0097
FICDX	-0.0160	0.0003	0.0043
FDIVX	-0.0162	0.0112	0.0164
FIGRX	-0.0315	0.0062	0.0018
FOSFX	-0.0413	-0.0075	-0.0104
KNINX	-0.0488	-0.0190	-0.0111
GAMNX	-0.0708	-0.0460	-0.0461
GSIFX	-0.0486	-0.0282	-0.0175
HAINX	-0.0357	-0.0192	-0.0105
IVINX	-0.0616	-0.0413	-0.0354
ACINX	-0.0355	-0.0015	0.0183
CONAX	-0.0598	-0.0481	-0.0306
MSACX	-0.0494	-0.0365	-0.0249
MSIQX	-0.0333	-0.0153	-0.0110
MUIYX	-0.0442	-0.0271	-0.0198
OAKIX	-0.0186	0.0178	0.0308
PHITX	-0.0566	-0.0404	-0.0347
PFIFX	-0.0400	-0.0249	-0.0138
PRWLX	-0.0587	-0.0447	-0.0269
SCIEX	-0.0566	-0.0423	-0.0369
SCINX	-0.0466	-0.0347	-0.0192

Table 18 Continued

F. Foreign Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 3
SEITX	-0.0328	-0.0101	0.0030
SNGRX	-0.0534	-0.0354	-0.0254
SBIEX	-0.0548	-0.0417	-0.0293
STISX	-0.0393	-0.0224	-0.0105
PRFEX	-0.0429	-0.0262	-0.0143
PRIDX	-0.0159	0.0052	0.0191
PRITX	-0.0446	-0.0280	-0.0159
TEMFX	-0.0365	0.0001	0.0022
FINEX	-0.0380	-0.0048	0.0049
USIFX	-0.0390	-0.0036	-0.0050
VTRIX	-0.0394	-0.0131	0.0011
VWIGX	-0.0371	-0.0039	0.0054
VNEPX	-0.0458	-0.0223	-0.0076
UNCGX	-0.0535	-0.0484	-0.0335
SRIGX	-0.0448	-0.0233	-0.0119
WIBCX	-0.0447	-0.0216	-0.0183
Portfolio	-0.0548	-0.0291	-0.0179

G. Latin Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
MBLTX	-0.0307	-0.0018	0.0168	-0.0021

H. World Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
GSCAX	-0.0558	-0.0231	-0.0499	-0.0076
ANWPX	-0.0260	-0.0137	-0.0117	0.0157
SMCWX	-0.0422	-0.0097	-0.0494	0.0014
AHERX	-0.0373	-0.0252	-0.0600	-0.0341
IGLGX	-0.0468	-0.0373	-0.0373	-0.0139
FWWGX	-0.0637	-0.0480	-0.0588	-0.0313
EGLBX	-0.0422	-0.0352	-0.0227	0.0016
FWWFX	-0.0389	0.0017	-0.0389	0.0175
FIISX	-0.0462	-0.0358	-0.0350	-0.0119
GAGLX	-0.0467	-0.0307	-0.0400	-0.0187
FGLOX	-0.0661	-0.0454	-0.0507	-0.0270
MCGLX	-0.0529	-0.0296	-0.0492	-0.0104
JAWWX	-0.0247	-0.0038	-0.0203	0.0229
LAGEX	-0.0463	-0.0393	-0.0331	-0.0215
MWEBX	-0.0372	-0.0150	-0.0329	0.0051
OPPAX	-0.0276	-0.0145	-0.0276	0.0055
OPGIX	-0.0204	0.0017	-0.0237	0.0140
QVGLX	-0.0438	-0.0214	-0.0341	-0.0137
NWWOX	-0.0501	-0.0408	-0.0321	-0.0199
PRGLX	-0.0427	-0.0377	-0.0388	-0.0139
PEQUX	-0.0461	-0.0325	-0.0447	0.0175
SGSCX	-0.0237	-0.0136	-0.0239	0.0140
SCOBX	-0.0609	-0.0562	-0.0458	-0.0290
TECAX	-0.0355	-0.0037	-0.0277	0.0138
TEGOX	-0.0540	-0.0238	-0.0488	-0.0121

Table 18 Continued

H. World Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
TEMGX	-0.0658	-0.0224	-0.0673	-0.0179
TEPLX	-0.0375	-0.0101	-0.0348	-0.0021
TEMWX	-0.0418	-0.0100	-0.0380	0.0011
USAWX	-0.0392	-0.0075	-0.0378	0.0027
Portfolio	-0.0575	-0.0334	-0.0553	-0.0136

I. International Hybrid Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
CAIBX	-0.0502	-0.0454	-0.0579	-0.0309
BPGLX	-0.0546	-0.0366	-0.0577	-0.0233
SGENX	-0.0341	-0.0126	-0.0292	-0.0053
FMAFX	-0.0595	-0.0404	-0.0496	-0.0258
MALOX	-0.0501	-0.0340	-0.0371	-0.0233
MFWTX	-0.0187	0.0100	-0.0188	-0.0073
Portfolio	-0.0611	-0.0327	-0.0557	-0.0259

Trading strategy 3 also generates the highest Sharpe measures for all individual International Hybrid funds except MFS Global Total Return A (MFWTX) fund, for which trading strategy 1 generates the highest Sharpe measure.

Trading strategies 1 and 3 provide higher Sharpe measures for Japan funds. On a portfolio basis, trading strategy 1 provides the highest Sharpe measure. The buy-and-hold Sharpe measure for portfolio of Japan funds is –0.0288; however strategy 1 generates the highest Sharpe measure (-0.0028). For individual Japan funds, trading strategy 1 generates the highest Sharpe measures for T. Rowe Price Japan (PRJPX) and Vanguard Pacific Stock Index (VPACX) funds and trading strategy 3 provides the highest Sharpe measures for DFA Japanese Small Company (DFJSX) and the Japan Fund-Adv S (SJPNX) funds.

Trading strategy 2 (complex strategy) provides the highest Sharpe measures for portfolios of Pacific/Asia ex. Japan funds. As reported in subsection 5.4, even though trading strategy 1 generates the highest daily mean returns for Eaton Vance Greater China Growth A (EVCGX),

Table 19: The Treynor Measures for Returns of Buy-and-hold and Trading Strategies

This table reports the Treynor measure of equation (10): $T = \dfrac{R_p - R_f}{\beta_p}$. Column 1 shows the ticker symbol of sample funds. Columns two through five report the Treynor measures (T) for Buy-and-hold strategy, trading strategy 1 *(simple weekend strategy)*, trading strategy 2 *(complex strategy)*, and trading strategy 3 *(restricted weekend strategy)* respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
MADCX	-0.00050	0.00013	0.00051	0.00025
MNEMX	-0.00061	-0.00022	0.00025	0.00009
MGEMX	-0.00047	0.00001	0.00045	0.00030
TEDMX	-0.00058	-0.00013	0.00007	0.00012
Portfolio	-0.00054	-0.00005	0.00033	0.00019

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold Strategy	Strategy 1		Strategy 2
FPBFX	-0.00024	0.00051		0.00023
GAPCX	-0.00081	-0.00034		-0.00045
JHWPX	-0.00046	0.00048		0.00012
MAPCX	-0.00069	-0.00007		-0.00032
TGRBX	-0.00062	0.00022		-0.00016
PRPBX	-0.00100	0.00109		-0.00059
FKPGX	-0.00102	-0.00017		-0.00050
Portfolio	-0.00068	0.00025		-0.00022

C. Europe Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
ANEAX	-0.00059	-0.00052	-0.00043	-0.00037
DFCSX	-0.00177	-0.00153	-0.00239	-0.00133
DFUKX	-0.00366	-0.00409	-0.00538	-0.00375
FIEUX	-0.00071	-0.00023	-0.00080	-0.00047
FEURX	-0.00075	-0.00039	-0.00079	-0.00027
MBEFX	-0.00083	-0.00083	-0.00091	-0.00072
EUGBX	-0.00060	-0.00056	-0.00056	-0.00050
PEURX	-0.00049	-0.00040	-0.00040	-0.00022
PEUGX	-0.00048	-0.00022	-0.00037	-0.00015
PRESX	-0.00057	-0.00052	-0.00019	-0.00043
VEURX	-0.00034	-0.00021	-0.00016	-0.00017
Portfolio	-0.00071	-0.00055	-0.00069	-0.00047

D. Japan Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
DFJSX	-0.00063	-0.00027	-0.00052	-0.000001
SJPNX	-0.00047	0.00005	-0.00017	-0.00011
PRJPX	-0.00067	-0.00019	-0.00046	-0.00022
VPACX	-0.00082	0.00008	0.00004	-0.00038
Portfolio	-0.00063	-0.00008	-0.00028	-0.00011

Table 19 Continued

E. Pacific/Asia ex. Japan Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
EVCGX	-0.00047	0.00037	0.00066	0.00011
CNTTX	-0.00024	0.00040	0.00100	0.00022
MBDRX	-0.00067	0.00048	0.00071	0.00013
MSAEX	-0.00045	0.00074	0.00140	0.00018
PRASX	-0.00022	0.00087	0.00149	0.00033
Portfolio	-0.00041	0.00056	0.00104	0.00019

F. Foreign Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 3
AEIGX	-0.00094	-0.00068	-0.00042
AIIEX	-0.00043	-0.00022	0.000002
AAIEX	-0.00054	-0.00026	-0.00014
TWIEX	-0.00049	0.00002	0.00017
AEPGX	-0.00041	-0.00012	0.00008
INIFX	-0.00077	-0.00060	-0.00047
BAINX	-0.00064	-0.00042	-0.00027
SNIVX	-0.00059	-0.00042	-0.00026
PNINX	-0.00072	-0.00062	-0.00037
CWVGX	-0.00062	-0.00036	-0.00020
NEFIX	-0.00050	-0.00033	-0.00010
CMISX	-0.00061	-0.00011	-0.00018
TIEUX	-0.00057	-0.00030	-0.00003
RBIEX	-0.00109	-0.00067	-0.00078
DRGLX	-0.00105	-0.00063	-0.00071
NIEAX	-0.00082	-0.00070	-0.00048
ENIGX	-0.00063	-0.00045	-0.00028
UMINX	-0.00062	-0.00048	-0.00019
FTITX	-0.00057	0.00041	-0.00016
FAERX	-0.00055	-0.00014	-0.00014
FICDX	-0.00037	0.00001	0.00010
FDIVX	-0.00021	0.00016	0.00023
FIGRX	-0.00043	0.00009	0.00003
FOSFX	-0.00056	-0.00011	-0.00015
KNINX	-0.00058	-0.00026	-0.00014
GAMNX	-0.00109	-0.00081	-0.00076
GSIFX	-0.00064	-0.00042	-0.00025
HAINX	-0.00049	-0.00031	-0.00016
IVINX	-0.00096	-0.00078	-0.00061
ACINX	-0.00058	-0.00001	0.00031
CONAX	-0.00087	-0.00083	-0.00049
MSACX	-0.00067	-0.00058	-0.00037
MSIQX	-0.00053	-0.00029	-0.00019
MUIYX	-0.00062	-0.00044	-0.00030
OAKIX	-0.00031	0.00034	-0.00054
PHITX	-0.00080	-0.00066	-0.00053
PFIFX	-0.00067	-0.00052	-0.00025
PRWLX	-0.00080	-0.00071	-0.00040
SCIEX	-0.00128	-0.00120	-0.00093
SCINX	-0.00063	-0.00055	-0.00028

Table 19 Continued

F. Foreign Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 3
SEITX	-0.00038	-0.00014	0.00004
SNGRX	-0.00071	-0.00055	-0.00036
SBIEX	-0.00083	-0.00075	-0.00048
STISX	-0.00054	-0.00036	-0.00016
PRFEX	-0.00053	-0.00038	-0.00019
PRIDX	-0.00030	0.00012	-0.00040
PRITX	-0.00055	-0.00040	-0.00021
TEMFX	-0.00053	0.000001	0.00003
FINEX	-0.00068	-0.00010	0.00010
USIFX	-0.00049	-0.00005	-0.00007
VTRIX	-0.00055	-0.00020	0.00002
VWIGX	-0.00047	-0.00005	0.00007
VNEPX	-0.00064	-0.00036	-0.00011
UNCGX	-0.00095	-0.00104	-0.00065
SRIGX	-0.00056	-0.00033	-0.00016
WIBCX	-0.00061	-0.00034	-0.00027
Portfolio	-0.00064	-0.00039	-0.00022

G. Latin Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
MBLTX	-0.00059	-0.00004	0.00043	-0.00004

H. World Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
GSCAX	-0.00079	-0.00037	-0.00077	-0.00011
ANWPX	-0.00033	-0.00020	-0.00016	0.00021
SMCWX	-0.00062	-0.00016	-0.00083	0.00002
AHERX	-0.00214	-0.00182	-0.00350	-0.00238
IGLGX	-0.00061	-0.00055	-0.00055	-0.00019
FWWGX	-0.00099	-0.00089	-0.00108	-0.00054
EGLBX	-0.00063	-0.00063	-0.00037	0.00003
FWWFX	-0.00050	0.00002	-0.00058	0.00022
FIISX	-0.00057	-0.00051	-0.00047	-0.00016
GAGLX	-0.00061	-0.00045	-0.00059	-0.00027
FGLOX	-0.00078	-0.00061	-0.00068	-0.00034
MCGLX	-0.00065	-0.00041	-0.00068	-0.00013
JAWWX	-0.00031	-0.00005	-0.00029	0.00030
LAGEX	-0.00062	-0.00060	-0.00051	-0.00031
MWEBX	-0.00047	-0.00021	-0.00047	0.00007
OPPAX	-0.00040	-0.00025	-0.00046	0.00009
OPGIX	-0.00030	0.00003	-0.00040	0.00023
QVGLX	-0.00066	-0.00031	-0.00060	-0.00023
NWWOX	-0.00073	-0.00071	-0.00051	-0.00032
PRGLX	-0.00057	-0.00059	-0.00061	-0.00020
PEQUX	-0.00062	-0.00050	-0.00070	-0.00026
SGSCX	-0.00033	-0.00022	-0.00038	0.00021
SCOBX	-0.00100	-0.00112	-0.00085	-0.00053
TECAX	-0.00046	-0.00005	-0.00041	0.00019
TEGOX	-0.00076	-0.00036	-0.00080	-0.00018

Table 19 Continued

H. World Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
TEMGX	-0.00110	-0.00041	-0.00129	-0.00032
TEPLX	-0.00058	-0.00017	-0.00063	-0.00004
TEMWX	-0.00059	-0.00015	-0.00063	0.00002
USAWX	-0.00045	-0.00010	-0.00049	0.00003
Portfolio	-0.00066	-0.00043	-0.00071	-0.00017

I. International Hybrid Fund

Ticker	Buy-and-hold Strategy	Strategy 1	Strategy 2	Strategy 3
CAIBX	-0.00076	-0.00081	-0.00099	-0.00051
BPGLX	-0.00096	-0.00078	-0.00122	-0.00045
SGENX	-0.00092	-0.00043	-0.00074	-0.00016
FMAFX	-0.00077	-0.00059	-0.00069	-0.00036
MALOX	-0.00086	-0.00070	-0.00070	-0.00044
MFWTX	-0.00080	0.00038	-0.00100	-0.00035
Portfolio	-0.00084	-0.00049	-0.00087	-0.00039

Merrill Lynch Dragon B (MBDRX) and T. Rowe Price New Asia (PRASX) funds; however, the

Sharpe measures of EVCGX, MBDRX and PRASX funds are not the highest under trading

strategy 1. Rather, Sharpe measures for all individual Pacific/Asia ex. Japan funds under trading

strategy 2 are the highest.

Finally, trading strategy 2 also provides the highest Sharpe measure for Latin fund. The

Sharpe measure for Merrill Lynch Latin America B (MBLTX) fund is –0.0307 under buy-and-

hold strategy. But trading strategy 2 generates the highest and positive Sharpe measure (0.0168)

for MBLTX fund.

The Treynor measures in Table 19 also reveal similar results reported for the Sharpe

measures in Table 18. Trading strategy 2 provides the highest Treynor measures for all but

Templeton Developing Markets A (TEDMX) funds, for which trading strategy 3 provides the

highest Treynor measure of 0.00012. The buy-and-hold Treynor measure for Diversified

Emerging market portfolio of funds is –0.00054 and trading strategy 2 generates the highest and positive Treynor measure of 0.00033.

Trading strategy 3 provides the highest Treynor measures for all Europe funds except Fidelity Europe (FIEUX), T. Rowe Price European Stock (PRESX) and Vanguard Europe Stock Index (VEURX) funds. Again, these findings are consistent with the results reported in Table 17; because Table 17 documents that trading strategy 3 provides the highest daily mean returns for all Europe funds except FIEUX and FEURX funds (for which trading strategy 1 performed better) and PRESX and VEURX funds (for which trading strategy 2 performed better). However after the appropriate risk-adjustment, it seems that all but three Europe funds (FIEUX, PRESX and VEURX) provide the highest risk-adjusted returns in terms of Treynor measure. Trading strategy 3 also provides the highest Treynor measures for all foreign funds except Columbia Stock International (CMISX), Dreyfus Premier International Growth A (DRGLX), Fidelity International Growth and Inc (FIGRX), Fidelity Overseas fund (FOSFX), Oakmark International fund (OAKIX), T. Rowe Price International Discovery (PRIDX) and USAA International (USIFX) funds. Strategy 1 provides the highest Treynor values for CMISX, DRGLX, FIGRX, FOSFX, OAKIX, PRIDX and USIFX funds.

The highest Treynor measures are also found using trading strategy 3 for all individual World funds except American Heritage (AHERX) fund, for which trading strategy 1 provides the highest Treynor measure. Trading strategy 3 also generates the highest Treynor measures for all individual International Hybrid funds except MFS Global Total Return A (MFWTX) fund, for which trading strategy 1 generates the highest Treynor measure.

Both trading strategies 1 (simple weekend strategy) and 3 (restricted weekend strategy) provide higher Treynor measures for Japan funds. The buy-and-hold Treynor measure for

portfolio of Japan funds is –0.00063; however strategy 1 generates the highest Treynor measure (-0.00008) for portfolio of Japan funds. For individual Japan funds, trading strategy 1 generates the highest Treynor measures for T. Rowe Price Japan (PRJPX) and Vanguard Pacific Stock Index (VPACX) funds. Trading strategy 3 provides the highest Treynor measures for DFA Japanese Small Company (DFJSX) and the Japan Fund-Adv S (SJPNX) funds.

Trading strategy 2 (complex strategy) provides the highest Treynor measures for portfolios of Pacific/Asia ex. Japan funds. The Treynor results are qualitatively similar to the results of Sharpe measures for Pacific/Asia ex. Japan funds. Trading strategy 2 also provides the highest and positive Treynor measure (0.00043) for Latin fund as opposed to buy-and-hold strategy's negative Treynor measure (-0.00059).

There may be some period when, on average, returns from a fund under perform the returns of a risk-free security. In such a situation, negative Sharpe and Treynor measures could occur because of negative excess returns (undesirable) or lower volatility (desirable). Morningstar states that: "*there are some drawbacks to using the Sharpe ratio. If two funds have equal positive average excess returns, the one that has the lower return volatility [i.e. standard deviation] receives a higher Sharpe ratio score. However, if the average excess returns are equal and negative, the fund with the higher volatility receives the higher score. While this result is consistent with portfolio theory, many retails investors find it counterintuitive. Unless advised appropriately, they may be reluctant to accept a fund rating based on the Sharpe ratio, or similar measures, in periods when the majority of the funds have negative excess returns.*" However, I think the above explanation is inconsistent with the basic principle of risk-adjusted returns; because higher risks are preferable if they are associated with higher returns. On the

Table 20: The Jensen Measures for Returns of Trading Strategies

The results for the Jansen measure of equation (11): $R_p - R_f = \alpha + \beta(R_m - R_f) + \varepsilon$ are presented in this table. Column one reports the ticker symbol of sample funds. Columns two through four present the risk-adjusted return (α), systematic risk (β) and coefficient of determination (R^2) respectively for trading strategy 1 *(simple weekend strategy)*. Columns five through seven present the risk-adjusted return (α), systematic risk (β) and coefficient of determination (R^2) respectively for trading strategy 2 *(complex strategy)*. Columns eight through ten present the risk-adjusted return (α), systematic risk (β) and coefficient of determination (R^2) respectively for trading strategy 3 *(restricted weekend strategy)*. Absolute T-statistics are in parenthesis below the coefficient estimates and the significance levels are provided in 1% (***), 5% (**) and 10% (*) level. Risk-adjusted return (α) is expressed in terms of percent. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
MADCX	0.0414	0.6988	0.6338	0.0495	0.5100	0.4599	0.0601	0.8496	0.7821
	(2.1421)**	(46.2340)***		(2.4616)**	(32.4265)***		(3.6812)***	(66.5459)***	
MNEMX	0.0175	0.7072	0.6064	0.0363	0.5083	0.4377	0.0471	0.8515	0.7445
	(0.8477)	(43.6222)***		(1.7307)*	(31.0085)***		(2.5957)***	(59.9722)***	
MGEMX	0.0341	0.7241	0.5639	0.0484	0.5282	0.3973	0.0673	0.8903	0.7110
	(1.4735)	(39.9582)***		(2.0470)**	(28.5303)***		(3.2609)***	(55.1052)***	
TEDMX	0.0201	0.5959	0.4756	0.0228	0.4248	0.3191	0.0421	0.7315	0.6095
	(0.8826)	(33.4699)***		(1.0104)	(24.0569)***		(1.9746)**	(43.8895)***	
Portfolio	0.0283	0.6805	0.6497	0.0392	0.4928	0.4707	0.0542	0.8307	0.8017
	(1.5555)	(47.8636)***		(2.0649)**	(33.1407)***		(3.6023)***	(70.6425)***	

Table 20 Continued

B. Diversified Pacific/Asia Fund

Ticker	Strategy 1 (Simple Weekend Strategy)						Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2				α	β	R^2
FPBFX	0.0577	0.6091	0.5480				0.0488	0.7309	0.6497
	(2.5578)**	(38.6980)***					(2.2274)**	(47.8387)***	
GAPCX	0.0049	0.5152	0.3600				- 0.0005	0.6201	0.4470
	(0.1733)	(26.3562)***					(0.0178)	(31.5841)***	
JHWPX	0.0473	0.5160	0.4485				0.0352	0.6323	0.5291
	(2.0235)**	(31.6905)***					(1.4465)	(37.2341)***	
MAPCX	0.0209	0.5730	0.4990				0.0084	0.6748	0.5960
	(0.8934)	(35.0732)***					(0.3677)	(42.6701)***	
TGRBX	0.0370	0.5596	0.4998				0.0190	0.6729	0.5998
	(1.6187)	(35.1283)***					(0.8481)	(43.0068)***	
PRPBX	0.0776	0.5080	0.0537				- 0.0087	0.5874	0.0399
	(0.8922)	(8.3735)***					(0.0742)	(7.1569)***	
FKPGX	0.0135	0.5005	0.4413				- 0.0035	0.5994	0.5295
	(0.5886)	(31.2300)***					(0.1497)	(37.2664)***	
Portfolio	0.0370	0.5402	0.4972				0.0141	0.6454	0.5392
	(1.6684)*	(34.9453)***					(0.5790)	(38.0012)***	

C. Europe Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
ANEAX	- 0.0156	0.7895	0.5846	- 0.0091	0.7920	0.6132	0.00004	0.8938	0.6758
	(0.6295)	(41.6937)***		(0.3864)	(44.2438)***		(0.0152)	(50.7218)***	
DFCSX	- 0.0357	0.2942	0.1164	- 0.0627	0.3021	0.1211	- 0.0276	0.3455	0.1496
	(1.1792)	(12.7554)***		(2.0643)**	(13.0444)***		(0.8970)	(14.7313)***	
DFUKX	- 0.0602	0.1597	0.0374	- 0.0811	0.1605	0.0377	- 0.0538	0.1812	0.0462
	(1.9896)**	(6.9237)***		(2.6816) ***	(6.9523)***		(1.7521)*	(7.7311)***	

Table 20 Continued

C. Europe Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
FIEUX	0.0060	0.6915	0.6188	- 0.0334	0.6863	0.5260	- 0.0072	0.7780	0.6151
	(0.2952)	(44.7743)***		(1.3727)	(37.0180)***		(0.3128)	(44.4102)***	
FEURX	- 0.0067	0.8753	0.6268	- 0.0422	0.8841	0.5402	0.0092	0.9947	0.7182
	(0.2670)	(45.5426)***		(1.3851)	(38.0890)***		(0.3976)	(56.0774)***	
MBEFX	- 0.0315	0.6195	0.3050	- 0.0374	0.6366	0.3228	- 0.0212	0.7135	0.3735
	(0.9024)	(23.2794)***		(1.0881)	(24.2619)***		(0.6135)	(27.1228)***	
EUGBX	- 0.0184	0.7702	0.4982	- 0.0187	0.7841	0.5306	- 0.0097	0.8775	0.5872
	(0.6394)	(35.0158)***		(0.6803)	(37.3632)***		(0.3517)	(41.8973)***	
PEURX	- 0.0062	0.7502	0.6438	- 0.0059	0.7632	0.6685	0.0113	0.8524	0.7326
	(0.2970)	(47.2459)***		(0.2952)	(49.9103)***		(0.5883)	(58.1515)***	
PEUGX	0.0074	0.7513	0.6855	- 0.0036	0.7591	0.6645	0.0165	0.8537	0.7829
	(0.3907)	(51.8810)***		(0.1803)	(49.4584)***		(0.9862)	(66.7030)***	
PRESX	- 0.0146	0.7307	0.6006	0.0100	0.7717	0.7186	- 0.0041	0.8358	0.6993
	(0.6582)	(43.0981)***		(0.5530)	(56.1538)***		(0.2011)	(53.5697)***	
VEURX	0.0078	0.7436	0.6684	0.0121	0.7709	0.7063	0.0153	0.8453	0.7684
	(0.4019)	(49.8941)***		(0.6532)	(54.5023)***		(0.8840)	(63.9930)***	
Portfolio	- 0.0152	0.6523	0.7056	- 0.0247	0.6646	0.7129	- 0.0064	0.7428	0.8042
	(0.9696)	(54.4034)***		(1.5716)	(55.3742)***		(0.4704)	(71.1951)***	

D. Japan Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
DFJSX	- 0.0103	0.3831	0.1039	- 0.0136	0.2664	0.0678	0.0005	0.4824	0.1398
	(0.2725)	(11.6495)***		(0.4113)	(9.2246)***		(0.0123)	(13.7823)***	
SJPNX	0.0027	0.5315	0.1640	- 0.0069	0.4054	0.1228	0.0080	0.6342	0.2045
	(0.0656)	(15.1515)***		(0.1897)	(12.7953)***		(0.1907)	(17.3362)***	

Table 20 Continued

D. Japan Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
PRJPX	- 0.0095 (0.2342)	0.5190 (14.7521)***	0.1568	- 0.0185 (0.5109)	0.4076 (12.9126)***	0.1247	- 0.0126 (0.3008)	0.6172 (16.8943)***	0.1962
VPACX	0.0032 (0.0852)	0.3829 (11.6501)***	0.1072	- 0.0011 (0.0338)	0.2993 (10.3008)***	0.0831	- 0.0170 (0.4335)	0.4609 (13.5328)***	0.1354
Portfolio	- 0.0035 (0.1009)	0.4541 (15.0892)***	0.1629	- 0.0095 (0.3070)	0.3446 (12.8162)***	0.1231	- 0.0053 (0.1454)	0.5486 (17.3867)***	0.2055

E. Pacific/Asia ex. Japan Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
EVCGX	0.0481 (1.6142)	0.6789 (30.8447)***	0.4351	0.0376 (1.4812)	0.3782 (20.1653)***	0.2477	0.0410 (1.4104)	0.9159 (42.6209)***	0.5955
CNTTX	0.0562 (1.9406)*	0.7625 (35.6390)***	0.5070	0.0566 (2.2150)**	0.4243 (22.4662)***	0.2901	0.0556 (2.0656)**	0.9936 (49.9489)***	0.6691
MBDRX	0.0527 (1.8919)*	0.6441 (31.2694)***	0.4419	0.0389 (1.5821)	0.3716 (20.4633)***	0.2532	0.0399 (1.4720)	0.8552 (42.7030)***	0.5964
MSAEX	0.0656 (2.2568)**	0.6107 (28.4059)***	0.3952	0.0592 (2.4206)**	0.3417 (18.9080)***	0.2245	0.0430 (1.4728)	0.8269 (38.3693)***	0.5440
PRASX	0.0723 (2.4670)**	0.6012 (27.7413)***	0.3839	0.0639 (2.5301)**	0.3498 (18.7386)***	0.2214	0.0542 (1.8681)*	0.8073 (37.6656)***	0.5348
Portfolio	0.0590 (2.2473)**	0.6595 (33.9912)***	0.4834	0.0512 (2.1860)**	0.3731 (21.5417)***	0.2731	0.0467 (1.8791)*	0.8798 (47.8743)***	0.6500

Table 20 Continued

F. Foreign Fund

Ticker	Strategy 1 (Simple Weekend Strategy)				Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2		α	β	R^2
AEIGX	- 0.0243	0.7543	0.4295		- 0.0041	0.8656	0.5112
	(0.8761)	(30.3904)***			(0.1507)	(35.9275)***	
AIIEX	0.0102	0.7088	0.5514		0.0302	0.8139	0.6406
	(0.4984)	(38.9580)***			(1.5501)	(46.8976)***	
AAIEX	0.0064	0.6239	0.5566		0.0165	0.7255	0.6591
	(0.3602)	(39.3703)***			(0.9930)	(48.8489)***	
TWIEX	0.0274	0.7272	0.5713		0.0447	0.8302	0.6424
	(1.3640)	(40.5680)***			(2.2610)**	(47.0865)***	
AEPGX	0.0139	0.5888	0.4787		0.0309	0.6864	0.5690
	(0.7101)	(33.6731)***			(1.6227)	(40.3679)***	
INIFX	- 0.0184	0.7704	0.5128		- 0.0089	0.8821	0.5364
	(0.7700)	(36.0576)***			(0.3399)	(37.7862)***	
BAINX	- 0.0044	0.6853	0.6452		0.0076	0.7832	0.7177
	(0.2698)	(47.3876)***			(0.4850)	(56.0153)***	
SNIVX	- 0.0036	0.5984	0.4662		0.0074	0.6911	0.5520
	(0.1782)	(32.8394)***			(0.3719)	(38.9927)***	
PNINX	- 0.0183	0.7115	0.4862		- 0.0001	0.8194	0.5820
	(0.7831)	(34.1853)***			(0.0022)	(41.4542)***	
CWVGX	- 0.0002	0.6712	0.5511		0.0131	0.7781	0.6285
	(0.0009)	(38.9388)***			(0.6881)	(45.6906)***	
NEFIX	0.0017	0.6797	0.5199		0.0211	0.7837	0.5993
	(0.0822)	(36.5726)***			(1.0300)	(42.9564)***	
CMISX	0.0168	0.6663	0.5788		0.0145	0.7527	0.5293
	(0.9243)	(41.1997)***			(0.6404)	(37.2515)***	
TIEUX	0.0043	0.7140	0.6391		0.0273	0.8251	0.7430
	(0.2535)	(46.7636)***			(1.7658)*	(59.7274)***	
RBIEX	- 0.0232	0.7416	0.4862		- 0.0339	0.8207	0.3311
	(0.9520)	(34.1869)***			(0.9096)	(24.7158)***	
DRGLX	- 0.0204	0.7629	0.4792		- 0.0283	0.8417	0.3492
	(0.8056)	(33.7094)***			(0.7710)	(25.7316)***	

Table 20 Continued

Ticker	Strategy 1 (Simple Weekend Strategy)				Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2		α	β	R^2
NIEAX	- 0.0248	0.7246	0.3623		- 0.0095	0.8338	0.4456
	(0.8070)	(26.4874)***			(0.3198)	(31.4958)***	
ENIGX	- 0.0069	0.7502	0.5868		0.0080	0.8655	0.6825
	(0.3457)	(41.8804)***			(0.4270)	(51.5055)***	
UMINX	- 0.0083	0.6702	0.5516		0.0138	0.7719	0.6258
	(0.4286)	(38.9759)***			(0.7231)	(45.4240)***	
FTITX	- 0.0037	0.6984	0.4584		0.0171	0.8090	0.5384
	(0.1516)	(32.3285)***			(0.7167)	(37.9362)***	
FAERX	0.0159	0.7251	0.6003		0.0191	0.8226	0.6339
	(0.8423)	(43.0661)***			(0.9561)	(46.2384)***	
FICDX	0.0159	0.4332	0.1937		0.0231	0.4904	0.2199
	(0.5626)	(17.2251)***			(0.7830)	(18.6502)***	
FDIVX	0.0296	0.5694	0.6086		0.0387	0.6499	0.6538
	(2.0326)**	(43.8215)***			(2.5653)**	(48.2780)***	
FIGRX	0.0288	0.6401	0.5934		0.0197	0.7261	0.5800
	(1.7023)*	(42.4510)***			(1.4529)	(41.2818)***	
FOSFX	0.0182	0.7255	0.6013		0.0179	0.8206	0.6065
	(0.9652)	(43.1562)***			(0.8499)	(43.6111)***	
KNINX	0.0076	0.7484	0.6851		0.0194	0.8503	0.7864
	(0.4693)	(51.8375)***			(1.3712)	(67.3962)***	
GAMNX	- 0.0257	0.5731	0.4066		- 0.0256	0.6553	0.4618
	(1.1657)	(29.0870)***			(1.1346)	(32.5382)***	
GSIFX	- 0.0048	0.7394	0.5564		0.0102	0.8339	0.6343
	(0.2297)	(39.3564)***			(0.5062)	(46.2686)***	
HAINX	0.0028	0.6397	0.4684		0.0156	0.7436	0.5572
	(0.1304)	(32.9856)***			(0.7397)	(39.4048)***	
IVINX	- 0.0291	0.6871	0.3510		- 0.0190	0.7966	0.4265
	(0.9754)	(25.8427)***			(0.6458)	(30.2921)***	
ACINX	0.0161	0.4825	0.3848		0.0383	0.5657	0.4422
	(0.8250)	(27.7929)***			(1.8882)**	(31.2777)***	

Table 20 Continued

Ticker	Strategy 1 (Simple Weekend Strategy)				Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2		α	β	R^2
CONAX	- 0.0302	0.6352	0.4177		- 0.0085	0.7231	0.4963
	(1.2614)	(29.7612)***			(0.3659)	(34.8669)***	
MSACX	- 0.0142	0.6408	0.4967		0.0001	0.7320	0.5788
	(0.6899)	(34.9114)***			(0.0055)	(41.1754)***	
MSIQX	0.0042	0.5745	0.3036		0.0117	0.6541	0.4178
	(0.1710)	(26.3777)***			(0.4730)	(29.7561)***	
MUIYX	- 0.0056	0.6784	0.4717		0.0056	0.7816	0.5594
	(0.2455)	(33.2051)***			(0.2536)	(39.5789)***	
OAKIX	0.0310	0.4414	0.3377		0.0485	0.5324	0.4068
	(1.5712)	(25.0943)***			(2.3624)**	(29.0907)***	
PHITX	- 0.0223	0.7385	0.4688		- 0.0139	0.8429	0.5310
	(0.8879)	(33.0139)***			(0.5508)	(37.3791)***	
PFIFX	- 0.0082	0.5187	0.2925		0.0071	0.6230	0.3702
	(0.3188)	(22.5966)***			(0.2739)	(26.9329)***	
PRWLX	- 0.0227	0.6423	0.4943		- 0.0021	0.7286	0.5759
	(1.0952)	(34.7436)***			(0.1042)	(40.9358)***	
SCIEX	- 0.0580	0.6877	0.1552		- 0.0443	0.7962	0.2000
	(1.1331)	(15.0648)***			(0.8727)	(17.5660)***	
SCINX	- 0.0138	0.7128	0.4962		0.0073	0.8215	0.5910
	(0.6014)	(34.8737)***			(0.3356)	(42.2264)***	
SEITX	0.0169	0.7546	0.6954		0.0354	0.8700	0.8036
	(1.0601)	(53.0938)***			(2.5754)**	(71.0531)***	
SNGRX	- 0.0144	0.7743	0.5307		0.0053	0.8865	0.6164
	(0.6205)	(37.3738)***			(0.0237)	(44.5251)***	
SBIEX	- 0.0273	0.7034	0.3906		- 0.0090	0.8099	0.4673
	(0.9747)	(28.1335)***			(0.3262)	(32.8993)***	
STISX	0.0003	0.7963	0.4980		0.0193	0.9042	0.5683
	(0.0121)	(35.0018)***			(0.7653)	(40.3038)***	
PRFEX	- 0.0014	0.7597	0.6063		0.0156	0.8749	0.7102
	(0.0724)	(43.6145)***			(0.8756)	(54.9980)***	

Table 20 Continued

F. Foreign Fund

Ticker	Strategy 1 (Simple Weekend Strategy)				Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2		α	β	R^2
PRIDX	0.0226 (0.8361)	0.4727 (19.6038)***	0.2373		0.0423 (1.5335)	0.5502 (22.3822)***	0.2887
PRITX	- 0.0034 (0.1747)	0.7604 (43.4982)***	0.6051		0.0138 (0.7712)	0.8758 (54.8284)***	0.7090
TEMFX	0.0174 (1.0008)	0.4849 (31.1974)***	0.4407		0.0227 (1.2871)	0.5637 (35.8200)***	0.5097
FINEX	0.0086 (0.4943)	0.3349 (21.6070)***	0.2743		0.0186 (1.0202)	0.4000 (24.6385)***	0.3297
USIFX	0.0197 (1.2721)	0.6375 (46.1816)***	0.6333		0.0220 (1.4363)	0.7299 (53.4555)***	0.6984
VTRIX	0.0096 (0.5184)	0.6122 (37.0485)***	0.5264		0.0274 (1.5462)	0.7137 (45.1430)***	0.6228
VWIGX	0.0217 (1.2467)	0.7150 (46.0345)***	0.6318		0.0365 (2.2110)**	0.8285 (56.2694)***	0.7196
VNEPX	- 0.0001 (0.0046)	0.7092 (33.8142)***	0.4807		0.0209 (0.9270)	0.8178 (40.6500)***	0.5725
UNCGX	- 0.0447 (1.3063)	0.6563 (21.4966)***	0.2723		- 0.0211 (0.6230)	0.7499 (24.7985)***	0.3326
SRIGX	0.0018 (0.0974)	0.7092 (44.1324)***	0.6120		0.0170 (1.0040)	0.8121 (53.8057)***	0.7011
WIBCX	0.0014 (0.0619)	0.7407 (35.6857)***	0.5077		- 0.0084 (0.3646)	0.8465 (41.1033)***	0.5779
Portfolio	- 0.0020 (0.1450)	0.6625 (54.0732)***	0.7030		0.0110 (0.9130)	0.7608 (70.8353)***	0.8026

Table 20 Continued

G. Latin Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
MBLTX	0.0443	0.7501	0.7345	0.0558	0.5291	0.5140	0.0507	0.8395	0.8186
	(1.9065)*	(58.4528)***		(2.1041)**	(36.1428)***		(2.4849)**	(74.6267)***	

H. World Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
GSCAX	- 0.0050	0.7755	0.4408	- 0.0370	0.7928	0.4707	0.0177	0.8691	0.5012
	(0.1873)	(31.2039)***		(1.4557)	(33.1426)***		(0.6770)	(35.2097)***	
ANWPX	0.0075	0.6974	0.5439	0.0103	0.7050	0.6030	0.0417	0.7873	0.6276
	(0.3897)	(38.3773)***		(0.5929)	(43.3074)***		(2.2734)**	(45.6018)***	
SMCWX	0.0101	0.7123	0.3925	- 0.0382	0.7324	0.4018	0.0272	0.7998	0.4454
	(0.3763)	(28.2495)***		(1.4137)	(28.7990)***		(1.0088)	(31.4790)***	
AHERX	- 0.1098	0.7230	0.0216	- 0.2799	0.8767	0.0332	- 0.1624	0.7866	0.0230
	(0.7466)	(5.2236)***		(1.9558)*	(6.5088)***		(1.0487)	(5.3946)***	
IGLGX	- 0.0202	0.8366	0.5241	- 0.0208	0.8394	0.5110	0.0117	0.9384	0.5761
	(0.8387)	(36.8761)***		(0.8392)	(35.9277)***		(0.4819)	(40.9512)***	
FWWGX	- 0.0470	0.8050	0.5566	- 0.0635	0.8184	0.3332	- 0.0196	0.9038	0.3854
	(1.3493)	(24.5387)***		(1.8138)*	(24.8439)***		(0.5669)	(27.8172)***	
EGLBX	- 0.0211	0.6607	0.3577	- 0.0041	0.6859	0.4347	0.0262	0.7608	0.4235
	(0.7884)	(26.2270)***		(0.1735)	(30.8180)***		(0.9775)	(30.1104)***	
FWWFX	0.0237	0.7248	0.6989	- 0.0199	0.7296	0.5089	0.0436	0.8144	0.7391
	(1.6496)*	(53.5371)***		(0.9186)	(35.7765)***		(2.9811)***	(59.1274)***	
FIISX	- 0.0151	0.7470	0.5612	- 0.0127	0.7587	0.6193	0.0136	0.8400	0.6464
	(0.7539)	(39.7403)***		(0.7058)	(44.8203)***		(0.7228)	(47.4954)***	
GAGLX	- 0.0101	0.6836	0.5172	- 0.0195	0.6819	0.5156	0.0040	0.7497	0.5607
	(0.5059)	(36.3718)***		(0.9737)	(36.2570)***		(0.1976)	(39.6872)***	

Table 20 Continued

H. World Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
FGLOX	- 0.0238	0.7934	0.6341	- 0.0303	0.8209	0.6379	- 0.0019	0.9026	0.7104
	(1.3079)	(46.2610)***		(1.6188)	(46.6483)***		(0.1093)	(55.0140)***	
MCGLX	- 0.0076	0.7473	0.5969	- 0.0284	0.7606	0.5915	0.0156	0.8484	0.6653
	(0.4091)	(42.7649)***		(1.4867)	(42.2903)***		(0.8578)	(49.5287)***	
JAWWX	0.0219	0.8622	0.6041	0.0016	0.8600	0.5610	0.0596	0.9698	0.6759
	(1.0390)	(43.4113)***		(0.0690)	(39.7302)***		(2.9366)***	(50.7307)***	
LAGEX	- 0.0204	0.6915	0.4829	- 0.0139	0.7002	0.4849	0.0007	0.7786	0.5422
	(0.9440)	(33.9617)***		(0.6385)	(34.0959)***		(0.0334)	(38.2315)***	
MWEBX	0.0058	0.6080	0.5776	0.0101	0.6208	0.5532	0.0265	0.6848	0.6222
	(0.3716)	(41.0930)***		(0.6016)	(39.1002)***		(1.6429)	(45.0766)***	
OPPAX	0.0044	0.7410	0.3920	- 0.0121	0.7718	0.4021	0.0343	0.8456	0.4530
	(0.1592)	(28.2202)***		(0.4241)	(28.8222)***		(1.2199)	(31.9697)***	
OPGIX	0.0250	0.7473	0.3840	0.0072	0.7852	0.3992	0.0463	0.8490	0.4311
	(0.8736)	(27.7490)***		(0.2486)	(28.6459)***		(1.5707)	(30.5778)***	
QVGLX	- 0.0005	0.6144	0.5258	- 0.0183	0.6268	0.3664	0.0065	0.6899	0.4178
	(0.0278)	(37.0077)***		(0.7342)	(26.7236)***		(0.2620)	(29.7586)***	
NWWOX	- 0.0292	0.7200	0.3718	0.0146	0.7286	0.4540	0.0001	0.8169	0.4426
	(1.0315)	(27.0375)***		(0.6050)	(32.0473)***		(0.0024)	(31.3001)***	
PRGLX	- 0.0240	0.8414	0.4583	- 0.0259	0.8611	0.4627	0.0111	0.9549	0.5307
	(0.8687)	(32.3228)***		(0.9219)	(32.6136)***		(0.4084)	(37.3586)***	
PEQUX	- 0.0189	0.9810	0.4787	- 0.0380	0.9777	0.4679	0.0007	1.0839	0.5314
	(0.6120)	(33.6792)***		(1.2063)	(32.9527)***		(0.2244)	(37.4080)***	
SGSCX	0.0063	0.7294	0.4352	- 0.0055	0.7567	0.4489	0.0440	0.8287	0.4904
	(0.2512)	(30.8477)***		(0.2165)	(31.7144)***		(1.7236)*	(34.4599)***	
SCOBX	- 0.0434	0.5303	0.2818	- 0.0300	0.5532	0.3291	- 0.0126	0.6057	0.3425
	(1.6945)*	(22.0144)***		(1.2551)	(24.6146)***		(0.4962)	(25.3534)***	
TECAX	0.0150	0.5911	0.5716	- 0.0065	0.6088	0.5103	0.0346	0.6768	0.5866
	(0.9713)	(40.5898)***		(0.3591)	(35.8750)***		(2.0105)**	(41.8408)***	
TEGOX	- 0.0032	0.5724	0.4879	- 0.0286	0.5850	0.4253	0.0090	0.6501	0.5060
	(0.1787)	(34.3028)***		(1.3907)	(30.2294)***		(0.4609)	(35.5529)***	

Table 20 Continued

H. World Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
TEMGX	- 0.0039	0.3691	0.3328	- 0.0390	0.3947	0.3057	- 0.0002	0.4293	0.3432
	(0.2493)	(24.8212)***		(2.1667)**	(23.3217)***		(0.0132)	(25.3949)***	
TEPLX	0.0064	0.4861	0.3812	- 0.0159	0.4947	0.3476	0.0157	0.5524	0.4052
	(0.3413)	(27.5815)***		(0.7738)	(25.6509)***		(0.7739)	(28.9935)***	
TEMWX	0.0080	0.5249	0.4708	- 0.0175	0.5390	0.4105	0.0200	0.5977	0.4807
	(0.4727)	(33.1488)***		(0.8965)	(29.3232)***		(1.0660)	(33.7960)***	
USAWX	0.0160	0.7596	0.7008	- 0.0139	0.7569	0.6753	0.0299	0.8492	0.7541
	(1.0693)	(53.7867)***		(0.8734)	(50.6823)***		(2.0387)**	(61.5210)***	
Portfolio	- 0.0087	0.6992	0.6791	- 0.0289	0.7180	0.6858	0.0121	0.7884	0.7610
	(0.6003)	(51.1269)***		(1.9698)**	(51.9251)***		(0.9028)	(62.6755)***	

I. International Hybrid Fund

Ticker	Strategy 1 (Simple Weekend Strategy)			Strategy 2 (Complex Strategy)			Strategy 3 (Restricted Weekend Strategy)		
	α	β	R^2	α	β	R^2	α	β	R^2
CAIBX	- 0.0154	0.3082	0.3590	- 0.0216	0.3162	0.3874	- 0.0066	0.3478	0.4160
	(1.2358)	(26.3025)***		(1.7934)*	(27.9456)***		(0.5293)	(29.6496)***	
BPGLX	- 0.0158	0.3356	0.2499	- 0.0309	0.3397	0.2546	- 0.0051	0.3798	0.3002
	(0.9010)	(20.2851)***		(1.7569)*	(20.5366)***		(0.2895)	(23.0094)***	
SGENX	- 0.0029	0.2390	0.0973	- 0.0114	0.2631	0.1759	0.0045	0.2803	0.1262
	(0.1336)	(11.5404)***		(0.6619)	(16.2382)***		(0.2011)	(13.3501)***	
FMAFX	- 0.0151	0.5241	0.5213	- 0.0201	0.5292	0.5908	- 0.0022	0.5820	0.5921
	(0.9939)	(36.6698)***		(1.5105)	(42.2273)**		(0.1510)	(42.3224)***	
MALOX	- 0.0166	0.4177	0.2641	- 0.0168	0.4255	0.3167	- 0.0057	0.4753	0.3190
	(0.7859	(21.0528)***		(0.8873)	(23.9259)***		(0.2710)	(24.0445)***	
MFWTX	0.0247	0.3614	0.0799	- 0.0237	0.3402	0.0396	- 0.0012	0.3758	0.0479
	(0.6651)	(10.3527)***		(0.4676)	(7.1406)***		(0.0246)	(7.8819)***	
Portfolio	- 0.0069	0.3643	0.4950	- 0.0207	0.3690	0.4657	- 0.0027	0.4068	0.5094
	(0.6166)	(34.7922)***		(1.7350)*	(32.8109)***		(0.2254)	(35.7969)***	

other hand, when excess returns are positive, Sharpe measures penalize the higher standard deviations. Therefore, similar rule should apply when excess returns are negative. Although some of the Sharpe and Treynor measures for trading strategy returns of this study are negative; however they dominate the buy-and-hold Sharpe and Treynor measures.

Table 20 presents the results of the Jensen measures for trading strategies. It has been reported in Tables 17, 18 and 19 that both forms of the weekend trading strategies (i.e. trading strategies 1 and 3) outperformed the buy-and-hold strategy in terms of higher risk-adjusted returns for most categories of international funds such as Diversified Emerging Market, Diversified Pacific/Asia, Europe, Japan, Foreign, World and International Hybrid funds. On the other hand, trading strategy 2 emerges as the best trading strategy for Pacific/Asia ex. Japan and Latin funds. As a test of robustness, the Jensen measure is used to test whether the risk-adjusted returns are positive and statistically significant. Empirical results suggest that the Jensen alphas of trading strategies are positive for most of the international funds although not all of them are statistically significant.

The Jensen model fit is good for individual as well as portfolio of Diversified Emerging market funds following trading strategy 3 (restricted weekend strategy). The Jensen alpha is the highest and positive and statistically significant at 1% level, risks are also less than the market risks and the coefficient of determination $\left(R^2\right)$ of the Jensen regression is also high for all Diversified Emerging market funds following trading strategy 3. More specifically, 71% of the risk-adjusted returns of trading strategy 3 are explained by the model for the Morgan Stan Institutional Emerging Market A (MGEMX) fund. Risk-adjusted returns of trading strategy 3 for MGEMX are positive (0.0673 percent) and statistically significant at better than the one-percent

level. Moreover, systematic risk of the third trading strategy is less than that of the market index (β=0.8903)

The Jensen alpha is positive (0.0370 percent) and statistically significant at 10% level for portfolio of Diversified Pacific/Asia funds following trading strategy 1. In addition, risks of the trading strategy 1 (0.5402) are also less than the market risks and the coefficient of determination $\left(R^2\right)$ of the Jensen model is also high (0.4972) for portfolio of Diversified Pacific/Asia funds. For individual Diversified Pacific/Asia funds, trading strategy 1 provides positive risk-adjusted returns (though not significant for all funds) and lower risks (beta coefficients are less than the market beta of 1). The coefficients of determination of the Jensen regression for all individual Diversified Pacific/Asia funds are also high.

Trading strategy 3 also provides the highest and positive risk-adjusted returns for most of the individual Europe, Foreign, World and International Hybrid funds. For Japan funds, both trading strategies 1 and 3 emerge as the best trading strategies in terms of risk-adjusted returns (Jensen alpha). All of the proposed trading strategies provide statistically significant positive Jensen alphas for Pacific/Asia ex. Japan funds; however trading strategies 1 and 2 provide the highest and most significant positive alphas. Similar findings are obtained for Latin fund; however trading strategy 2 provides the highest and significantly positive Jensen alpha (0.0558 percent). Moreover, the R^2 values of the Jensen regression model are higher for all categories of sample funds.

The Sharpe, Treynor and Jensen measures of risk-adjusted returns in generally provide evidences that the proposed trading strategies provide superior performances. However, trading strategy 1 (simple weekend trading strategy) and trading strategy 3 (restricted weekend trading

strategy) are considered as the best trading strategies because they provide statistically significant higher risk-adjusted returns for most of the international mutual funds.

3.5.7. Risks and Returns of Serial Correlation Trading Strategy

According to the proposed serial correlation trading strategy of this study investors of an international mutual fund are in the fund (i.e. buy-and-hold fund) whenever its own foreign market index is up and are out of the fund (i.e. sell the fund) whenever its own foreign market index is down. The serial correlation trading strategy is more unrestricted than the trading strategies 1 (simple weekend strategy), 2 (complex strategy) or 3 (restricted weekend strategy) of this study because the serial correlation strategy allows investors to execute higher trade frequencies than the trading strategies 1, 2 or 3 of this study allows. As a result, the serial correlation trading strategy is expected to produce higher returns in absence of transactions costs.

Table 21 documents the daily mean returns and risks of the serial correlation trading strategy and compares them with the buy-and-hold strategy. The results suggest that the serial correlation trading strategy produces higher daily mean returns and lower daily average risks for all categories of international mutual funds. For example, the buy-and-hold strategy produces daily mean returns of –0.0318% and daily mean standard deviations (risks) of 1.3224% for Merrill Lynch Dev Cap Market A (MADCX) fund during the holdout sample period. However an investor of MADCX fund may increase daily mean returns to 0.1486% and reduce daily average risks to 0.8243% by following the proposed serial correlation trading strategy. Moreover, the paired t-test (to test the null hypothesis of no significant difference in daily mean returns between buy-and-hold strategy and the serial correlation trading strategy) is statistically

Table 21: Returns and Risks of Serial Correlation Trading Strategy

This table presents the returns and risks of buy-and-hold and serial correlation trading strategy. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and risks (standard deviations of returns) of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of serial correlation trading strategy. The significance level of t-statistics (to test the differences in mean returns between buy-and-hold and filter trading strategy) and F-statistics (to test differences in mean variances between buy-and-hold and filter trading strategy) are presented at 1% (***), 5% (**) and 10% (*) level respectively. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
MADCX	-0.0318%	1.3224%	0.1486%***	0.8243%***
MNEMX	-0.0424%	1.3434%	0.1384%***	0.8462%***
MGEMX	-0.0318%	1.4658%	0.1705%***	0.9171%***
TEDMX	-0.0319%	1.3084%	0.1253%***	0.8886%***
Portfolio	-0.0345%	1.2831%	0.1457%***	0.8000%***

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
FPBFX	-0.0014%	1.3893%	0.0763%***	0.9574%***
GAPCX	-0.0389%	1.4254%	0.0585%***	0.9343%***
JHWPX	-0.0147%	1.3235%	0.0744%***	0.8984%***
MAPCX	-0.0347%	1.4110%	0.0365%***	0.8572%***
TGRBX	-0.0294%	1.3397%	0.0521%***	0.8991%***
PRPBX	-0.0471%	4.2347%	0.0589%***	4.1287%
FKPGX	-0.0512%	1.2696%	0.0330%***	0.8317%***
Portfolio	-0.0310%	1.3295%	0.0557%***	0.9836%***

C. Europe Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
ANEAX	-0.0414%	1.5057%	0.0613%***	1.0755%***
DFCSX	-0.0511%	1.1944%	0.0354%***	1.0169%***
DFUKX	-0.0592%	1.1280%	0.0437%***	0.9162%***
FIEUX	-0.0443%	1.3766%	0.0557%***	0.9908%***
FEURX	-0.0666%	1.7461%	0.1061%***	1.0803%***
MBEFX	-0.0495%	1.5844%	0.0381%***	1.1664%***
EUGBX	-0.0418%	1.5714%	0.0504%***	1.1068%***
PEURX	-0.0289%	1.3817%	0.0765%***	0.9533%***
PEUGX	-0.0280%	1.3644%	0.0768%***	0.9180%***
PRESX	-0.0370%	1.3908%	0.0662%***	0.9474%***
VEURX	-0.0152%	1.3483%	0.0546%***	0.8983%***
Portfolio	-0.0421%	1.1558%	0.0604%***	0.7881%***

Table 21 Continued

D. Japan Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
DFJSX	-0.0193%	1.5653%	0.0587%***	1.0661%***
SJPNX	-0.0195%	1.7005%	0.0565%***	1.1530%***
PRJPX	-0.0320%	1.6781%	0.0612%***	1.1124%***
VPACX	-0.0278%	1.5067%	0.0141%***	1.0159%***
Portfolio	-0.0246%	1.4668%	0.0476%***	0.9878%***

E. Pacific/Asia ex. Japan Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
EVCGX	-0.0309%	1.7032%	0.1184%***	1.1977%***
CNTTX	-0.0088%	1.7435%	0.1166%***	1.2163%***
MBDRX	-0.0470%	1.7022%	0.1159%***	1.1014%***
MSAEX	-0.0237%	1.6030%	0.1067%***	1.1080%***
PRASX	-0.0025%	1.5777%	0.1221%***	1.0913%***
Portfolio	-0.0226%	1.5740%	0.1159%***	1.0826%***

F. Foreign Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
AEIGX	-0.0742%	1.5644%	0.0711%***	0.9982%***
AIIEX	-0.0220%	1.2165%	0.0971%***	0.7799%***
AAIEX	-0.0268%	1.0590%	0.0722%***	0.6900%***
TWIEX	-0.0285%	1.3708%	0.0873%***	0.8334%***
AEPGX	-0.0143%	1.0919%	0.0907%***	0.6895%***
INIFX	-0.0601%	1.4149%	0.0559%***	0.9632%***
BAINX	-0.0394%	1.1035%	0.0795%***	0.7602%***
SNIVX	-0.0284%	1.0914%	0.0744%***	0.6997%***
PNINX	-0.0492%	1.2633%	0.0734%***	0.8218%***
CWVGX	-0.0371%	1.1629%	0.0676%***	0.8243%***
NEFIX	-0.0271%	1.1994%	0.0878%***	0.8247%***
CMISX	-0.0343%	1.2144%	0.0810%***	0.8647%***
TIEUX	-0.0363%	1.2201%	0.0854%***	0.7964%***
RBIEX	-0.0844%	1.6449%	0.0167%***	1.4129%***
DRGLX	-0.0826%	1.6488%	0.0453%***	1.2587%***
NIEAX	-0.0603%	1.4516%	0.0626%***	0.8144%***
ENIGX	-0.0444%	1.2462%	0.0750%***	0.8322%***
UMINX	-0.0365%	1.1611%	0.0970%***	0.7930%***
FTITX	-0.0352%	1.3017%	0.0886%***	0.9158%***
FAERX	-0.0337%	1.2324%	0.0697%***	0.8768%***
FICDX	-0.0023%	1.2627%	0.0527%***	0.8377%***
FDIVX	-0.0023%	0.9626%	0.0770%***	0.6690%***
FIGRX	-0.0179%	1.1354%	0.0794%***	0.8154%***
FOSFX	-0.0339%	1.2513%	0.0684%***	0.9065%***
KNINX	-0.0381%	1.1456%	0.0755%***	0.7616%***
GAMNX	-0.0633%	1.1455%	0.0408%***	0.8087%***
GSIFX	-0.0433%	1.2583%	0.0811%***	0.8026%***
HAINX	-0.0243%	1.1808%	0.0604%***	0.8052%***
IVINX	-0.0698%	1.4221%	0.0418%***	1.1177%***

Table 21 Continued

F. Foreign Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
ACINX	-0.0212%	1.1016%	0.1323%***	0.6531%***
CONAX	-0.0543%	1.2062%	0.0501%***	0.9103%***
MSACX	-0.0380%	1.1313%	0.0414%***	0.8710%***
MSIQX	-0.0213%	1.1733%	0.0325%***	0.9749%***
MUIYX	-0.0370%	1.2390%	0.0495%***	0.8273%***
OAKIX	-0.0020%	1.0669%	0.0985%***	0.6675%***
PHITX	-0.0591%	1.3587%	0.0477%***	0.9816%***
PFIFX	-0.0297%	1.1863%	0.0605%***	0.8811%***
PRWLX	-0.0493%	1.1440%	0.0503%***	0.8205%***
SCIEX	-0.0979%	2.0448%	0.0085%***	1.8436%***
SCINX	-0.0409%	1.2615%	0.0587%***	0.9213%***
SEITX	-0.0201%	1.1589%	0.0781%***	0.7983%***
SNGRX	-0.0533%	1.3328%	0.0643%***	0.9508%***
SBIEX	-0.0577%	1.3789%	0.1109%***	0.8519%***
STISX	-0.0380%	1.4195%	0.0847%***	0.9422%***
PRFEX	-0.0353%	1.2384%	0.0771%***	0.8150%***
PRIDX	-0.0015%	1.2128%	0.1425%***	0.6851%***
PRITX	-0.0375%	1.2400%	0.0751%***	0.8224%***
TEMFX	-0.0166%	0.9423%	0.0729%***	0.6627%***
FINEX	-0.0142%	0.8438%	0.0920%***	0.4775%***
USIFX	-0.0228%	1.0414%	0.0616%***	0.7157%***
VTRIX	-0.0277%	1.1546%	0.0749%***	0.7356%***
VWIGX	-0.0268%	1.2038%	0.0805%***	0.7840%***
VNEPX	-0.0417%	1.2982%	0.0815%***	0.9415%***
UNCGX	-0.0628%	1.5055%	0.0590%***	0.8621%***
SRIGX	-0.0338%	1.1537%	0.0886%***	0.7846%***
WIBCX	-0.0407%	1.3074%	0.0689%***	0.9544%***
Portfolio	-0.0380%	1.0174%	0.0714%***	0.6810%***

G. Latin Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
MBLTX	-0.0358%	1.7505%	0.1481%***	1.1094%***

H. World Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
GSCAX	-0.0614%	1.4194%	0.1299%***	0.9577%***
ANWPX	-0.0115%	1.1286%	0.1304%***	0.6889%***
SMCWX	-0.0386%	1.3354%	0.1152%***	0.8303%***
AHERX	-0.1966%	5.7550%	0.0191%***	4.0791%***
IGLGX	-0.0466%	1.3768%	0.1025%***	1.0219%***
FWWGX	-0.0839%	1.5975%	0.0947%***	1.0411%***
EGLBX	-0.0373%	1.3071%	0.1462%***	0.9871%***
FWWFX	-0.0284%	1.1874%	0.0954%***	0.7390%***
FIISX	-0.0361%	1.1665%	0.1095%***	0.7629%***

Table 21 Continued

H. World Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
GAGLX	-0.0347%	1.1259%	0.0756%***	0.7439%***
FGLOX	-0.0625%	1.2150%	0.0889%***	0.8071%***
MCGLX	-0.0444%	1.1753%	0.1108%***	0.7991%***
JAWWX	-0.0159%	1.3633%	0.1537%***	0.8813%***
LAGEX	-0.0367%	1.1777%	0.0951%***	0.7719%***
MWEBX	-0.0186%	0.9791%	0.1141%***	0.6788%***
OPPAX	-0.0203%	1.3836%	0.1352%***	0.7887%***
OPGIX	-0.0114%	1.4375%	0.0999%***	0.9768%***
QVGLX	-0.0336%	1.1754%	0.0636%***	0.8810%***
NWWOX	-0.0501%	1.3561%	0.1069%***	0.8783%***
PRGLX	-0.0448%	1.4691%	0.1346%***	0.9414%***
PEQUX	-0.0577%	1.6394%	0.1400%***	0.9375%***
SGSCX	-0.0135%	1.3259%	0.1313%***	0.9165%***
SCOBX	-0.0515%	1.1389%	0.0736%***	0.8754%***
TECAX	-0.0178%	1.0038%	0.1230%***	0.7054%***
TEGOX	-0.0387%	1.0452%	0.0826%***	0.7652%***
TEMGX	-0.0371%	0.8336%	0.0892%***	0.5673%***
TEPLX	-0.0186%	0.9710%	0.0816%***	0.7529%***
TEMWX	-0.0228%	0.9728%	0.1034%***	0.7367%***
USAWX	-0.0254%	1.1032%	0.0968%***	0.7606%***
Portfolio	-0.0413%	1.0276%	0.1049%***	0.6672%***

I. International Hybrid Fund

Ticker	Buy-and-hold Strategy		Serial Correlation Trading Strategy	
	Mean Daily Returns	Mean Daily SD	Mean Daily Returns	Mean Daily SD
CAIBX	-0.0122%	0.5977%	0.0405%***	0.3949%***
BPGLX	-0.0237%	0.7600%	0.0569%***	0.4517%***
SGENX	-0.0123%	0.8839%	0.0706%***	0.4656%***
FMAFX	-0.0327%	0.8491%	0.0523%***	0.5953%***
MALOX	-0.0281%	0.9170%	0.0591%***	0.5901%***
MFWTX	-0.0163%	1.8306%	0.0144%***	1.3070%*
Portfolio	-0.0209%	0.6328%	0.0490%***	0.4199%***

significant at 1% level for MADCX fund. The F-test (to test the hypothesis of no significant difference in daily mean standard deviations between buy-and-hold strategy and the filter trading strategy) is also statistically significant at 1% level for MADCX fund. A comparison between the results of the proposed serial correlation trading strategy and trading strategies 1, 2 and 3 suggest that the serial correlation trading strategy performs better than trading strategies 1, 2 or 3 because

the serial correlation trading strategy allows investors to trade more frequently than that of for trading strategies 1, 2 or 3.

I computed the number of trades (roundtrip) required under the proposed serial correlation trading strategy. The number of roundtrip trades required under serial correlation trading strategy is provided in the parentheses after the name of each fund category: Diversified Emerging Market (249); Diversified Pacific/Asia (286); Europe (294); Foreign (267); Hybrid (255); Japan (227); Latin (275); Pacific/Asia excluding Japan (278), and World (255).

3.5.8. Market Timing Analysis for Trading Strategy Returns

The proposed trading strategies of this study are related to time the market (i.e. shifting investment in between international funds and money market funds on the basis of movements in foreign market index to capture gain in up markets and avoid losses in down markets). The Treynor-Mazuy (TM) (1966) and Henriksson-Merton (HM) (1981) market timing models are used in this section to test the performances of the trading strategies. The equations for the TM and HM, respectively, are:

$$\text{TM: } R_p - R_f = \alpha + \beta\left(R_m - R_f\right) + \gamma\left(R_m - R_f\right)^2 + \varepsilon \qquad (12)$$

$$\text{HM: } R_p - R_f = \alpha + \beta\left(R_m - R_f\right) + \gamma\left(R_m - R_f\right)D + \varepsilon \qquad (13)$$

where $R_p - R_f$ is portfolio excess return, $R_m - R_f$ is market excess return, and α, β and γ are coefficients for selectivity (risk-adjusted returns), systematic risk, and market timing

respectively, D is dummy variable that takes a value of 1 if the market return exceeds the risk-free rate or zero if the market return is below the risk-free rate and ε is random error term.

The Capital Asset Pricing Model (CAPM) and the Jensen measure exhibit the linear relationship between fund and market returns; however the CAPM and Jensen model do not capture the effects of fund managers or investors who adjust portfolio risks on the basis of a timing forecast. Treynor and Mazuy (1966) argue that if fund managers or investors can forecast market returns correctly they will hold a larger (smaller) proportion of a market portfolio when the market returns are high (low). The TM measure uses the second moment of excess market returns to capture curvature in the regression (and also to enhance the coefficient of determination of the regression model). It implies that the characteristic line is linear with scatter inversely related to diversification if fund mangers or investors maintain constant risk. In other words, any market timing attempt causes curvature in the characteristic line and the curvature and scatter depend on the proportion of correct and incorrect guesses and the magnitude of the gambles. Using the quadratic term separates market timing from security selection measures. A linear model such as the CAPM or the Jensen doesn't capture this argument. If a fund investor can increase (decrease) the fund's exposure to the market index prior to a up (down) market, then the coefficient of timing ability, γ, will be positive in equation (12). If γ is not significantly different from zero, then the quadratic term adds no explanatory power. A significant negative γ refers to inferior timing ability of fund managers or investors.

The HM measure of equation (13) uses a dummy variable (D), where D is 1 if market return exceeds risk-free returns $\left(R_m > R_f\right)$ or 0 otherwise. The timing ability allows investors to avoid downturn in a bear market. Accordingly, in a bear market, investor's beta will be β and in

a bull market investor's beta will be $\beta + \gamma$. The coefficient of the dummy variable (γ) in equation (13) measures the timing ability of fund managers and γ is positive for managers who successfully time the market.

If the intercepts α in equation (12) and (13) are not significantly different from zero, one may conclude that the market is efficient (i.e. information and trading have costs which reduces net returns). A statistically significant and positive α implies positive excess returns (superior selection).

Table 22, Table 23 and Table 24 report the TM and HM measures for trading strategy 1 (simple weekend strategy), trading strategy 2 (complex strategy), and trading strategy 3 (restricted weekend strategy) respectively.[63] The results of the TM measures suggest that the trading strategies exhibit statistically positive timing ability. It has been reported earlier that trading strategies 2 and 3 performed better for Diversified Emerging market funds in terms of risks, returns and risk-adjusted returns. The TM market timing coefficients (γ) are positive and statistically significant for all individual and portfolio of Diversified Emerging market funds following the trading strategies 2 and 3. Similarly, the market timing coefficients are positive and statistically significant for Diversified Pacific/Asia funds under trading strategy 1.

As reported earlier trading strategy 3 provides the highest daily mean returns for individual European funds except Fidelity Europe (FIEUX) and Invesco European Investment (FEURX) funds, for which trading strategy 1 performed better and T. Rowe Price European

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[63] I also report the TM and HM regression results for buy-and-hold strategy in Table B-2 of appendix. For buy-and-hold strategy, the market timing coefficient (γ) is expected to be negative and the results of Table B-2 of appendix show that almost all funds exhibit negative market timing coefficients. Besides, alphas (selectivity coefficients) are not statistically different from zero. The results are consistent with the efficient market hypothesis where information and trading have costs, which diminish excess returns.

Table 22: Treynor and Mazuy (TM) and Henriksson and Merton (HM) Market Timing Results for Trading Strategy 1 (simple weekend strategy)

This table reports the Treynor-Mazuy market timing model of equation (12): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)^2 + \varepsilon$ and the Henriksson and Merton market timing model of equation (13): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)D + \varepsilon$ for trading strategy 1 *(simple weekend trading strategy)*. Column one lists the ticker symbol of sample funds. Columns two through five present the coefficients of risk adjusted returns in percent ((α), systematic risks ((β), market timing (γ) and coefficient of determinations (R^2) of TM model. Columns six through nine present the coefficients of risk adjusted returns in percent ((α), systematic risks ((β), market timing (γ) and coefficient of determinations (R^2) of HM model. Absolute t-values are given in parentheses and the significance levels are provided at 1% (***), 5% (**) and 10% (*) level. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MADCX	- 0.0306	0.7623	4.5861	0.6676	- 0.0730	0.5975	0.2495	0.6427
	(1.5677)	(49.2445)***	(11.2023)***		(2.5977)***	(25.3140)***	(5.5427)***	
MNEMX	- 0.0546	0.7667	4.5959	0.6385	- 0.0898	0.6081	0.2340	0.6138
	(2.6121)***	(46.1735)***	(10.4653)***		(2.9880)***	(24.0911)***	(4.8608)***	
MGEMX	- 0.0539	0.8017	5.6095	0.6058	- 0.1356	0.5738	0.3701	0.5801
	(2.3094)**	(43.2893)***	(11.4530)***		(4.0495)***	(20.4122)***	(6.9037)***	
TEDMX	- 0.0424	0.6510	3.9819	0.5019	- 0.0733	0.5132	0.2035	0.4817
	(1.8042)*	(34.9026)***	(8.0729)***		(1.1980)**	(18.3414)***	(3.8144)***	
Portfolio	- 0.0454	0.7454	4.6933	0.6880	- 0.0929	0.5732	0.2643	0.6605
	(2.4970)**	(51.6819)***	(12.3041)***		(3.5259)***	(25.9027)***	(6.2629)***	

Table 22 Continued

B. Diversified Pacific/Asia Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FPBFX	0.0116	0.5984	2.2201	0.5558	- 0.0314	0.5240	0.1645	0.5523
	(0.4739)	(37.9258)***	(4.6574)***		(0.9152)	(17.9132)***	(3.4437)***	
GAPCX	- 0.0101	0.5120	0.7212	0.3607	- 0.0406	0.4717	0.0840	0.3610
	(0.3305)	(25.9037)***	(1.2984)		(0.9511)	(12.9335)***	(1.4104)	
JHWPX	0.0445	0.5156	0.0866	0.4485	- 0.0302	0.4997	0.0315	0.4487
	(1.7792)*	(31.3146)***	(0.1741)		(0.8475)	(16.4363)***	(0.6346)	
MAPCX	- 0.0184	0.5638	1.8921	0.5048	- 0.0837	0.4731	0.1931	0.5051
	(0.7218)	(34.3330)***	(3.8137)***		(2.3552)**	(15.6029)***	(3.9000)***	
TGRBX	0.0138	0.5542	1.1140	0.5019	- 0.0372	0.4888	0.1370	0.5030
	(0.5545)	(34.4791)***	(2.2939)**		(1.0708)	(16.4829)***	(2.8282)***	
PRPBX	0.0843	0.5096	- 0.3207	0.0537	0.0517	0.4833	0.0479	0.0538
	(0.8856)	(8.3061)***	(0.1730)		(0.3895)	(4.2655)***	(0.2587)	
FKPGX	- 0.0090	0.4952	1.0840	0.4435	- 0.0368	0.4524	0.0930	0.4429
	(0.3586)	(30.6224)***	(2.2187)**		(1.0521)	(15.1384)***	(1.9054)*	
Portfolio	0.0168	0.5355	0.9710	0.4989	- 0.0211	0.4847	0.1073	0.4993
	(0.6943)	(34.3176)***	(2.0598)**		(0.6257)	(16.8261)***	(2.2804)**	

C. Europe Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
ANEAX	- 0.0162	0.7895	0.0362	0.5846	- 0.0107	0.7942	- 0.0099	0.5847
	(0.5788)	(41.5628)***	(0.0474)		(0.2851)	(23.8747)***	(0.1726)	
DFCSX	- 0.0229	0.2928	0.7443	0.1169	- 0.0254	0.3041	- 0.0209	0.1165
	(0.6700)	(12.6575)***	(0.7998)		(0.5533)	(7.5055)***	(0.2977)	
DFUKX	- 0.0367	0.1572	-1.3685	0.0391	- 0.0283	0.1905	- 0.0648	0.0380
	(1.0748)	(6.7969)***	(1.4713)		(0.6174)	(4.7016)***	(0.9235)	

Table 22 Continued

C. Europe Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FIEUX	0.0121	0.6909	- 0.3574	0.6189	0.0097	0.6951	- 0.0075	0.6188
	(0.5285)	(44.5927)***	(0.5735)		(0.3152)	(25.6182)***	(0.1604)	
FEURX	- 0.0003	0.8746	- 0.3737	0.6269	0.0111	0.8925	- 0.0363	0.6269
	(0.0115)	(45.3637)***	(0.4818)		(0.2913)	(26.4384)***	(0.6216)	
MBEFX	- 0.0311	0.6195	- 0.0233	0.3050	- 0.0224	0.6283	- 0.0185	0.3050
	(0.7879)	(23.2027)***	(0.0217)		(0.4233)	(13.4386)***	(0.2280)	
EUGBX	- 0.0259	0.7710	0.4382	0.4983	- 0.0452	0.7443	0.0545	0.4985
	(0.7956)	(34.9433)***	(0.4936)		(1.0341)	(19.2670)***	(0.8147)	
PEURX	- 0.0007	0.7496	- 0.3193	0.6439	0.0038	0.7598	- 0.0202	0.6439
	(0.0303)	(47.0608)***	(0.4983)		(0.1189)	(27.2389)***	(0.4185)	
PEUGX	0.0212	0.7498	- 0.8026	0.8282	0.0302	0.7733	- 0.0464	0.6858
	(0.9866	(51.6500)***	(1.3744)		(1.0501)	(30.4110)***	(1.0540)	
PRESX	- 0.0033	0.7295	- 0.6592	0.6009	0.0076	0.7522	- 0.0452	0.6009
	(0.1328)	(42.9028)***	(0.9638)		(0.2261)	(25.2612)***	(0.8778)	
VEURX	0.0232	0.7419	- 0.8971	0.6690	0.0187	0.7541	- 0.0220	0.6685
	(1.0518)	(49.6659)***	(1.4928)		(0.6306)	(28.8028)***	(0.4863)	
Portfolio	- 0.0007	0.6515	- 0.4610	0.7058	- 0.0046	0.6626	- 0.0216	0.7057
	(0.4133)	(54.1763)***	(0.9530)		(0.1942)	(31.4578)***	(0.5917)	

D. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
DFJSX	-0.0448	0.4085	2.6106	0.1099	- 0.0411	0.3477	0.0771	0.1045
	(1.1297)	(12.0090)***	(2.8063)***		(0.7787)	(6.4970)***	(0.8363)	
SJPNX	- 0.0425	0.5648	3.4151	0.1724	- 0.0487	0.4726	0.1285	0.1652
	(1.0058)	(15.5899)***	(3.4471)***		(0.8654)	(8.2806)***	(1.3077)	

Table 22 Continued

D. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
PRJPX	-0.0547	0.5524	3.4220	0.1653	- 0.0515	0.4708	0.1052	0.1577
	(1.2912)	(15.2021)***	(3.4438)***		(0.9122)	(8.2229)***	(1.0669)	
VPACX	-0.0257	0.4043	2.1851	0.1115	- 0.0251	0.3506	0.0707	0.1076
	(0.6591)	(12.0807)***	(2.3878)**		(0.4837)	(6.6639)***	(0.7806)	
Portfolio	- 0.0419	0.4825	2.9082	0.1712	- 0.0416	0.4104	0.0953	0.1638
	(1.1569)	(15.5215)***	(3.4211)***		(0.8613)	(8.3801)***	(1.1309)	

E. Pacific/Asia ex. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
EVCGX	- 0.0391	0.7166	4.8291	0.5550	- 0.1343	0.5029	0.3781	0.4515
	(1.2942)	(33.1427)***	(9.5056)***		(3.1965)***	(13.8831)***	(5.0682)***	
CNTTX	- 0.0450	0.8063	5.6083	0.5550	- 0.1589	0.5549	0.4461	0.5280
	(1.5589)	(38.9773)***	(11.5383)***		(3.9196)***	(15.8712)***	(7.4162)***	
MBDRX	- 0.0205	0.6758	4.0591	0.4726	- 0.0867	0.5095	0.2893	0.4527
	(0.7209)	(33.1634)***	(8.4772)***		(2.1958)**	(14.9549)***	(4.9353)***	
MSAEX	- 0.0011	0.6396	3.6973	0.4205	- 0.0593	0.4901	0.2591	0.4038
	(0.0355)	(29.8644)***	(7.3472)***		(1.4343)	(13.7480)***	(4.2247)***	
PRASX	- 0.0024	0.6335	4.1409	0.4158	- 0.0764	0.4576	0.3085	0.3962
	(0.0794)	(29.4988)***	(8.2063)***		(1.8399)*	(12.7701)***	(5.0054)***	
Portfolio	- 0.0216	0.6943	4.4669	0.5222	- 0.1031	0.5030	0.3362	0.4986
	(0.8151)	(36.5675)***	(10.0118)***		(2.7861)***	(15.7570)***	(6.1224)***	

Table 22 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
AEIGX	-0.0238	0.7542	-0.0369	0.4295	- 0.0180	0.7613	-0.0149	0.4986
	(0.7548)	(30.3078)***	(0.0305)		(0.4270)	(17.6971)***	(0.1978)	
AIIEX	0.0119	0.7085	-0.1400	0.5514	0.0288	0.7294	-0.0442	0.5516
	(0.5130)	(38.7126)***	(0.1576)		(0.9273)	(23.0615)***	(0.7959)	
AAIEX	-0.0028	0.6254	0.7397	0.5569	- 0.0087	0.6072	0.0358	0.5568
	(0.1405)	(39.2531)***	(0.9567)		(0.3203)	(22.0418)***	(0.7397)	
TWIEX	0.0337	0.7261	-0.5024	0.5714	0.0444	0.7460	-0.0403	0.5715
	(1.4723)	(40.2746)***	(0.5743)		(1.4516)	(23.9379)***	(0.7362)	
AEPGX	0.0069	0.5900	0.5607	0.4788	0.0091	0.5834	0.0116	0.4787
	(0.3098)	(33.5495)***	(0.6571)		(0.3035)	(19.1884)***	(0.2169)	
INIFX	-0.0441	0.7748	2.0534	0.5144	- 0.0538	0.7311	0.0841	0.5135
	(1.6193)	(36.1080)***	(1.9720)**		(1.4788)	(19.6950)***	(1.2907)	
BAINX	-0.0197	0.6880	1.2232	0.6460	- 0.0249	0.6626	0.0487	0.6455
	(1.0659)	(47.3476)***	(1.7335)*		(1.0092)	(26.3629)***	(1.1042)	
SNIVX	-0.0162	0.6006	1.0074	0.4667	- 0.0326	0.5663	0.0688	0.4668
	(0.6978)	(32.7816)***	(1.1332)		(1.0490)	(17.8859)***	(1.2370)	
PNINX	-0.0349	0.7143	1.3330	0.4868	- 0.0418	0.6854	0.0560	0.4865
	(1.3154)	(34.1452)***	(1.3131)		(1.1790)	(18.9452)***	(0.8815)	
CWVGX	-0.0123	0.6733	0.9832	0.5516	- 0.0171	0.6523	0.0405	0.5513
	(0.5592)	(38.8533)***	(1.1693)		(0.5806)	(21.7692)***	(0.7701)	
NEFIX	-0.0056	0.6809	0.5834	0.5201	- 0.0093	0.6674	0.0262	0.5200
	(0.2350)	(36.4308)***	(0.6432)		(0.2938)	(20.6569)***	(0.4619)	
CMISX	0.0116	0.6672	0.4110	0.5789	0.0003	0.6481	0.0392	0.5791
	(0.5631)	(41.0162)***	(0.5207)		(0.0105)	(23.0513)***	(0.7931)	
TIEUX	-0.0042	0.7154	0.6862	0.6393	- 0.0070	0.7014	0.0270	0.6392
	(0.2172)	(46.6007)***	(0.9210)		(0.2688)	(26.4244)***	(0.5783)	
RBIEX	-0.0397	0.7444	1.3253	0.4869	- 0.0568	0.7043	0.0800	0.4868
	(1.4348)	(34.1383)***	(1.2524)		(1.5370)	(18.6836)***	(1.2091)	
DRGLX	-0.0187	0.7626	-0.1430	0.4792	- 0.0140	0.7701	-0.0154	0.4792
	(0.6457)	(33.4977)***	(0.1294)		(0.3616)	(19.5692)***	(0.2231)	

Table 22 Continued

F. Foreign Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
NIEAX	-0.0532	0.7295	2.2733	0.3638	- 0.0895	0.6529	0.1540	0.3640
	(1.5237)	(26.5407)***	(1.7044)*		(1.9222)*	(13.7436)***	(1.8465)*	
ENIGX	-0.0249	0.7533	1.4394	0.5877	- 0.0305	0.7240	0.0561	0.5872
	(1.0911)	(41.8520)***	(1.6481)*		(0.9998)	(23.2569)***	(1.0255)	
UMINX	-0.0202	0.6723	0.9563	0.5521	- 0.0255	0.6512	0.0409	0.5518
	(0.9211)	(38.8861)***	(1.1399)		(0.8684)	(21.7836)***	(0.7787)	
FTITX	0.0060	0.6967	-0.7772	0.4586	0.0163	0.7205	-0.0475	0.4586
	(0.2190)	(32.0682)***	(0.7373)		(0.4423)	(19.1846)***	(0.7195)	
FAERX	-0.0072	0.7291	1.8526	0.6019	- 0.0231	0.6819	0.0928	0.6013
	(0.3377)	(43.1373)***	(2.2588)**		(0.8064)	(23.3222)***	(1.8068)*	
FICDX	0.0201	0.4325	-0.3426	0.1938	0.0465	0.4672	-0.0728	0.1943
	(0.6274)	(17.0951)***	(0.2790)		(1.0844)	(10.6855)***	(0.9484)	
FDIVX	0.0295	0.5695	0.0111	0.6086	0.0324	0.5725	-0.0065	0.6086
	(1.7766)*	(43.5655)***	(0.0176)		(1.4603)	(25.3365)***	(0.1644)	
FIGRX	0.0271	0.6404	0.1381	0.5934	0.0259	0.6369	0.0069	0.5934
	(1.4054)	(42.2214)***	(0.1876)		(1.0064)	(24.2912)***	(0.1499)	
FOSFX	-0.0041	0.7294	1.7868	0.6028	-0.0198	0.6835	0.0902	0.5516
	(0.1928)	(43.2130)***	(2.1816)**		(0.6906)	(23.4105)***	(1.7604)*	
KNINX	-0.0178	0.7528	2.0328	0.6872	-0.0387	0.6972	0.1100	0.6867
	(0.9689)	(52.0097)***	(2.8943)***		(1.5743)	(27.8417)***	(2.5008)**	
GAMNX	-0.0023	0.5690	-1.8801	0.4084	0.0185	0.6220	-0.1051	0.4080
	(0.0901)	(28.7560)***	(1.9580)*		(0.5504)	(18.1797)*	(1.7496)*	
GSIFX	-0.0233	0.7425	1.4811	0.5573	- 0.0372	0.7035	0.0770	0.5570
	(0.9743)	(39.3353)***	(1.6168)		(1.1628)	(21.5519)***	(1.3430)	
HAINX	-0.0044	0.6409	0.5789	0.4685	- 0.0103	0.6251	0.0313	0.4685
	(0.1776)	(32.8604)***	(0.6116)		(0.3120)	(18.5403)***	(0.5280)	
IVINX	-0.0430	0.6895	1.1166	0.3514	- 0.0488	0.6652	0.0470	0.3511
	(1.2680)	(25.7883)***	(0.8607)		(1.0771)	(14.3911)***	(0.5784)	
ACINX	0.0380	0.4787	-1.7531	0.3869	0.0691	0.5412	-0.1261	0.3876
	(1.7156)*	(27.4607)***	(2.0725)**		(2.3400)**	(17.9711)***	(2.3848)***	

Table 22 Continued

F. Foreign Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
CONAX	-0.0345	0.6360	0.3439	0.4177	- 0.0419	0.6222	0.0280	0.4177
	(1.2654)	(29.6219)***	(0.3301)		(1.1525)	(16.7661)***	(0.4290)	
MSACX	-0.0311	0.6436	1.3507	0.4976	- 0.0643	0.5853	0.1191	0.4985
	(1.3272)	(34.8958)***	(1.5090)		(2.0586)**	(18.3725)***	(2.1297)**	
MSIQX	-0.0238	0.5793	2.2411	0.3627	- 0.0718	0.4904	0.1806	0.3642
	(0.8584)	(26.4907)***	(2.1120)**		(1.9388)*	(12.9876)***	(2.7237)***	
MUIYX	-0.0209	0.6811	1.2203	0.4723	- 0.0364	0.6444	0.0731	0.4723
	(0.8005)	(33.1577)***	(1.2243)		(1.0443)	(18.1482)***	(1.1721)	
OAKIX	0.0494	0.4382	-1.4736	0.3393	0.0672	0.4815	-0.0862	0.3391
	(2.2023)**	(24.7968)***	(1.7185)*		(2.2441)**	(15.7607)***	(1.6064)	
PHITX	-0.0346	0.7407	0.9856	0.4691	- 0.0333	0.7263	0.0263	0.4689
	(1.2113)	(32.9249)***	(0.9029)		(0.8737)	(18.6727)***	(0.3848)	
PFIFX	-0.0088	0.5188	0.0440	0.2925	- 0.0022	0.5254	-0.0144	0.2925
	(0.2987)	(22.4677)***	(0.0393)		(0.0552)	(13.1632)***	(0.2050)	
PRWLX	-0.0224	0.6422	-0.0211	0.4943	- 0.0123	0.6537	-0.0246	0.4944
	(0.9507)	(34.5367)***	(0.0234)		(0.3912)	(20.3398)***	(0.4367)	
SCIEX	-0.0886	0.6930	2.4487	0.1561	- 0.1479	0.5882	0.2137	0.1568
	(1.5207)	(15.0984)***	(1.0994)		(1.9018)*	(7.4167)***	(1.5348)	
SCINX	-0.0214	0.7141	0.6094	0.4963	- 0.0340	0.6905	0.0480	0.4964
	(0.8200)	(34.7376)***	(0.6109)		(0.9752)	(19.4313)***	(0.7695)	
SEITX	-0.0032	0.7581	1.6080	0.6967	- 0.0206	0.7131	0.0892	0.6964
	(0.1765)	(53.1395)***	(2.3229)**		(0.8528)	(28.9025)***	(2.0592)**	
SNGRX	-0.0250	0.7761	0.8489	0.5310	- 0.0248	0.7628	0.0248	0.5308
	(0.9462)	(37.2522)***	(0.8397)		(0.7030)	(21.1747)***	(0.3916)	
SBIEX	-0.0332	0.7044	0.4700	0.3906	- 0.0377	0.6918	0.0247	0.3906
	(1.0400)	(28.0099)***	(0.3852)		(0.8851)	(15.9151)***	(0.3242)	
STISX	0.0165	0.7935	-1.2951	0.4985	0.0576	0.8598	-0.1363	0.4996
	(0.5680)	(34.6930)***	(1.1669)		(1.4882)	(21.7684)***	(1.9653)**	
PRFEX	-0.0200	0.7629	1.4843	0.6073	- 0.0209	0.7382	0.0463	0.6066
	(0.8984)	(43.5942)***	(1.7478)*		(0.7036)	(24.3781)***	(0.8709)	

Table 22 Continued

F. Foreign Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
PRIDX	0.0348	0.4706	-0.9803	0.2378	0.0628	0.5172	-0.0956	0.2384
	(1.1324)	(19.4068)***	(0.8332)		(1.5294)	(12.3453)***	(1.3002)	
PRITX	-0.0210	0.7634	1.4076	0.6059	- 0.0215	0.7403	0.0431	0.6053
	(0.9424)	(43.4627)***	(1.6514)*		(0.7230)	(24.3621)***	(0.8073)	
TEMFX	0.0148	0.4854	0.2091	0.4408	0.0118	0.4786	0.0135	0.4408
	(0.7473)	(31.0436)***	(0.2757)		(0.4444)	(17.7102)***	(0.2837)	
FINEX	0.0138	0.3340	-0.4172	0.2745	0.0143	0.3412	-0.0135	0.2744
	(0.6976)	(21.4249)***	(0.5515)		(0.5405)	(12.6606)***	(0.2860)	
USIFX	0.0125	0.6387	0.5714	0.6335	0.0074	0.6239	0.0291	0.6334
	(0.7123)	(46.0119)***	(0.8484)		(0.3158)	(25.9987)***	(0.6914)	
VTRIX	-0.0106	0.6157	1.6185	0.5279	- 0.0351	0.5627	0.1063	0.5281
	(0.5040)	(37.1008)***	(2.0099)**		(1.2481)	(19.6189)***	(2.1103)**	
VWIGX	0.0136	0.7164	0.6472	0.6320	0.0142	0.7066	0.0179	0.6318
	(0.6873)	(45.8664)***	(0.8539)		(0.5356)	(26.1674)***	(0.3772)	
VNEPX	-0.0153	0.7118	1.2159	0.4813	- 0.0265	0.6800	0.0628	0.4811
	(0.5716)	(33.7587)***	(1.1883)		(0.7414)	(18.6523)***	(0.9803)	
UNCGX	-0.0492	0.6570	0.3556	0.2723	- 0.0299	0.6727	-0.0353	0.5516
	(1.2612)	(21.3956)***	(0.2387)		(0.5735)	(12.6734)***	(0.3790)	
SRIGX	-0.0121	0.7116	1.1127	0.6126	- 0.0252	0.6794	0.0641	0.6125
	(0.5925)	(44.0570)***	(1.4197)		(0.9202)	(24.3292)***	(1.3068)	
WIBCX	-0.0076	0.7422	0.7194	0.5079	- 0.0185	0.7185	0.0475	0.5079
	(0.2848)	(35.5573)***	(0.7102)		(0.5238)	(19.9145)***	(0.7495)	
Portfolio	-0.0101	0.6639	0.6486	0.7033	- 0.0140	0.6492	0.0286	0.7032
	(0.6457)	(53.8941)***	(1.0850)		(0.6718)	(30.4789)***	(0.7653)	

Table 22 Continued

G. Latin Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MBLTX	0.0351	0.7504	0.2808	0.7348	0.0225	0.7338	0.0343	0.7347
	(1.4304)	(58.4718)***	(1.1619)		(0.6882)	(34.2851)***	(0.9492)	

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
GSCAX	-0.0190	0.7769	1.2453	0.4413	0.0046	0.7758	-0.0008	0.4408
	(0.6400)	(31.2147)***	(1.0439)		(0.1164)	(17.7315)***	(0.0104)	
ANWPX	-0.0134	0.6996	1.8602	0.5456	- 0.0233	0.6601	0.0778	0.5447
	(0.6198)	(38.4919)***	(2.1353)**		(0.8027)	(20.6477)***	(1.4186)	
SMCWX	0.0150	0.7118	0.4354	0.3926	0.0534	0.7646	-0.1091	0.3935
	(0.4982)	(28.1756)***	(0.3596)		(1.3227)	(17.2384)***	(1.4341)	
AHERX	-0.0525	0.7171	-5.0939	0.0221	0.0974	0.9734	-0.5221	0.0229
	(0.3180)	(5.1719)***	(0.7665)		(0.4396)	(3.9971)***	(1.2497)	
IGLGX	-0.0327	0.8379	1.1065	0.5245	- 0.0121	0.8464	-0.0204	0.5241
	(1.2081)	(36.8759)***	(1.0159)		(0.3335)	(21.1904)***	(0.2978)	
FWWGX	-0.0378	0.8040	-0.8167	0.3279	- 0.0130	0.8462	-0.0859	0.3282
	(0.9675)	(24.4644)***	(0.5184)		(0.2466)	(14.6548)***	(0.8668)	
EGLBX	-0.0266	0.6612	0.4926	0.3578	- 0.0139	0.6693	-0.0181	0.3578
	(0.8871)	(26.2001)***	(0.4072)		(0.3450)	(15.0922)***	(0.2378)	
FWWFX	0.0130	0.7259	0.9502	0.6994	0.0135	0.7124	0.0258	0.6990
	(0.8083)	(53.5600)***	(1.4627)		(0.6230)	(29.8941)***	(0.6299)	
FIISX	-0.0305	0.7486	1.3700	0.5620	- 0.0400	0.7169	0.0628	0.5616
	(1.3607)	(39.7842)***	(1.5189)		(1.3285)	(21.6717)***	(1.1070)	
GAGLX	-0.0063	0.6833	-0.3376	0.5172	0.0023	0.6986	-0.0311	0.5173
	(0.2813)	(36.2819)***	(0.3740)		(0.0747)	(21.1118)***	(0.5482)	

Table 22 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FGLOX	-0.0371	0.7948	1.1795	0.6347	- 0.0404	0.7734	0.0417	0.6343
	(1.8159)*	(46.2887)***	(1.4332)		(1.4702)	(25.6192)***	(0.8053)	
MCGLX	-0.0318	0.7498	2.1488	0.5991	- 0.0482	0.6982	0.1022	0.5981
	(1.5290)	(42.9381)***	(2.5674)**		(1.7229)*	(22.7303)***	(1.9395)	
JAWWX	0.0209	0.8623	0.0916	0.6041	0.0427	0.8874	-0.0525	0.6044
	(0.8823)	(43.3318)***	(0.0961)		(1.3441)	(25.3842)***	(0.8752)	
LAGEX	-0.0342	0.6929	1.2211	0.4836	- 0.0379	0.6703	0.0441	0.4831
	(1.4080)	(33.9863)***	(1.2496)		(1.1632)	(18.7027)***	(0.7178)	
MWEBX	-0.0074	0.6094	1.1804	0.5785	- 0.0089	0.5902	0.0372	0.5778
	(0.4222)	(41.1512)***	(1.6631)*		(0.3762)	(22.6614)***	(0.8322)	
OPPAX	0.0052	0.7409	-0.0627	0.3920	0.0161	0.7551	-0.0294	0.3921
	(0.1644)	(28.1622)***	(0.0497)		(0.3832)	(16.3345)***	(0.3710)	
OPGIX	0.0227	0.7475	0.2060	0.3841	0.0429	0.7689	-0.0452	0.3842
	(0.7062)	(27.7038)***	(0.1592)		(0.9951)	(16.2198)***	(0.5556)	
QVGLX	-0.0053	0.6149	0.4294	0.5259	0.0053	0.6214	-0.0145	0.5259
	(0.2689)	(36.9696)***	(0.5386)		(0.1981)	(21.2582)***	(0.2894)	
NWWOX	-0.0453	0.7216	1.4314	0.3725	- 0.0585	0.6845	0.0740	0.3723
	(1.4271)	(27.0607)***	(1.1198)		(1.3729)	(14.6046)***	(0.9203)	
PRGLX	-0.0444	0.8435	1.8151	0.4592	-0.0346	0.8288	0.0265	0.4583
	(1.4332)	(32.3681)***	(1.4530)		(0.8288)	(18.0815)***	(0.3376)	
PEQUX	-0.0266	0.9818	0.6785	0.4788	-0.0192	0.9806	0.0007	0.4787
	(0.7652)	(33.6434)***	(0.4851)		(0.4119)	(19.1222)***	(0.0080)	
SGSCX	0.0203	0.7280	-1.2419	0.4357	0.0515	0.7840	-0.1138	0.4364
	(0.7198)	(30.7413)***	(1.0942)		(1.3608)	(18.8519)***	(1.5958)	
SCOBX	-0.0501	0.5310	0.5998	0.2820	-0.0448	0.5286	0.0036	0.2818
	(1.7450)*	(22.0026)***	(0.5185)		(1.1606)	(12.4631)***	(0.0492)	
TECAX	0.0096	0.5917	0.4785	0.5717	0.0145	0.5904	0.0014	0.5716
	(0.5555)	(40.5561)***	(0.6843)		(0.6205)	(23.0278)***	(0.0317)	
TEGOX	-0.0116	0.5732	0.7519	0.4883	-0.0096	0.5646	0.0161	0.4880
	(0.5846)	(34.3001)***	(0.9386)		(0.3576)	(19.2209)***	(0.3195)	

Table 22 Continued

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
TEMGX	0.0054	0.3681	0.8333	0.3336	0.0339	0.4148	-0.0953	0.3353
	(0.3068)	(24.7213)***	(1.1675)		(1.4249)	(15.8729)***	(2.1258)**	
TEPLX	-0.0016	0.4869	0.7084	0.3815	-0.0043	0.4732	0.0269	0.3813
	(0.0752)	(27.5820)***	(0.8372)		(0.1517)	(15.2513)***	(0.5052)	
TEMWX	-0.0024	0.5260	0.9238	0.4715	-0.0032	0.5114	0.0280	0.4710
	(0.1294)	(33.1715)***	(1.2155)		(0.1252)	(18.3478)***	(0.5863)	
USAWX	-0.0001	0.7613	1.4379	0.7019	-0.0011	0.7389	0.0431	0.7011
	(0.0079)	(53.8977)***	(2.1239)**		(0.0477)	(29.7293)***	(1.0120)	
Portfolio	-0.0140	0.6997	0.4650	0.6793	-0.0015	0.7079	-0.0181	0.6792
	(0.8559)	(51.0767)***	(0.7082)		(0.0694)	(29.4025)***	(0.4393)	

I. International Hybrid Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
CAIBX	-0.0200	0.3087	0.4127	0.3593	- 0.0239	0.2979	0.0215	0.3592
	(1.4339)	(26.2976)***	(0.7336)		(1.2736)	(14.4421)***	(0.6067)	
BPGLX	-0.0310	0.3372	1.3488	0.2517	- 0.0417	0.3044	0.0651	0.2510
	(1.5739)	(20.3637)***	(1.6994)*		(1.5740)	(10.4558)***	(1.3045)	
SGENX	-0.0030	0.2390	0.0019	0.0973	- 0.0066	0.2346	0.0091	0.0974
	(0.1199)	(11.5179)***	(0.0019)		(0.1976)	(6.4348) ***	(0.1457)	
FMAFX	-0.0326	0.5259	1.5607	0.5233	- 0.0429	0.4905	0.0700	0.5223
	(1.9200)*	(36.8019)***	(2.2784)**		(1.8743)*	(19.5139) ***	(1.6232)	
MALOX	-0.0102	0.4170	-0.5642	0.2643	0.0228	0.4653	- 0.0992	0.2657
	(0.4320)	(20.9815)***	(0.5922)		(0.7183)	(13.3346) ***	(1.6575)*	
MFWTX	0.0195	0.3619	0.4619	0.0799	0.0132	0.3476	0.0288	0.0799
	(0.4678)	(10.3481)***	(0.2755)		(0.2366)	(5.6553) ***	(0.2733)	
Portfolio	-0.0129	0.3649	0.5370	0.4955	- 0.0132	0.3567	0.0159	0.4951
	(1.0337)	(34.7997)***	(1.0682)		(0.7848)	(19.3496) ***	(0.5024)	

Table 23: Treynor and Mazuy (TM) and Henriksson and Merton (HM) Market Timing Results for Trading Strategy 2 (complex strategy)

This table reports the Treynor-Mazuy market timing model of equation (12): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)^2 + \varepsilon$ and the Henriksson and Merton market timing model of equation (13): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)D + \varepsilon$ for trading strategy 2 *(complex trading strategy)*. Column one lists the ticker symbol of sample funds. Columns two through five present the coefficients of risk adjusted returns in percent ((α), systematic risks ((β), market timing (γ) and coefficient of determinations (R^2) of TM model. Columns six through nine present the coefficients of risk adjusted returns in percent ((α), systematic risks ((β), market timing (γ) and coefficient of determinations (R^2) of HM model. Absolute t-values are given in parentheses and significance levels are provided in 1% (***), 5% (**) and 10% (*) level. Note that trading strategy 1 and 2 are similar for Diversified Pacific/Asia fund and Foreign fund categories; therefore, TM and HM measures for trading strategy 2 of Diversified Pacific/Asia and Foreign fund categories are not reported in this table. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MADCX	- 0.0222	0.5731	4.5679	0.5055	- 0.0964	0.3808	0.3180	0.4796
	(1.0889)	(35.4296)***	(10.6676)***		(3.3149)***	(15.6039)***	(6.8330)***	
MNEMX	- 0.0361	0.5720	4.6116	0.4823	- 0.1071	0.3813	0.3127	0.4560
	(1.6946)*	(33.8324)***	(10.3037)***		(3.5287)***	(14.9588)***	(6.4327)***	
MGEMX	- 0.0354	0.6021	5.3459	0.4475	- 0.1436	0.3582	0.4188	0.4247
	(1.4761)	(31.6008)***	(10.5982)***		(4.2157)***	(12.5263)***	(7.6788)***	
TEDMX	- 0.0382	0.4786	3.8914	0.5934	- 0.1053	0.3114	0.2793	0.3343
	(1.6396)	(25.8492)***	(7.9390)***		(3.2022)***	(11.2805)***	(5.3060)***	
Portfolio	- 0.0330	0.5564	4.6042	0.5215	- 0.1131	0.3579	0.3322	0.4943
	(1.7230)*	(36.6121)***	(11.4433)***		(4.1317)***	(15.5753)***	(7.5801)***	

Table 23 Continued

C. Europe Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
ANEAX	- 0.0338	0.7947	1.4414	0.6144	- 0.0206	0.7809	0.0235	0.6132
	(1.2739)	(44.3224)***	(1.9977)**		(0.5787)	(24.8317)***	(0.4309)	
DFCSX	- 0.0557	0.3013	-0.4090	0.1212	- 0.0468	0.3174	- 0.0323	0.1212
	(1.6214)	(12.9705)***	(0.4376)		(1.0153)	(7.8031)***	(0.4591)	
DFUKX	- 0.0730	0.1596	- 0.4770	0.0379	- 0.0662	0.1749	- 0.0305	0.0378
	(2.1326)**	(6.8923)***	(0.5120)		(1.4409)	(4.3146)***	(0.4342)	
FIEUX	- 0.0606	0.6893	1.5891	0.5277	- 0.0700	0.6510	0.0745	0.5266
	(2.2079)**	(37.1259)***	(2.1268)**		(1.8978)*	(20.0009)***	(1.3200)	
FEURX	- 0.0802	0.8882	2.2187	0.5423	- 0.0893	0.8386	0.0958	0.5409
	(2.3343)**	(38.2308)***	(2.3731)**		(1.9346)*	(20.5805)***	(1.3580)	
MBEFX	- 0.0666	0.6398	1.7006	0.3242	- 0.0599	0.6150	0.0456	0.3230
	(1.7126)*	(24.3296)***	(1.6069)		(1.1468)	(13.3423)***	(0.5714)	
EUGBX	- 0.0440	0.7869	1.4754	0.5317	- 0.0513	0.7527	0.0663	0.5310
	(1.4154)	(37.4195)***	(1.7435)*		(1.2298)	(20.4227)***	(1.0390)	
PEURX	- 0.0220	0.7649	0.9364	0.6692	- 0.0070	0.7621	0.0022	0.6685
	(0.9694)	(49.9098)***	(1.5183)		(0.2297)	(28.3711)***	(0.0467)	
PEUGX	- 0.0196	0.7608	0.9323	0.6651	- 0.0098	0.7531	0.0126	0.6645
	(0.8619)	(49.4574)***	(1.5061)		(0.3213)	(27.9317)***	(0.2694)	
PRESX	- 0.0157	0.7744	1.4986	0.7202	- 0.0136	0.7489	0.0479	0.7189
	(0.7731)	(56.3423)***	(2.7093)***		(0.4981)	(31.0372)***	(1.1474)	
VEURX	- 0.0193	0.7743	1.8358	0.7088	- 0.0350	0.7255	0.0957	0.7075
	(0.9255)	(54.7978)***	(3.2283)***		(1.2449)	(29.2530)***	(2.2295)**	
Portfolio	- 0.0446	0.6668	1.1584	0.7142	- 0.0427	0.6473	0.0365	0.7131
	(2.5104)**	(55.5039)***	(2.3963)**		(1.7875)*	(30.7109)***	(0.9994)	

Table 23 Continued

D. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
DFJSX	- 0.0320	0.2799	1.3909	0.0701	- 0.0194	0.2597	0.0144	0.0678
	(0.9180)	(9.3508)***	(1.6988)*		(0.4189)	(5.5248)***	(0.1784)	
SJPNX	- 0.0342	0.4255	2.0632	0.1267	- 0.0240	0.3858	0.0428	0.1229
	(0.8935)	(12.9678)***	(2.2990)**		(0.4719)	(7.4792)***	(0.4817)	
PRJPX	- 0.0535	0.4334	2.6475	0.1313	- 0.0523	0.3689	0.0845	0.1254
	(1.4066)	(13.2771)***	(2.9651)***		(1.0328)	(7.1796)***	(0.9557)	
VPACX	- 0.0167	0.3124	1.3500	0.0853	- 0.0065	0.2905	0.0191	0.0832
	(0.4759)	(10.3721)***	(1.6386)		(0.1396)	(6.1413)***	(0.2348)	
Portfolio	- 0.0341	0.3628	1.8629	0.1276	- 0.0256	0.3262	0.0402	0.1233
	(1.0510)	(13.0309)***	(2.4462)**		(0.5922)	(7.4513)***	(0.5336)	

E. Pacific/Asia ex. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
EVCGX	-0.0096	0.3987	2.6173	0.3217	- 0.0610	0.2831	0.2044	0.2565
	(0.3661)	(21.1765)***	(5.9080)***		(1.6880)*	(9.0906)***	(3.8147)***	
CNTTX	-0.0038	0.4503	3.3485	0.2684	- 0.0825	0.2900	0.2885	0.3064
	(0.1453)	(23.9719)***	(7.5743)***		(2.2827)**	(9.3013)***	(5.3793)***	
MBDRX	-0.0036	0.3899	2.3545	0.2710	- 0.0455	0.2901	0.1750	0.2600
	(0.1415)	(21.3560)***	(5.4802)***		(1.3006)	(9.6102)***	(3.3703)***	
MSAEX	0.0204	0.3584	2.1470	0.2400	- 0.0173	0.2679	0.1585	0.2304
	(0.8044)	(19.6867)***	(5.0120)***		(0.4954)	(8.9100)***	(3.0652)***	
PRASX	0.0197	0.3689	2.4509	0.2403	- 0.0307	0.2585	0.1962	0.2298
	(0.7517)	(19.6592)***	(5.5502)***		(0.8542)	(8.3360)***	(3.6782)***	
Portfolio	0.0046	0.3932	2.5836	0.2960	- 0.0474	0.2779	0.2045	0.2831
	(0.1907)	(22.6688)***	(6.3291)***		(1.4229)	(9.6737)***	(4.1384)***	

Table 23 Continued

G. Latin Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MBLTX	0.0146	0.5320	2.1497	0.5379	- 0.0916	0.4193	0.2319	0.5265
	(0.5339)	(37.2396)***	(7.9833)***		(2.4855)**	(17.3899)***	(5.6896)***	

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
GSCAX	-0.0321	0.7923	-0.4334	0.4708	-0.0065	0.8297	-0.0768	0.4712
	(1.1262)	(33.0592)***	(0.3772)		(0.1698)	(19.7082)***	(1.0640)	
ANWPX	0.0110	0.7049	-0.0707	0.6030	0.0071	0.7011	0.0080	0.6030
	(0.5692)	(43.2184)***	(0.0904)		(0.2714)	(24.4637)***	(0.1628)	
SMCWX	-0.0052	0.7290	-2.9346	0.4046	0.0469	0.8353	-0.2144	0.4055
	(0.1713)	(28.6769)***	(2.4080)**		(1.1550)	(18.7136)***	(2.8007)***	
AHERX	-0.1907	0.8676	-7.9255	0.0343	-0.0324	1.1760	-0.6238	0.0350
	(1.1883)	(6.4321)***	(1.2257)		(0.1501)	(4.9632)***	(1.5347)	
IGLGX	-0.0188	0.8392	-0.1826	0.5111	-0.0010	0.8634	-0.0500	0.5112
	(0.6740)	(35.8492)***	(0.1627)		(0.0269)	(20.9927)***	(0.7080)	
FWWGX	-0.0405	0.8161	-2.0465	0.3341	-0.0048	0.8894	-0.1479	0.3344
	(1.0307	(24.7406)***	(1.2942)		(0.0904)	(15.3480)***	(1.4883)	
EGLBX	0.0033	0.6851	-0.6548	0.4349	0.0178	0.7124	-0.0553	0.4350
	(0.1231)	(30.7288)***	(0.6126)		(0.5004)	(18.1855)***	(0.8227)	
FWWFX	-0.0138	0.7290	-0.5398	0.5091	-0.0080	0.7441	-0.0301	0.5090
	(0.5689)	(35.6808)***	(0.5511)		(0.2435)	(20.7243)***	(0.4888)	
FIISX	-0.0190	0.7593	0.5576	0.6196	-0.0288	0.7392	0.0406	0.6195
	(0.9399)	(44.7797)***	(0.6860)		(1.0629)	(24.8091)***	(0.7948)	
GAGLX	-0.0023	0.6802	-1.5224	0.5167	0.0133	0.7215	-0.0826	0.5164
	(0.1040)	(36.1347)***	(1.6872)*		(0.4423)	(21.8079)***	(1.4550)	

Table 23 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FGLOX	-0.0128	0.8191	-1.5526	0.6389	-0.0068	0.8493	-0.0592	0.6383
	(0.6107)	(46.5193)***	(1.8394)*		(0.2401)	(27.4256)***	(1.1148)	
MCGLX	-0.0379	0.7616	0.8482	0.5918	-0.0528	0.7311	0.0615	0.5920
	(1.7704)*	(42.2790)***	(0.9823)		(1.8346)*	(23.0994)***	(1.1335)	
JAWWX	0.0104	0.8591	-0.7795	0.5612	0.0294	0.8937	-0.0700	0.5615
	0.4013	(39.6204)***	(0.7498)		(0.8478)	(23.4582)***	(1.0719)	
LAGEX	-0.0155	0.7003	0.1357	0.4849	0.0205	0.6922	0.0166	0.4849
	(0.6312)	(34.0375)***	(0.1376)		(0.6235)	(19.1460)***	(0.2675)	
MWEBX	-0.0156	0.6213	0.4862	0.5533	-0.0185	0.6107	0.0210	0.5532
	(0.8252)	(39.0660)***	(0.6377)		(0.7267)	(21.8491)***	(0.4380)	
OPPAX	-0.0001	0.7705	-1.0603	0.4025	0.0051	0.7925	-0.0432	0.4023
	(0.0043)	(28.7283)***	(0.8246)		(0.1184)	(16.8116)***	(0.5342)	
OPGIX	0.0085	0.7836	-1.3950	0.3997	0.0377	0.8395	-0.1133	0.4001
	(0.2588)	(28.5444)***	(1.0600)		(0.8594)	(17.4090)***	(1.3691)	
QVGLX	-0.0242	0.6274	0.5265	0.3665	-0.0349	0.6068	0.0418	0.3666
	(0.8661)	(26.7000)***	(0.4674)		(0.9285)	(14.6948)***	(0.5901)	
NWWOX	-0.0090	0.7280	-0.4990	0.4541	-0.0141	0.7293	-0.0014	0.4540
	(0.3321)	(31.9624)***	(0.4570)		(0.3862)	(18.2185)***	(0.0201)	
PRGLX	-0.0313	0.8617	0.4870	0.4628	-0.0267	0.8601	0.00201	0.4627
	(0.9955)	(32.5734)***	(0.3840)		(0.6306)	(18.5025)***	(0.0257)	
PEQUX	-0.0241	0.9762	-1.2380	0.4682	-0.0101	1.0114	-0.0704	0.4681
	(0.6813)	(32.8505)***	(0.8690)		(0.2123)	(19.3674)***	(0.7857)	
SGSCX	0.0232	0.7537	-2.5510	0.4511	0.0520	0.8262	-0.1449	0.4507
	(0.8176)	(31.5928)***	(2.2305)**		(1.3633)	(19.7001)***	(2.0143)**	
SCOBX	-0.0199	0.5521	-0.8923	0.3295	0.0004	0.5898	-0.0764	0.3298
	(0.7439)	(24.5276)***	(0.8268)		(0.0101)	(14.9147)***	(1.1266)	
TECAX	0.0015	0.6080	-0.7072	0.5106	0.0003	0.6169	-0.0170	0.5104
	(0.0733)	(35.7680)***	(0.8679)		(0.0100)	(20.6498)***	(0.3317)	

Table 23 Continued

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
TEGOX	-0.0283	0.5849	-0.0238	0.4253	-0.0249	0.5894	-0.0093	0.4253
	(1.2275)	(30.1692)***	(0.0256)		(0.8028)	(17.3010)***	(0.1597)	
TEMGX	-0.0062	0.3913	-2.9141	0.3130	0.0218	0.4682	-0.1532	0.3108
	(0.3074)	(23.1986)***	(3.6039)***		(0.8090)	(15.7705)***	(3.0088)***	
TEPLX	-0.0152	0.4946	-0.0624	0.3476	-0.0224	0.4868	0.0165	0.3476
	(0.6589)	(25.5974)***	(0.0674)		(0.7246)	(14.3370)***	(0.2825)	
TEMWX	-0.0135	0.5386	-0.3525	0.4105	-0.0172	0.5393	-0.0007	0.4105
	(0.6180)	(29.2460)***	(0.3992)		(0.5856)	(16.6647)***	(0.0121)	
USAWX	-0.0140	0.7569	0.0100	0.6753	-0.0083	0.7636	-0.0140	0.6753
	(0.7846)	(50.5846)***	(0.0139)		(0.3464)	(29.0433)***	(0.3112)	
Portfolio	-0.0184	0.7170	-0.9409	0.6864	-0.0037	0.7486	-0.0637	0.6864
	(1.1141)	(51.7876)***	(1.4177)		(0.1662)	(30.7751)***	(1.5255)	

I. International Hybrid Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
CAIBX	-0.0108	0.3151	0.9593	0.3889	- 0.0101	0.3301	-0.0289	0.3877
	(0.7992)	(27.8285)***	(1.7671)*		(0.5565)	(16.5733)***	(0.8463)	
BPGLX	-0.0397	0.3407	0.7844	0.2552	- 0.0478	0.3193	0.0427	0.2550
	(2.0137)**	(20.5596)***	(0.9875)		(1.8047)*	(10.9647)***	(0.8543)	
SGENX	0.0038	0.2615	-1.3523	0.1780	0.0193	0.3002	-0.0774	0.1776
	(0.1980)	(16.3300)***	(1.7397)*		(0.7445)	(10.5342)***	(1.5823)	
FMAFX	-0.0229	0.5295	0.2483	0.5909	- 0.0280	0.5197	0.0199	0.5909
	(1.5330)	(42.1710)***	(0.4125)		(1.3959)	(23.5533)***	(0.5265)	
MALOX	-0.0030	0.4241	-1.2214	0.3178	0.0234	0.4742	-0.1013	0.3187
	(0.1428)	(23.8199)***	(1.4309)		(0.8240)	(15.1633)***	(1.8890)*	

Table 23 Continued

I. International Hybrid Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MFWTX	-0.0281	0.3407	0.3955	0.0397	- 0.0334	0.3285	0.0244	0.0397
	(0.4950)	(7.1364)***	(0.1728)		(0.4370)	(3.9162)***	(0.1696)	
Portfolio	-0.0168	0.3886	-0.3508	0.4659	0.0128	0.3787	-0.0201	0.4659
	(1.2519)	(32.7167)***	(0.6495)		(0.7081)	(19.1253)***	(0.5918)	

Stock (PRESX) and Vanguard Euro Stock Index (VEURX) funds, for which trading strategy 2 performed better. However, a few of the TM market timing coefficients for strategy 3 are positive for Europe funds; besides strategy 1 doesn't provide positive market timing ability for FIEUX and FEURX funds at all. However, trading strategy 2 provides positive and statistically significant TM timing coefficients for PRESX and VEURX funds.

Trading strategy 3 also produces positive TM market timing coefficients for most of the sample Foreign, World and International Hybrid funds; however not all positive market timing coefficients are statistically significant. Trading strategies 1 and 3 provide positive and statistically significant TM timing measures for Japan funds. Both trading strategies 1 and 2 produce positive and statistically significant TM market timing coefficient for Pacific/Asia ex. Japan funds. Finally trading strategy 2 provides positive and statistically significant TM market timing coefficient for Latin fund.

Table 24: Treynor and Mazuy (TM) and Henriksson and Merton (HM) Market Timing Results for Trading Strategy 3 (restricted weekend strategy)

This table reports the Treynor-Mazuy market timing model of equation (12): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)^2 + \varepsilon$ and the Henriksson and Merton market timing model of equation (13): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)D + \varepsilon$ for trading strategy 3 *(restricted weekend trading strategy)*. Column one lists the ticker symbol of sample funds. Columns two through five present the coefficients of risk adjusted returns in percent ((α), systematic risks ((β), market timing (γ) and coefficient of determinations (R^2) of TM model. Columns six through nine present the coefficients of risk adjusted returns in percent ((α), systematic risks ((β), market timing (γ) and coefficient of determinations (R^2) of HM model. Absolute t-values are given in parentheses and significance levels are provided in 1% (***), 5% (**) and 10% (*) level. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MADCX	0.0466	0.8615	0.8582	0.7831	- 0.0205	0.7783	0.1757	0.7858
	(2.7006)***	(62.9137)***	(2.3676)**		(0.8605)	(38.8917)***	(4.6040)***	
MNEMX	0.0270	0.8692	1.2782	0.7466	- 0.0344	0.7793	0.1778	0.7481
	(1.4115)	(57.1815)***	(3.1767)***		(1.2968)	(34.9674)***	(4.1826)***	
MGEMX	0.0388	0.9154	1.8173	0.7147	- 0.0757	0.7637	0.3118	0.7206
	(1.7846)*	(53.0471)***	(3.9781)***		(2.5289)**	(30.4123)***	(6.5101)***	
TEDMX	0.0291	0.7430	0.8262	0.6105	- 0.0318	0.6662	0.1611	0.6128
	(1.2903)	(41.5183)***	(1.7441)*		(1.0174)	(25.3882)***	(3.2187)***	
Portfolio	0.0354	0.8473	1.1950	0.8038	- 0.0406	0.7469	0.2066	0.8072
	(2.2329)**	(67.3737)***	(3.5896)***		(1.8591)*	(40.7408)***	(5.9088)***	

Table 24 Continued

B. Diversified Pacific/Asia Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FPBFX	0.0543	0.7322	-0.2650	0.6498	0.0634	0.7448	-0.0268	0.6498
	(2.2664)**	(47.3958)***	(0.5683)		(1.8949)*	(26.1023)***	(0.5758)	
GAPCX	0.0346	0.6283	-1.6898	0.4506	0.0530	0.6711	-0.0987	0.4482
	(1.1280)	(31.7471)***	(2.8284)***		(1.2342)	(18.3221)***	(1.6501)*	
JHWPX	0.0956	0.6463	-2.9022	0.5410	0.1450	0.7370	-0.2025	0.5349
	(3.6337)***	(38.1252)***	(5.6708)***		(3.9247)***	(23.3824)***	(3.9346)***	
MAPCX	0.0111	0.6755	-0.1322	0.5961	-0.0119	0.6555	0.0373	0.5962
	(0.4469)	(42.2368)***	(0.2738)		(0.3433)	(22.1973)***	(0.7740)	
TGRBX	0.0487	0.6798	-1.4245	0.6027	0.0505	0.7030	-0.0581	0.6003
	(1.9890)**	(43.1198)***	(2.9930)***		(1.4760)	(24.0683)***	(1.2183)	
PRPBX	0.0144	0.5928	1.1126	0.0400	- 0.0614	0.5371	0.0972	0.0400
	(0.1119)	(7.1427)***	(0.4441)		(0.3417)	(3.5041)***	(0.3882)	
FKPGX	0.0242	0.6058	-1.3290	0.5323	0.0464	0.6469	-0.0920	0.5309
	(0.9612)	(37.3585)***	(2.7151)***		(1.3205)	(21.5677)***	(1.8791)*	
Portfolio	0.0404	0.6515	1.2650	0.5414	0.0407	0.6708	-0.0491	0.5396
	(1.5201)	(38.0268)***	(2.4459)**		(1.0956)	(21.1538)***	(0.9482)	

C. Europe Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
ANEAX	- 0.0007	0.7869	-0.5242	0.5840	- 0.0175	0.7888	0.0027	0.5838
	(0.2593)	(41.0758)***	(0.6807)		(0.5977)	(41.5878)***	(0.0838)	
DFCSX	- 0.0051	0.2867	-1.8398	0.1184	- 0.0024	0.2926	- 0.0717	0.1179
	(0.1486)	(12.3041)***	(1.9641)**		(0.0661)	(12.6845)***	(1.7963)*	
DFUKX	- 0.0144	0.1497	-2.7026	0.0436	- 0.0150	0.1585	- 0.0957	0.0416
	(0.4229)	(6.4323)***	(2.8892)***		(0.4214)	(6.8735)***	(2.3984)**	

Table 24 Continued

C. Europe Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FIEUX	0.0203	0.6881	-0.8600	0.6187	- 0.0415	0.6920	0.0992	0.6224
	(0.8873)	(44.0536)***	(1.3695)		(1.7447)*	(44.9716)***	(3.7262)***	
FEURX	- 0.0051	0.8750	-0.0922	0.6264	- 0.0151	0.8755	0.0178	0.6264
	(0.1778)	(44.9818)***	(0.1179)		(0.5069)	(45.4718)***	(0.5333)	
MBEFX	- 0.0156	0.6149	-0.9885	0.3044	- 0.0095	0.6180	- 0.0482	0.3045
	(0.3948)	(22.8420)***	(0.9134)		(0.2314)	(23.1951)***	(1.0451)	
EUGBX	- 0.0271	0.7725	0.5292	0.4981	- 0.0444	0.7711	0.0553	0.4988
	(0.8308)	(34.7029)***	(0.5914)		(1.3036)	(35.0183)***	(1.4518)	
PEURX	- 0.0032	0.7491	-0.1955	0.6432	- 0.0251	0.7502	0.0391	0.6437
	(0.1343)	(46.6165)***	(0.3026)		(1.0206)	(47.1943)***	(1.4215)	
PEUGX	- 0.0050	0.7533	0.7041	0.6852	- 0.0201	0.7513	0.0571	0.6862
	(0.2322)	(51.4344)***	(1.1958)		(0.8995)	(51.8998)***	(2.2804)**	
PRESX	- 0.0264	0.7323	0.5619	0.6001	- 0.0581	0.7311	0.0907	0.6030
	(0.9755)	(42.6876)***	(0.8147)		(2.2202)**	(43.2065)***	(3.0989)***	
VEURX	- 0.0184	0.7485	1.5146	0.6694	- 0.0501	0.7441	0.1209	0.6736
	(0.8358)	(49.7518)***	(2.5044)**		(2.1892)**	(50.2886)***	(4.7225)***	
Portfolio	- 0.0096	0.6506	-0.3539	0.7051	- 0.0272	0.6521	0.0243	0.7053
	(0.5385)	(53.6331)***	(0.7257)		(1.4635)	(54.3218)***	(1.1700)	

D. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
DFJSX	- 0.0388	0.5114	2.9746	0.1464	- 0.0673	0.4045	0.1698	0.1420
	(0.9196)	(14.1305)***	(3.0061)***		(1.2007)	(7.1104)***	(1.7340)*	
SJPNX	- 0.0459	0.6740	4.0814	0.2150	- 0.0941	0.5170	0.2556	0.2088
	(1.0436)	(17.8683)***	(3.9575)***		(1.6071)	(8.7067)***	(2.5005)**	

Table 24 Continued

D. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
PRJPX	- 0.0644	0.6554	3.9232	0.2061	- 0.0988	0.5183	0.2158	0.1993
	(1.4672)	(17.3916)***	(3.8073)***		(1.6891)*	(8.7329)***	(2.1122)**	
VPACX	- 0.0435	0.4804	2.0062	0.1386	- 0.0639	0.4071	0.1174	0.1366
	(1.0570)	(13.6159)***	(2.0794)**		(1.1692)	(7.3486)***	(1.2307)	
Portfolio	- 0.0481	0.5803	3.2464	0.2144	- 0.0810	0.4617	0.1897	0.2086
	(1.2683)	(17.8171)***	(3.6454)***		(1.6034)	(9.0075)***	(2.1492)**	

E. Pacific/Asia ex. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
EVCGX	0.0370	0.9176	0.2239	0.5955	- 0.0147	0.8621	0.1155	0.5966
	(1.2109)	(41.9663)***	(0.4351)		(0.3538)	(24.0572)***	(1.8743)*	
CNTTX	0.0120	1.0124	2.4164	0.6760	- 0.0787	0.8640	0.2784	0.6754
	(0.4292)	(50.5439)***	(5.1272)***		(2.0618)**	(26.2624)***	(4.9201)***	
MBDRX	0.0360	0.8569	0.2165	0.5965	0.0084	0.8249	0.0652	0.5968
	(1.2646)	(42.0501)***	(0.4516)		(0.2177)	(24.6760)***	(1.1342)	
MSAEX	0.0715	0.8146	-1.5835	0.5475	0.0746	0.8574	-0.0656	0.5444
	(2.3445)**	(37.2862)***	(3.0806)***		(1.7873)*	(23.8347)***	(1.0596)	
PRASX	0.0734	0.7990	-1.0672	0.5364	0.0574	0.8104	-0.0067	0.5348
	(2.4154)**	(36.6975)***	(2.0833)**		(1.3829)	(22.6416)***	(0.1088)	
Portfolio	0.0460	0.8801	0.0412	0.6500	0.0094	0.8437	0.0774	0.6506
	(1.7609)*	(47.0632)***	(0.0937)		(0.2646)	(27.5177)***	(1.4672)	

Table 24 Continued

F. Foreign Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
AEIGX	-0.0048	0.8658	0.0620	0.5112	- 0.0092	0.8600	0.0123	0.5113
	(0.1575)	(35.7223)***	(0.0527)		(0.2247)	(20.5351)***	(0.1668)	
AIIEX	0.0365	0.8128	-0.5101	0.6407	0.0506	0.8365	-0.0485	0.6408
	(1.6495)*	(46.5664)***	(0.6027)		(1.7102)*	(27.7419)***	(0.9167)	
AAIEX	0.0164	0.7255	0.0140	0.6591	0.0071	0.7151	0.0223	0.6592
	(0.8629)	(48.5643)***	(0.0194)		(0.2821)	(27.7055)***	(0.4928)	
TWIEX	0.0461	0.8300	-0.1105	0.6424	0.0514	0.8377	- 0.0161	0.6425
	(2.0473)**	(46.7971)***	(0.1285)		(1.7120)*	(27.3368)***	(0.2985)	
AEPGX	0.0248	0.6876	0.4912	0.5692	0.0191	0.6734	0.0282	0.5692
	(1.1428)	(40.1986)***	(0.5922)		(0.6582)	(22.7844)***	(0.5435)	
INIFX	-0.0437	0.8880	2.7893	0.5387	- 0.0703	0.8141	0.1459	0.5380
	(1.4714)	(37.9126)***	(2.4557)**		(1.7687)*	(20.1001)***	(2.0516)**	
BAINX	-0.0069	0.7857	1.1609	0.7184	- 0.0142	0.7590	0.0520	0.7181
	(0.3869)	(55.9301)***	(1.7041)*		(0.5980)	(31.2523)***	(1.2182)	
SNIVX	0.0143	0.6899	-0.5495	0.5521	- 0.0020	0.6807	0.0224	0.5521
	(0.6302)	(38.7040)***	(0.6358)		(0.0666)	(22.0985)***	(0.4133)	
PNINX	-0.0225	0.8233	1.7949	0.5832	- 0.0389	0.7764	0.0924	0.5828
	(0.8918)	(41.4637)***	(1.8642)*		(1.1556)	(22.6205)***	(1.5327)	
CWVGX	-0.0001	0.7804	1.0608	0.6290	- 0.0072	0.7556	0.0483	0.6288
	(0.0052)	(45.5860)***	(1.2779)		(0.2468)	(25.5380)***	(0.9291)	
NEFIX	0.0193	0.7840	0.1445	0.5993	0.0165	0.7786	0.0108	0.5993
	(0.8272)	(42.7218)***	(0.1624)		(0.5313)	(24.5571)***	(0.1941)	
CMISX	0.0100	0.7534	0.3607	0.5294	- 0.0014	0.7351	0.0378	0.5295
	(0.3878)	(37.0732)***	(0.3660)		(0.0402)	(20.9352)***	(0.6128)	
TIEUX	0.0200	0.8264	0.5903	0.7431	0.0136	0.8099	0.0328	0.7431
	(1.1332)	(59.4869)***	(0.8763)		(0.5761)	(33.7372)***	(0.7778)	
RBIEX	-0.0424	0.8222	0.6849	0.3312	- 0.0485	0.8045	0.0348	0.3312
	(1.0009)	(24.6168)***	(0.4229)		(0.8572)	(13.9400)***	(0.3438)	
DRGLX	-0.0225	0.8407	-0.4630	0.3492	- 0.0039	0.8687	- 0.0579	0.3494
	(0.5387)	(25.5512)***	(0.2902)		(0.0703)	(15.2815)***	(0.5802)	

Table 24 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
NIEAX	0.0394	0.8390	2.3922	0.4472	- 0.0819	0.7536	0.1722	0.4477
	(1.1668)	(31.5484)***	(1.8551)*		(1.8186)*	(16.4088)***	(2.1353)**	
ENIGX	-0.0040	0.8676	0.9676	0.6829	- 0.0082	0.8476	0.0385	0.6827
	(0.1885)	(51.3556)***	(0.0190)		(0.2847)	(29.0269)***	(0.7511)	
UMINX	0.0198	0.7708	-0.4791	0.6259	0.0169	0.7753	- 0.0075	0.6258
	(0.9112)	(45.1033)***	(0.5781)		(0.5839)	(26.2530)***	(0.1438)	
FTITX	0.0422	0.8046	-2.0039	0.5398	0.0534	0.8491	- 0.0862	0.5390
	(1.5515)	(37.5691)***	(1.9294)*		(1.4699)	(22.9265)***	(1.3256)	
FAERX	-0.0058	0.8269	1.9873	0.6355	- 0.0252	0.7736	0.1052	0.6351
	(0.2536)	(46.2948)***	(2.2945)**		(0.8309)	(25.0522)***	(1.9400)*	
FICDX	0.0480	0.4861	-1.9917	0.2214	0.0803	0.5537	-0.1360	0.2217
	(1.4304)	(18.3967)***	(1.5544)		(1.7929)*	(12.1302)***	(1.6962)*	
FDIVX	0.0400	0.6496	-0.1060	0.6538	0.0385	0.6497	0.0004	0.6538
	(2.3303)**	(47.9784)***	(0.1614)		(1.6797)*	(27.7690)***	(0.0101)	
FIGRX	0.0292	0.7260	-0.0418	0.5800	0.0278	0.7251	0.0021	0.5800
	(1.2994)	(41.0346)***	(0.0487)		(0.9257)	(23.7194)***	(0.0398)	
FOSFX	-0.0065	0.8248	1.9579	0.6079	- 0.0250	0.7730	0.1022	0.6075
	(0.2723)	(43.6586)***	(2.1373)**		(0.7817)	(23.6676)***	(1.7816)*	
KNINX	0.0019	0.8533	1.3982	0.7873	- 0.0231	0.8032	0.1011	0.7876
	(0.1201)	(67.3792)***	(2.2769)**		(1.0780)	(36.7331)***	(2.6328)***	
GAMNX	0.0198	0.6474	-3.6367	0.4678	0.0450	0.7335	- 0.1680	0.4650
	(0.7750)	(32.1400)***	(3.7230)***		(1.3151)	(21.0193)***	(2.7406)***	
GSIFX	-0.0300	0.8408	3.2232	0.6383	- 0.0540	0.7628	0.1527	0.6366
	(1.3127)	(46.6348)***	(3.6867)***		(1.7627)*	(24.4277)***	(2.7845)***	
HAINX	0.0128	0.7441	0.2321	0.5572	0.0020	0.7285	0.0324	0.5573
	(0.5294)	(39.2010)***	(0.2521)		(0.0626)	(22.2144)***	(0.5632)	
IVINX	-0.0278	0.7981	0.7004	0.4266	- 0.0437	0.7693	0.0586	0.4267
	(0.8280)	(30.1751)***	(0.5461)		(0.9744)	(16.8358)***	(0.7299)	
ACINX	0.0756	0.5593	-2.9850	0.4474	0.1058	0.6405	-0.1606	0.6679
	(3.2889)***	(30.8848)***	(3.3993)***		(3.4440)***	(20.4448)***	(2.9187)***	

Table 24 Continued

F. Foreign Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
CONAX	-0.0229	0.7256	1.1556	0.4968	- 0.0399	0.6884	0.0746	0.4968
	(0.8671)	(34.8000)***	(1.1429)		(1.1290)	(19.1078)***	(1.1796)	
MSACX	-0.0219	0.7358	1.7623	0.5802	- 0.0621	0.6631	0.1479	0.5813
	(0.9669)	(41.2151)***	(2.0357)**		(2.0552)**	(21.5265)***	(2.7342)***	
MSIQX	-0.0225	0.6600	2.7384	0.4208	- 0.0803	0.5524	0.2186	0.4228
	(0.8057)	(29.9273)***	(2.5606)**		(2.1513)**	(14.5191)***	(3.2719)***	
MUIYX	-0.0073	0.7839	1.0329	0.5598	- 0.0296	0.7427	0.0837	0.5600
	(0.2893)	(39.4771)***	(1.0728)		(0.8791)	(21.6541)***	(1.3891)	
OAKIX	0.0891	0.5254	-3.2560	0.4132	0.1081	0.5984	- 0.1417	0.4099
	(3.8367)***	(28.6945)***	(3.6669)***		(3.4729)***	(18.8611)***	(2.5432)**	
PHITX	-0.0194	0.8438	0.4362	0.5311	- 0.0187	0.8376	0.0113	0.5310
	(0.6731)	(37.2036)***	(0.3966)		(0.4859)	(21.3725)***	(0.1642)	
PFIFX	0.0256	0.6198	-1.4821	0.3711	0.0294	0.6476	- 0.0530	0.3705
	(0.8682)	(26.6564)***	(1.3145)		(0.7450)	(16.1131)***	(0.7501)	
PRWLX	-0.0183	0.7314	1.2968	0.5767	- 0.0159	0.7133	0.0329	0.5760
	(0.8053)	(40.8886)***	(1.4952)		(0.5242)	(23.0615)***	(0.6052)	
SCIEX	-0.0666	0.8000	1.7838	0.2005	- 0.1278	0.7037	0.1986	0.2014
	(1.1520)	(17.5518)***	(0.8071)		(1.6561)*	(8.9406)***	(1.4364)	
SCINX	0.0015	0.8225	0.4639	0.5911	- 0.0119	0.8003	0.0457	0.5912
	(0.0614)	(42.0338)***	(0.4889)		(0.3593)	(23.6713)***	(0.7704)	
SEITX	0.0127	0.8739	1.8151	0.8051	- 0.0134	0.8160	0.1160	0.8051
	(0.8145)	(71.2208)***	(3.0507)***		(0.6451)	(38.4943)***	(3.1153)***	
SNGRX	-0.0109	0.8885	0.9140	0.6167	- 0.0143	0.8702	0.0352	0.6165
	(0.4285)	(44.3781)***	(0.9414)		(0.4205)	(25.1479)***	(0.5792)	
SBIEX	-0.0099	0.8100	0.0703	0.4673	- 0.0198	0.7979	0.0256	0.4673
	(0.3144)	(32.7125)***	(0.0586)		(0.4716)	(18.6508)***	(0.3413)	
STISX	0.0518	0.8986	-2.6051	0.5703	0.1014	0.9952	0.1954	0.5711
	(1.8127)*	(39.9107)***	(2.3860)**		(2.6607)***	(25.6071)***	(2.8627)***	
PRFEX	-0.0017	0.8779	1.3885	0.7110	- 0.0058	0.8512	0.0509	0.7105
	(0.0852)	(54.9335)***	(1.7918)*		(0.2140)	(30.7997)***	(1.0494)	

Table 24 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
PRIDX	0.0759	0.5444	-2.6919	0.2917	0.1072	0.6221	- 0.1543	0.2912
	(2.4235)***	(22.0617)***	(2.2495)**		(2.5617)**	(14.5847)***	(2.0602)**	
PRITX	-0.0026	0.8787	1.3165	0.7096	- 0.0061	0.8538	0.0474	0.7092
	(0.1293)	(54.7466)***	(1.6915)*		(0.2242)	(30.7637)***	(0.9717)	
TEMFX	0.0300	0.5624	-0.5810	0.5100	0.0230	0.5640	- 0.0006	0.5097
	(1.4922)	(35.5391)***	(0.7571)		(0.8561)	(20.6197)***	(0.0126)	
FINEX	0.0464	0.3952	-2.2269	0.3340	0.0482	0.4328	- 0.0705	0.3308
	(2.2457)**	(24.2784)***	(2.8214)***		(1.7435)*	(35.3518)***	(1.4236)	
USIFX	0.0145	0.7312	0.6018	0.6986	0.0097	0.7057	0.0521	0.6988
	(0.8305)	(53.2539)***	(0.9039)		(0.0042)	(29.7537)***	(1.2498)	
VTRIX	0.0093	0.7168	1.4469	0.6239	- 0.0248	0.6559	0.1242	0.6249
	(0.4631)	(45.1385)***	(1.8790)*		(0.9232)	(23.9336)***	(2.5803)***	
VWIGX	0.0296	0.8297	0.5554	0.7197	0.0225	0.8131	0.0333	0.7197
	(1.5733)	(56.0336)***	(0.7735)		(0.8963)	(31.7761)***	(0.7415)	
VNEPX	0.0018	0.8211	1.5312	0.5733	- 0.0174	0.7754	0.0911	0.5732
	(0.0694)	(40.6145)***	(1.5620)		(0.5074)	(22.1955)***	(1.4843)	
UNCGX	-0.0273	0.7510	0.4974	0.3327	- 0.0114	0.7607	- 0.0231	0.3326
	(0.7082)	(24.6894)***	(0.3372)		(0.2211)	(14.4733)***	(0.2505)	
SRIGX	0.0056	0.8140	0.9108	0.7015	- 0.0122	0.7798	0.0693	0.7017
	(0.2915)	(53.6525)***	(1.2380)		(0.4732)	(29.7545)***	(1.5062)	
WIBCX	-0.0012	0.8481	0.7707	0.5781	- 0.0212	0.8137	0.0704	0.5783
	(0.0460)	(40.9520)***	(0.7674)		(0.6042)	(22.7446)***	(1.1210)	
Portfolio	0.0068	0.7615	0.3354	0.8027	- 0.0004	0.7482	0.0271	0.8027
	(0.4965)	(70.4983)***	(0.6403)		(0.0208)	(40.0922)***	(0.8254)	

Table 24 Continued

G. Latin Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MBLTX	0.0677	0.8388	-0.5201	0.8195	0.0768	0.8589	-0.0411	0.8189
	(3.1496)***	(74.6927)***	(2.4581)**		(2.6802)***	(45.8136)***	(1.2977)	

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
GSCAX	0.0067	0.8702	0.9809	0.5014	0.0071	0.8562	0.0269	0.5012
	(0.2286)	(35.1961)***	(0.8282)		(0.1792)	(19.7203)***	(0.3610)	
ANWPX	0.0250	0.7890	1.4841	0.6286	0.0020	0.7393	0.1000	0.6287
	(1.2171)	(45.6714)***	(1.7934)*		(0.0734)	(24.3822)***	(1.9215)*	
SMCWX	0.0459	0.7978	-1.6611	0.4462	0.0775	0.8605	-0.1268	0.0350
	(1.5170)	(31.3634)***	(1.3632)		(1.9083)*	(19.2769)***	(1.6554)*	
AHERX	-0.0832	0.7783	-7.0451	0.0238	0.0294	1.0184	-0.4838	0.0240
	(0.4791)	(5.3295)***	(1.0071)		(0.1262)	(3.9726)***	(1.0995)	
IGLGX	-0.0096	0.9397	1.1292	0.5765	-0.0058	0.9172	0.0442	0.5762
	(0.0353)	(40.9450)***	(1.0271)		(0.1582)	(22.7583)***	(0.6390)	
FWWGX	-0.0113	0.9030	0.7366	0.3855	-0.0054	0.9209	-0.0356	0.3855
	(0.2915)	(27.7379)***	(0.4723)		(0.1046)	(16.1132)***	(0.3631)	
EGLBX	0.0278	0.7607	-0.1367	0.4235	0.0236	0.7576	0.0067	0.4235
	(0.9223)	(30.0443)***	(0.1127)		(0.5828)	(17.0450)***	(0.0880)	
FWWFX	0.0316	0.8156	1.0686	0.7397	0.0120	0.7761	0.0798	0.7398
	(1.9273)*	(59.1635)***	(1.6181)		(0.5437)	(32.0829)***	(1.9214)*	
FIISX	-0.0024	0.8417	1.4242	0.6472	-0.0312	0.7859	0.1129	0.6477
	(0.1154)	(47.5497)***	(1.6796)*		(1.1037)	(25.3074)***	(2.1180)**	
GAGLX	0.0039	0.7497	0.0026	0.5607	-0.0019	0.7426	0.0148	0.5607
	(0.1749)	(39.6085)***	(0.0028)		(0.0636)	(22.3481)***	(0.2603)	

Table 24 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FGLOX	-0.0031	0.9027	0.1038	0.7104	-0.0251	0.8745	0.0585	0.7107
	(0.1571)	(54.9124)***	(0.1318)		(0.9557)	(30.3211)***	(1.1808)	
MCGLX	-0.0060	0.8507	1.9240	0.6668	-0.0446	0.7756	0.1519	0.6677
	(0.2955)	(49.6723)***	(2.3453)**		(1.6332)	(25.8312)***	(2.9472)***	
JAWWX	0.0590	0.9698	0.0536	0.6759	0.0624	0.9732	-0.0071	0.6759
	(2.5909)***	(50.6332)***	(0.0585)		(2.0404)**	(28.9409)***	(0.1229)	
LAGEX	-0.0125	0.7800	1.1804	0.5428	-0.0359	0.7344	0.0923	0.5431
	(0.5173)	(38.2461)***	(1.2082)		(1.1020)	(20.5178)***	(1.5029)	
MWEBX	0.0101	0.6866	1.4622	0.6234	-0.0123	0.6380	0.0978	0.6235
	(0.5574)	(45.1735)***	(2.0085)**		(0.5049)	(23.9165)***	(2.1351)**	
OPPAX	0.0441	0.8446	-0.8763	0.4532	0.0391	0.8514	-0.0122	0.4530
	(1.4001)	(31.8735)***	(0.6904)		(0.9239)	(18.3003)***	(0.1530)	
OPGIX	0.0595	0.8476	-1.1784	0.4314	0.0706	0.8783	-0.0613	0.4313
	(1.8009)*	(30.4769)***	(0.8846)		(1.5852)	(17.9881)***	(0.7311)	
QVGLX	-0.0041	0.6910	0.9340	0.4181	-0.0224	0.6551	0.0727	0.4183
	(0.1465)	(29.7552)***	(0.8396)		(0.6030)	(16.0703)***	(1.0388)	
NWWOX	-0.0093	0.8178	0.8295	0.4428	-0.0382	0.7707	0.0964	0.4432
	(0.2977)	(31.2807)***	(0.6623)		(0.9140)	(16.7976)***	(1.2241)	
PRGLX	0.0064	0.9554	0.4195	0.5308	0.0020	0.9439	0.0229	0.5308
	(0.2092)	(37.3054)***	(0.3420)		(0.0492)	(20.9947)***	(0.2965)	
PEQUX	-0.0036	1.0850	0.9346	0.5316	-0.0234	1.0472	0.0765	0.5317
	(0.1042)	(37.3784)***	(0.6721)		(0.5053)	(20.5530)***	(0.8747)	
SGSCX	0.0653	0.8265	-1.8980	0.4915	0.0815	0.8740	-0.0945	0.4911
	(2.2831)**	(34.3366)***	(1.6461)*		(2.1186)**	(20.6748)***	(1.3025)	
SCOBX	-0.0167	0.6062	0.3699	0.3426	-0.0217	0.5947	0.0230	0.3426
	(0.5883)	(25.3222)***	(0.3226)		(0.5674)	(14.1517)***	(0.3184)	
TECAX	0.0381	0.6785	-0.3095	0.5866	0.0243	0.6663	0.0261	0.5866
	(1.9720)**	(41.7379)***	(0.3974)		(0.9359)	(23.3506)***	(0.5324)	
TEGOX	0.0063	0.6509	0.7401	0.5063	-0.0118	0.6250	0.0523	0.5064
	(0.0291)	(35.5399)***	(0.8436)		(0.4028)	(19.4392)***	(0.9476)	

Table 24 Continued

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
TEMGX	0.0328	0.4258	-2.9438	0.3502	0.0591	0.5010	-0.1497	0.3478
	(1.6395)	(25.2756)***	(3.6475)***		(2.1922)**	(16.9076)***	(2.9426)***	
TEPLX	0.0093	0.5531	0.5659	0.4054	-0.0096	0.5218	0.0638	0.4058
	(0.4097)	(28.9752)***	(0.6189)		(0.3160)	(15.5782)***	(1.1093)	
TEMWX	0.0165	0.5981	0.3155	0.4807	0.0053	0.5729	0.0518	0.4811
	(0.7819)	(33.7516)***	(0.3717)		(0.0186)	(18.4214)***	(0.9708)	
USAWX	0.0116	0.8512	1.6241	0.7553	-0.0125	0.7980	0.1069	0.7554
	(0.7091)	(61.6871)***	(2.4571)**		(0.5671)	(32.9522)***	(2.5716)**	
Portfolio	0.0118	0.7885	0.0262	0.7610	0.0065	0.7818	0.0140	0.7610
	(0.7850)	(62.5534)***	(0.0435)		(0.3226)	(35.3281)***	(0.3696)	

I. International Hybrid Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
CAIBX	-0.0100	0.3482	0.3003	0.4162	- 0.0235	0.3273	0.0427	0.4167
	(0.7133)	(29.6241)***	(0.5334)		(1.2544)	(15.8722)***	(1.2073)	
BPGLX	-0.0228	0.3816	1.5823	0.3025	- 0.0430	0.3340	0.0956	0.3023
	(1.1640)	(23.1134)***	(2.0004)**		(1.6286)	(11.5205)***	(1.9203)*	
SGENX	0.0127	0.2794	-0.7315	0.1266	0.0071	0.2835	-0.0066	0.1262
	(0.5080)	(13.2855)***	(0.7261)		(0.2118)	(7.6756)***	(0.1048)	
FMAFX	-0.0208	0.5839	1.6590	0.5942	- 0.0436	0.5319	0.1044	0.5942
	(1.2758)	(42.4886)***	(2.5201)**		(1.9867)**	(22.0473)***	(2.5218)**	
MALOX	0.0064	0.4740	-1.0750	0.3197	0.0314	0.5201	-0.0936	0.3204
	(0.2716)	(23.9454)***	(1.1337)		(0.9948)	(14.9745)***	(1.5706)	
MFWTX	-0.0128	0.3770	1.0244	0.0481	- 0.0284	0.3430	0.0686	0.0481
	(0.2245)	(7.8921)***	(0.4476)		(0.3727)	(4.0892)***	(0.4765)	
Portfolio	-0.0079	0.4074	0.4599	0.5097	- 0.0167	0.3900	0.0352	0.5098
	(0.5828)	(35.7835)***	(0.8434)		(0.9166)	(19.5152)***	(1.0254)	

The empirical results of the HM measures in Table 22, Table 23 and Table 24 suggest that while fewer asset classes produce statistically significant positive timing, the results are qualitatively similar to the results of TM measures. The HM market timing coefficients (γ) are positive and statistically significant for all individual and portfolio of Diversified Emerging market funds following trading strategies 2 (complex strategy) and 3 (restricted weekend strategy). Similarly, the HM market timing coefficients are positive and statistically significant for Diversified Pacific/Asia funds under trading strategy 1.

Similar to TM measures, trading strategy 3 provides few positive HM market timing coefficients for Europe funds. Trading strategy 3 also produced positive HM market timing coefficients for most of the sample Foreign, World and International Hybrid funds; however not all positive market timing coefficients are statistically significant. Trading strategy 3 also provides positive and statistically significant HM timing measures for Japan funds. Both trading strategies 1 and 2 produce positive and statistically. significant HM market timing coefficients for Pacific/Asia ex. Japan funds. Finally trading strategy 2 provides positive and statistically significant HM market timing coefficient for Latin fund.

When I compare the TM and HM results of trading strategies (Tables 22, 23 and 24) with the buy-and-hold TM and HM results (Table B-2 of appendix), it is revealed that the coefficient of determinations (R^2) of both TM and HM measures improved under trading strategies 1, 2 and 3. The TM and HM results of buy-and-hold strategy suggest that the mutual fund managers, on average, do not produce differential selectivity and timing results. But the TM and HM results of trading strategies suggest that mutual fund investors have superior selection and timing ability if they follow the proposed trading strategies.

Most of the mutual fund performance literature suggests that mutual funds (or other managed portfolios) display perverse market timing ability when compared to an unmanaged index. Treynor and Mazuy (1966) found significant positive market timing ability in only 1 fund out of 57 sample funds. Henriksson and Merton (1981) found significant positive market timing ability in only 3 funds out of 116 funds in their sample. However, despite those indications of perverse timing, the perverse timing may not be the result of decisions made by active portfolio managers or investors. Warther (1995) argues that some indications of perverse timing are the result of fund flows into mutual funds that are correlated with expectations of future market performance. If managers cannot rapidly invest these funds, the cash position of the fund will increase causing the beta to decrease. Therefore, while it would appear that the manager decreased the beta at the wrong time, the beta decrease was not due to a managerial decision but an externality. Further, Edelen (1999) finds that monthly cash flows are capable of explicating some negative timing ability.

Using daily mutual fund data for TM and HM models, this paper shows significant positive timing ability for international mutual funds. Both the TM and HM measures in Table 22, Table 23 and Table 24 document that the proposed trading strategies 1 (simple weekend strategy), 2 (complex strategy), and 3 (restricted weekend strategy) provide positive and statistically significant market timing coefficients; however it appears that trading strategy 1 and trading strategy 3 that incorporate a weekend effect (or Monday seasonal) dominates a buy-and-hold strategy. This is consistent with the study of Bollen and Busse (2001) which documents, using daily mutual fund data, that mutual funds possess more timing ability than previously reported in performance literature.

One plausible reason for the success of the trading strategy is that it is possible that the daily and weekend returns can be successfully forecasted but mutual fund portfolio managers may not be able to exploit the day-of-the-week patterns in security returns due to transaction costs. However, if individual investors can also forecast daily return patterns, and are able to escape transaction costs by trading fund shares at no charge, those investors (1) may be able to shift funds between international funds and money market fund (or cash) to avoid some negative returns and (2) may contribute to the documented perverse timing as discussed by Warther (1995) and Edelen (1999).

3.6. Possible Extension of this Study

In this paper, I used the returns of foreign indices to predict the returns of the US-based international mutual funds. Accordingly all the trading strategies proposed in this essay are based on the up or down movement of the foreign index. International mutual fund investors possibly can predict the fund returns based on the day of the week effects from the US indices too. The contrast between low serial correlations for most indices (except the MSCI emerging markets) and the high serial correlations for the MSCI World index on certain days in Table 15 is interesting. It seems to be possible only if there is one region in the World index that is not in the other indices and which on some days leads (this, of course is the US index). In turn the negative Tuesday and Friday coefficients for the MSCI World index suggests that the effect of the US varies with the day of the week. This can be estimated for the US indices. Besides, the first essay of this dissertation showed that the US leads many foreign markets and the mutual funds.

On theoretical grounds, there are reasons for believing that the US effect might differ by day of the week. A US effect on Asian and Japan means that the US Friday is affecting the Asian or Japan markets on the following Monday. This suggests a trading strategy: if the US is up on Friday international mutual funds investors should stay in funds; if Friday is down, then investors should get out of the international funds for Monday. Besides, Miller, Prather and Mazumder (2003) document the day of the week effects for ten different classes of mutual funds (that includes both the US and international funds) for a recent time period. Investigating the day of the week trading strategies for international funds using US indices can further extend this study

3.7. Conclusion and Limitations of this Study

The weekend effect in security returns provides no operational trading strategy to capitalize the returns because of transactions costs associated with trading individual stocks. However, transaction costs may be escaped by trading mutual funds and variable annuities. Using 2,479 daily return observations from 123 US-based international open-end mutual funds in 9 fund categories, this paper analyzes the potential exploitability of their returns using the weekend effect. The investigation splits the sample, uses the initial sub sample to investigate day-of-the-week return patterns and to develop trading rules, and then tests those rules on the holdout sample. The results of this study suggest that trading strategies, especially the weekend trading strategies, can both increase returns and moderate risks. By exploiting the weekend effect, investors of international mutual funds can enjoy higher risk-adjusted returns. The Sharpe, Treynor and Jensen measures document that the trading strategies based on the day-of-the-week

or weekend patterns provide superior risk-adjusted returns as opposed to a buy-and-hold strategy. Additionally, Treynor-Mazuy and Henriksson-Merton market timing models suggest that the weekend trading strategies produce positive timing measures. While the data used in this study are for international mutual) funds, very similar accounts are provided by many retirement accounts and annuities with no (or less) exchange restrictions that are found on mutual funds.

In practice, investors might limit their day-of-the-week (or weekend) trading to tax-sheltered accounts because of the numerous trades required. The complexity such a strategy would create for tax reporting is major cost imposed on the long-term shareholders. However, there are probably many individuals with substantial wealth in retirement funds that would find a day-of-the-week or weekend strategy useful.

The day-of-the-week or weekend trading strategies, while benefiting the individual investor, might not be in the interest of other holders of the funds. The fund families would incur extra administrative costs from such frequent trading (as would a retirement plan or variable annuity within which such trades were being made). If only a few investors attempted frequent trading and the fund was experiencing net inflows, the only effect might be larger net inflows on some days than on others. However, if more than a few investors used strategies that involved frequent trading there would be days of net outflows for the fund. If large sums were traded by day-of-the-week or weekend rules, the funds would incur large expenses (spreads and commissions) in buying and selling securities in order to stay fully invested. At best a fund that realized that it received net buying on some days and net selling on others, might adopt a policy of timing its purchases for the days that it received funds and timing its sales for the days it lost funds. It might also maintain larger cash reserves so it would not have to buy and sell securities.

It should be realized that frequent trading is not in the interests of funds and that fund instruments should be designed to restrict such trading. This can be done by placing limitations on the frequency of trading or by adding trading fees. Of course, any such restrictions should be disclosed before sale and investors should not be offered products with assurances of the easy trading only to have the fund later try to prevent or reduce trading. Given that profitable and utility enhancing strategies appear to exist, funds should anticipate that eventually they will have to deal with frequent trading and should design their products accordingly. Prospectuses might provide for small fees per trade to cover the additional administrative costs of placing trades and either also place limits on the number or frequency of trades, or impose fees that are a percentage of value for trades that are quickly reversed.

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APPENDIX

Table A-1: Descriptions of Sample Funds

This appendix provides details descriptions of the sample international mutual funds. I include funds, which are continuously in operation from January 4, 1993 through October 31, 2002. For funds with multiple share classes, I include fund, which is incepted first (in case inception date is same I include only A share class or the share class that begins alphabetically). I also include funds, which are close to new investors (denoted by ***). However, I exclude funds with a major policy change during the sample period. Regional compositions are identified using the following notations: A = Asia; A/P = Asia Pacific; E = Europe; J = Japan; L= Latin; US/Can = USA & Canada; US = United States, UK = United Kingdom. Country compositions are identified using the following notations: Afr = South Africa; Aus = Australia; Bel = Belgium; Aut = Austria; Bzl = Brazil; Can = Canada; Chl = Chile; Chn = China; Dnm = Denmark; Fin = Finland; Fr = France; Ger = Germany; Gr = Greece; HK = Hong Kong; Ind = India; Indo = Indonesia; Ir = Ireland; Ity = Italy; J = Japan; Kor = South Korea; Malay = Malaysia; Mex = Mexico; Nor = Norway; Ntd = Netherlands; NZ = New Zealand; Phil = Philippines; Pol = Poland; Por = Portugal; Rus = Russia; Sing = Singapore; Spn = Spain; Swe = Sweden; Swiss = Switzerland; Twn = Taiwan; UK = United Kingdom; US = United States. Load types are denoted by F = Front; D = Deferred; No = No load.

A. Diversified Emerging Market Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
1	Merrill Lynch Dev Cap Market A	MADCX	09/01/1989	F=5.5%	A/P=60%, E=15%, L=15%	Bzl=5%, Kor=25%, Mex=10%, Twn=25%	Merrill Lynch Investment Managers
2	Montgomery Emerging Mkts R	MNEMX	03/02/1992	No	A/P=50%, E=15%, L=30%	Kor=20%, Mex=10%, Twn=15%	Montgomery Funds
3	Morgan Stan Ins Emerging Mkt A	MGEMX	09/25/1992	No	A/P=60%, E=10%, L=20%	Kor=25%, Mex=10%, Twn=15%	Morgan Stanley Institutional Fds
4	Templeton Developing Mkts A	TEDMX	10/16/1991	F=5.75%	A/P=40%, E=15%, L=25%	Afr=15%, Kor=15%, HK=10%, Twn=5%	Franklin Templeton Investments

B. Diversified Pacific/Asia Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
1	Fidelity Pacific Basin	FPBFX	10/01/1986	F=3%; D=1%	A/P=40%, J=55%	Aus=15%, J=55%	Fidelity Group

Table A-1 Continued

B. Diversified Pacific/Asia Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
2	GAM Pacific Basin A	GAPCX	05/06/1987	F=5%	A/P=50%, J=45%	Aus=10%, HK=30%, J=45%, Sing=10%,	GAM Funds
3	J. Hancock Pacific Basin Eq A	JHWPX	09/08/1987	F=5%	A/P=50%, J=45%	HK=15%, J=45%, Kor=15%, Sing=5%, Twn=10%	John Hancock Funds
4	Merrill Lynch Pacific A	MAPCX	11/19/1976	F=5.25%	A/P=20%, E=20%, J=50%, US/CAN=10%	Aus=5%, J=50%, HK=10%, Kor=5%, UK=5%,	Merrill Lynch Investment Managers
5	Morgan Stanley Pacific Growth B	TGRBX	11/30/1990	D=5%	A/P=40%, J=55%	Aus=10%, HK=10%, J=55%, Kor=15%, Twn=5%	Morgan Stanley Funds
6	Prudential Pacific Growth B	PRPBX	07/24/1992	D=5%	A/P=55%, J=45%	Aus=20%, HK=20%, J=45%, Kor=10%, Twn=5%	Prudential Funds
7	Templeton Pacific Growth A	FKPGX	09/20/1991	F=5.75%	A/P=60%, J=35%	HK=25%, Ind=10%, J=35%, Kor=15%, Sing=5%	Franklin Templeton Investments

C. Europe Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
1	Alliance New Europe A	ANEAX	04/02/1990	F=4.25%	E = 95%	Fr=20%, Ger=10%, Spn=10%, Swiss=10%, UK=35%	Alliance Funds
2	DFA Continental Small Compny	DFCSX	04/15/1988	No	E = 95%	Fr=15%, Ger=10%, Ity=10%, Spn=10%, Swiss=10%	DFA Investment Dimensions Group
3	DFA United Kingdom Small Co	DFUKX	01/31/1986	No	E = 98%	UK=98%	DFA Investment Dimensions Group
4	Fidelity Europe	FIEUX	10/01/1986	D=1%	E = 90%	Fr=20%, Ger=10%, Ity=10%, Swiss=20%, UK=20%	Fidelity Group
5	INVESCO European Inv	FEURX	06/02/1986	No	E = 85%	Fr=20%, Ntd=5%, Spn=10%, Swiss=15%, UK=30%	INVESCO Family of Funds
6	Merrill Lynch Euro Fund B	MBEFX	01/30/1987	D=4%	E = 85%	Fr=15%, Ity=10%, Ntd=15%, Swiss=10%, UK=35%	Merrill Lynch Investment Managers
7	Morgan Stanley European Growth B	EUGBX	06/01/1990	D=5%	E = 95%	Fr=15%, Ity=5%, Ntd=10%, Swiss=15%, UK=35%	Morgan Stanley Funds
8	Pioneer Europe A	PEURX	04/02/1991	F=5.75%	E = 95%	Fr=15%, Ger=10%, Ntd=10%, Swiss=10%, UK=40%	Pioneer Group

Table A-1 Continued

C. Europe Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
9	Putnam Europe Growth A	PEUGX	09/07/1990	F=5.75%	E = 98%	Fr=20%, Ity=10%, Ntd=5%, Swiss=15%, UK=30%	Putnam Funds
10	T. Rowe Price European Stock	PRESX	02/28/1990	No	E = 95%	Fr=20%,Ity=10%, Ntd=10%, Swiss=10%, UK=35%	T. Rowe Price Funds
11	Vanguard Euro Stock Index Fund	VEURX	06/18/1990	No	E= 99%	Fr=10%, Ger=10%, Swe=20%, Swiss=10%, UK=20%	Vanguard Group

D. Japan Fund

	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
1	DFA Japanese Small Company	DFJSX	01/31/1986	No	J=95%	J=95%	DFA Investment Dimensions Group
2	The Japan Fund-Adv S	SJPNX	04/01/1962	No	J=95%	J=95%	Scudder Funds – Japan
3	T. Rowe Price Japan Fund	PRJPX	12/30/1991	No	J=90%	J=90%	T. Rowe Price Funds
4	Vanguard Pacific Stk Index Fd	VPACX	06/18/1990	No	A/P=25%, J=75%	Aus=15%, HK=5%, J= 75%, Sing=5%	Vanguard Group

E. Pacific/Asia Ex. Japan Fund

	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
1	Eaton Vance Grtr China Gr A	EVCGX	10/28/1992	F=5.75%	A/P = 90%	Chn=15%, HK=40%, Twn=30%,	Eaton Vance Group
2	Liberty Newport Tiger T Fd***	CNTTX	06/01/1989	F=5.75%	A/P = 98%	HK=35%, Ind=15%, Kor=15%, Chn=5%, Sing=10%	Liberty Financial Funds
3	Merrill Lynch Dragon Fund B	MBDRX	05/29/1992	D=4%	A/P = 95%	Chn=10%, HK=15%, Kor=40%, Sing=10%, Twn=20%	Merrill Lynch Investment Managers
4	Morgan Stan Ins Asian Eq A	MSAEX	07/01/1991	No	A/P = 90%	HK=20%, Kor=30%, Malay=5%, Sing=10%, Twn=20%,	Morgan Stanley Institutional Funds
5	T. Rowe Price New Asia Fd	PRASX	09/28/1990	No	A/P = 85%	HK=15%, Ind=10%, Kor=30%, Malay=10%, Twn=15%	T. Rowe Price Funds

Table A-1 Continued

F. Foreign Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
1	ING International Growth I	AEIGX	01/03/1992	No	A/P=5%, E=60%, J = 25%, US/CAN=5%	Fr=10%, Ger=10%, J=25%, Swiss=10%, UK=25%	ING Funds
2	AIM International Equity A	AIIEX	04/07/1992	F=5.5%	A/P=5%, E=55, J=15%, US/CAN=15%	Can=10%, Fr=15%, J=15%, Ity=10%, UK=15%,	AIM Family of Funds
3	American AAdvant Intl Eq Ins	AAIEX	08/07/1991	No	A/P=10%, E=55%, J=15%, US/CAN=5%	A/P=10%, Fr=15%, J=15%, Spn=10%, UK=15%, US=5%	American Aadvantage Funds
4	American Cent Intl Gr Inv	TWIEX	05/09/1991	No	E=75%, J=10%, US/CAN=5%	Fr=15%, Ity=10%, J=10%, Ntd=10%, UK=20%	American Century Investments
5	American Funds EuroPacific A	AEPGX	04/16/1984	F=5.75%	A/P=10%, E=40%, J=15%, US/CAN=5%	Fr=10%, J=15%, Kor=5%, Ntd=5%, UK=20%	American Funds Group
6	AXP International Fund A	INIFX	11/15/1984	F=5.75%	E=75%, J=20%	Ity=5%, J=20%, Ntd=5%, Swiss=10%, UK=30%	American Express Financial
7	Babson-Stewart Ivory Intl	BAINX	12/14/1987	No	A/P=10%, E=70%, J =15%	Chn=5%, J=15%, UK=15%, Fr=10%, Ger=10%	Babson Fund Group
8	Bernstein Tax-Mgd Intl Value	SNIVX	06/22/1992	No	A/P=5%, E=50%, J =30%, US/CAN=15%	Can=10%, Fr=15%, J=30%, Swe=5%, UK=25%	Bernstein Funds
9	BlackRock Intl Equity Instl	PNINX	04/27/1992	No	A/P=10%, E=65%, J =20%	Fr=10%, J=20%, Spn=10%, Swiss=10%, UK=20%	BlackRock Funds
10	Calvert World Value Intl EqA	CWVGX	06/26/1992	F=4.75%	A/P=10%, E=55%, J =15%, L=5%	Aus=5%, Fr=5%, J=15%, Ntd=5%, UK=20%,	Calvert Group
11	CDC Nvest Intl Equity A	NEFIX	05/21/1992	F=5.75%	A/P=10%, E=60%, J =10%, US/CAN=5%	Can=5%, Ity=10%, J=10%, Swiss=10%, UK=25%	CDC Nvest Funds
12	Columbia International Stock	CMISX	10/01/1992	No	A/P=10%, E=60%, J =20%, US/CAN=5%	Fr=5%, J=20%, Spn=5%, Swiss=5%, UK=25%,	Columbia Funds
13	Consulting Grp Cap Mkt Intl Equity	TIEUX	11/18/1991	No	A/P=10%, E=65%, J =20%	J=20%, Fr=10%, Ger=5%, Ntd=10%, UK=25%	Consulting Group Capital Markets
14	Credit Suisse Instl Intl Ins	RBIEX	09/30/1992	D=1%	A/P=10%, E=55%, J =25%	J=25%, Fin=5%, Fr=10%, Swiss=5%, UK=25%	Credit Suisse
15	Dreyfus Premier Intl Gr A	DRGLX	01/31/1992	F=5.75%	A/P=15%, E=60%, J =15%	Fr=15%, Indo=5%, J=15%, Kor=5%, UK=20%,	Dreyfus Premier
16	Eclipse EAFE Index Fd Nl	NIEAX	01/02/1991	No	A/P=5%, E=65%, J =25%	Fr=10%, Ger=10%, J=25%, Spn=10%, UK=15%,	Eclipse Funds
17	Enterprise Intl Growth A	ENIGX	11/17/1987	F=4.75%	A/P=5%, E=70%, J =20%	Fr=15%, J=20%, Ntd=5%, Swiss=15%, UK=35%,	Enterprise Group

Table A-1 Continued

F. Foreign Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
18	Excelsior International Fd	UMINX	07/21/1987	No	A/P=15%, E=60%, J =20%	Fr=10%, Ger=10%, Ity=5%, J=20%, UK=10%	Excelsior Funds
19	Federated Intl Equity A	FTITX	08/17/1984	F=5.50%	A/P=10%, E=55%, J =20%	Fr=15%, Ger=5%, J=20%, Swiss=5%, UK=25%,	Federated Funds
20	Fidelity Adv Overseas Fund T	FAERX	04/23/1990	F=3.50%	A/P=5%, E=50%, J =30%, US/CAN=5%	Fr=10%, J=30%, Ntd=5%, Swiss=10%, UK=20%	Fidelity Advisor Funds
21	Fidelity Canada Fund	FICDX	11/17/1987	F=3%	US/CAN = 98%	Can=95%	Fidelity Group
22	Fidelity Diversified Intl Fund	FDIVX	01/02/1992	No	A/P=5%, E=50%, J =15%, US/CAN=10%	Can=5%, Fr=10%, J=15%, Ntd=10%, UK=15%	Fidelity Group
23	Fidelity Intl Growth & Inc	FIGRX	12/31/1986	No	A/P=5%, E=50%, J =25%, US/CAN=10%	Fr=10%, J=25%, Ntd=5%, Swiss=10%, UK=20%	Fidelity Group
24	Fidelity Overseas Fund	FOSFX	12/04/1984	No	A/P=10%, E=40%, J =25%, US/CAN=5%	J=25%, Fr=10%, Swiss=10%, UK=20%, US=5%	Fidelity Group
25	Fifth Third Intl GDP Inst	KNINX	12/04/1992	No	A/P=5%, E=65%, J =25%	Fr=15%, Ger=10%, Ity=10%, J=25%, UK=20%	Kent Funds
26	GAM International Fund A	GAMNX	01/02/1985	F=5%	A/P=15%, E=65%, J =15%	Fr=10%, Ger=10%, HK=10%, J=15%, UK=25%	GAM Funds
27	Goldman Sachs Intl Eqty A	GSIFX	12/01/1992	F=5.50%	E=70%, J =25%	Fr=10%, Ity=10%, J=25%, Swiss=10%, UK=30%	Goldman Sachs Asset Mgmt Group
28	Harbor International Fund	HAINX	12/29/1987	No	A/P=10%, E=75%, J =10%	Fr=15%, J=10%, Ntd=10%, Swiss=10%, UK=30%	Harbor Funds
29	Ivy International Fund A	IVINX	04/30/1986	F=5.75%	A/P=10%, E=65%, J =15%	Fr=10%, Ger=10%, J=20%, Swiss=5%, UK=20%	Ivy Mackenzie Management
30	Liberty Acorn Intl Fund Z	ACINX	09/23/1992	No	A/P=10%, E=50%, J =10%, US/CAN=10%	Fr=10%, Ger=10%, J=10%, Swiss=10%, UK=10%	Liberty Financial Funds
31	Liberty Newport Intl Equity A	CONAX	06/08/1992	F=5.75%	A/P=5%, E=65%, J =20%	J=20%, UK=20%	Liberty Financial Funds
32	Morgan Stan Ins Active Int All A	MSACX	01/17/1992	No	A/P=5%, E=65%, J =20%	Fr=10%, J=20%, Ntd=5%, Swiss=10%, UK=35%	Morgan Stanley Institutional Funds
33	Morgan Stan Ins Intl Equity A***	MSIQX	08/04/1989	No	A/P=5%, E=65%, J =25%	Fr=10%, J=25%, Ntd=10%, Swiss=10%, UK=35%	Morgan Stanley Institutional Funds
34	Munder International Equity Y	MUIYX	12/02/1991	No	A/P=10%, E=70%, J =15%, US/CAN=5%	Fr=10%, J=15%, Ntd=5%, Swiss=10%, UK=25%	The Munder Funds

Table A-1 Continued

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
35	Oakmark International Fund	OAKIX	09/30/1992	No	A/P=15%, E=55%, J =10%, L=10%	Fr=20%, J=10%, Swe=5%, Swiss=5%, UK=20%	Oakmark Funds
36	Phoenix-Aberdeen Intl Port. A	PHITX	11/01/1989	F=5.75%	A/P=10%, E=65%, J =20%	Fr=10%, HK=5%, J=20%, Swiss=10%, UK=20%	Phoenix Funds
37	Preferred International Value Fund	PFIFX	06/30/1992	No	A/P=15%, E=50%, J =20%, US/CAN=10%	Can=10%, Ger=10%, J=20%, Swiss=10%, UK=15%	Preferred Group
38	Principal International A	PRWLX	08/12/1982	F=4.75%	A/P=5%, E=70%, J =20%, US/CAN=5%	Fr=10%, J=20%, Ntd=5%, Swiss=5%, UK=20%	Principal Mutual Funds
39	Schroder Intl Equity Inv	SCIEX	12/19/1985	No	E=60%, J =20%	Fr=10%, Ger=5%, J=20%, Ntd=10%, UK=20%	Schroder Funds
40	Scudder Intl Fund S	SCINX	06/18/1953	No	A/P=5%, E=70%, J =20%	Fr=15%, J=20%, Ntd=5%, Swiss=10%, UK=20%	Scudder Funds
41	SEI International Equity A	SEITX	12/20/1989	No	A/P=10%, E=65%, J =20%	Fr=10%, J=20%, Ntd=10%, Swiss=10%, UK=30%	SEI Funds
42	Sit International Growth Fund	SNGRX	11/01/1991	No	A/P=10%, E=65%, J =15%, US/CAN=5%	Fr=15%, HK=5%, J=15%, Swiss=10%, UK=25%	Sit Group
43	Smith Barney Intl All Cap Gr A	SBIEX	02/28/1986	F=5%	A/P=10%, E=60%, J =10%, US/CAN=15%	Ir=10%, J=10%, Ntd=5%, Swiss=5%, UK=25%	Smith Barney Group
44	Strong International Stock	STISX	03/04/1992	No	A/P=10%, E=55%, J =20%	Fr=15%, Ity=5%, J=20%, Swiss=5%, UK=15%	Strong Funds
45	T. Rowe Price Foreign Equity	PRFEX	09/07/1989	No	A/P=5%, E=70%, J =15%	Fr=15%, Ity=5%, J=15%, Swiss=5%, UK=25%	T. Rowe Price Funds
46	T. Rowe Price Intl Discovery***	PRIDX	12/30/1988	No	A/P=15%, E=40%, J =25%	Fr=5%, Ger=10%, J=25%, UK=15%, US=5%	T. Rowe Price Funds
47	T. Rowe Price Intl Stock Fund	PRITX	05/09/1980	No	A/P=5%, E=70%, J =15%	Fr=15%, Ity=5%, J=15%, Swiss=5%, UK=25%	T. Rowe Price Funds
48	Templeton Foreign A	TEMFX	10/05/1982	F=5.75%	A/P=25%, E=45%, J =10%, US/CAN=5%	Fr=10%, HK=15%, J=10%, Ntd=10%, Swiss=10%	Franklin Templeton Investments
49	Templeton Foreign Smaller Co A	FINEX	09/20/1991	F=5.75%	A/P=30%, E=45%, J =10%, US/CAN=10%	Can=10%, HK=20%, Ind=10%,J=10%, Ntd=10%	Franklin Templeton Investments
50	USAA International Fund	USIFX	07/11/1988	No	A/P=5%, E=65%, J =15%, US/CAN=10%	Fr=15%, J=15%, Spn=5%, Swiss=15%, UK=30%	USAA Group

Table A-1 Continued

F. Foreign Fund

#	Fund Name	Ticker	Inception Date	Maximum Load	Approximate Regional Composition	Approximate Country Composition	Family
51	Vanguard International Value Fund	VTRIX	05/16/1983	No	A/P=15%,E=65%, J =15%, L=5%	Fr=10%, Ger=5%, HK=10%, J=15%, UK=15%	Vanguard Group
52	Vanguard Intl Growth Fund	VWIGX	09/30/1981	No	A/P=10%, E=60%, J =20%	Fr=15%, J=20%, Kor=5%, Ntd=10%, UK=20%	Vanguard Group
53	Vontobel International Equity	VNEPX	07/06/1990	No	A/P=5%, E=75%, J =20%	J=20%, Ntd=5%, Spn=10%, Swiss=15%, UK=30%	Vontobel Funds
54	Waddell & Reed Adv Intl Gr A	UNCGX	06/03/1970	F=5.75%	E=65%, J =15%, US/CAN=5%	Fr=15%, Ger=10%, Ity=15%, J=15%, UK=20%	Waddell & Reed Advisors Funds
55	WM Intl Growth A	SRIGX	07/18/1990	F=5.50%	A/P=15%, E=55%, J =20%, US/CAN=5%	Fr=10%, J=20%, Ntd=10%, Swiss=10%, UK=20%	WM Group of Funds
56	Wright Intl Blue Chip Equity Stand	WIBCX	09/14/1989	No	A/P=5%, E=70%, J =15%, US/CAN=5%	Fr=10%, Ger=10%, J=15%, Spn=10%, UK=30%	Wright Investors' Service

G. Latin America Fund

#	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
1	Merrill Lynch Latin Amer B	MBLTX	09/27/1991	D=4%	L = 95%	Bzl=45%, Chl=5%, Mex=45%, US/UK=5%	Merrill Lynch Investment Managers

H. World Fund

#	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
1	Alliance Global Small Cap A	GSCAX	09/29/1966	F=4.25%	A/P=5%, E=20%, J=20%, US/CAN=55%	J=20%, Ger=5%, Swiss=5%, UK=10%, US=55%	Alliance Funds
2	American Fds New Prospective A	ANWPX	03/13/1973	F=5.75%	A/P=5%, E=20%, J=10%, US/CAN=50%	Can=5%, J=10%, Ntd=5%, UK=10%, US=45%	American Funds Group
3	American Fund Small Cap World A	SMCWX	04/30/1990	F=5.75%	A/P=5%, E=10%, J=5%, US/CAN=55%		American Funds Group
4	American Heritage Fund	AHERX	12/28/1951	No	E=80%, US/CAN=20%	UK=75%, US=20%	American Heritage Group
5	AXP Global Growth A	IGLGX	05/29/1990	F=5.75%	A/P=5%, E=25%, J=5%, US/CAN=65%	J=5%, UK=10%, US=65%	American Express Financial

Table A-1 Continued

	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
6	Dreyfus Founders Wldwide Gr F***	FWWGX	12/29/1989	No	A/P=5%, E=25%, J=10%, US/CAN=60%	J=10%, Swiss=5%, UK=10%, US=60%	Dreyfus Founders Class F
7	Elfun International Equity Fund	EGLBX	01/01/1988	No	A/P=10%, E=60%, J=15%, US/CAN=15%	Fr=15%, Ger=10%, Ity=5%, J=15%, US=15%	Elfun Funds
8	Fidelity Worldwide Fund	FWWFX	05/30/1990	No	A/P=5%, E=20%, J=10%, US/CAN=60%	Fr=5%, Ger=5%, J=10%, UK=5%, US=60%	Fidelity Group
9	First Invest Global A	FIISX	12/16/1981	F=5.75%	E=35%, J=5%, US/CAN = 55%	Fr=5%, J=5%, UK=10%, US=55%	First Investors Group
10	GAM Global Fund A	GAGLX	05/28/1986	F=5%	A/P=5%, E=25%, J=10%, US/CAN=60%	Fr=5%, J=10%, Sing=5%, UK=5%, US=60%	GAM Funds
11	J. Hancock Global Fund B	FGLOX	09/02/1986	D=5%	A/P=5%, E=30%, J=5%, US/CAN=60%	Fr=5%, J=5%, Sing=5%, UK=10%, US=60%	John Hancock Funds
12	Ivy Fund Global A	MCGLX	04/18/1991	F=5.75%	A/P=5%, E=30%, J=10%, US/CAN=55%	Fr=5%, J=10%, Swiss=5%, UK=10%, US=55%	Ivy Mackenzie Management
13	Janus Worldwide Fund***	JAWWX	05/15/1991	No	A/P=5%, E=30%, J=10%, L=5%, US/CAN=45%	Fr=10%, J=10%, Swiss=5%, UK=15%, US=45%	Janus
14	Lord Abbett Global Equity A	LAGEX	09/30/1988	F=5.75%	A/P=5%, E=25%, J=10%, US/CAN=60%	Fr=5%, J=10%, Ity=5%, UK=10%, US=60%	Lord Abbett Family of Funds
15	MFS Global Equity Fund B	MWEBX	12/29/1986	D=4%	E=40%, J=10%, US/CAN=40%	Fr=10%, J=10%, Swiss=5%, UK=15%, US=40%	MFS Family of Funds
16	Oppenheimer Global Fund A	OPPAX	12/22/1969	F=5.75%	A/P=5%, E=35%, J=10%, US/CAN=50%	Can=5%, Fr=5%, J=10%, UK=5%, US=45%	Oppenheimer Funds
17	Oppenheimer Global Gr & Inc Fd A	OPGIX	10/22/1990	F=5.75%	E=40%, US/CAN=55%	Can=5%, Fr=5%, Ger=5%, J=15%, US=55%	Oppenheimer Funds
18	Oppenheimer Quest Glob Val A	QVGLX	07/02/1990	F=5.75%	A/P=5%, E=25%, J=10%, US/CAN=55%	Can=5%, Fr=10%, J=10%, UK=10%, US=50%	Oppenheimer Funds
19	Phoenix-Aberdeen Wldwde Opp A	NWWOX	05/13/1960	F=5.75%	A/P=5%, E=35%, J=15%, US/CAN=45%	Fr=5%, J=15%, Swiss=5%, UK=10%, US=45%	Phoenix Funds
20	Prudential Global Growth Fund B	PRGLX	05/16/1984	D=5%	A/P=10%, E=25%, J=10%, US/CAN=50%	Aus=5%, J=10%, Kor=5%, UK=15%, US=50%	Prudential Funds
21	Putnam Global Growth Fund A	PEQUX	09/01/1967	F=5.75%	A/P=5%, E=30%, J=10%, US/CAN=55%	Fr=10%, J=10%, Swiss=5%, UK=10%, US=55%	Putnam Funds

Table A-1 Continued

H. World Fund

	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
22	Scudder Global Discovery Fd S***	SGSCX	09/10/1991	No	E=40%, J=10%, US/CAN=50%	Fr=10%, Ger=10%, Ir=10%, J=10%, UK=10%, US=50%	Scudder Funds
23	Scudder Global Fund S	SCOBX	07/23/1986	No	A/P=5%, E=30%, J=15%, US/CAN=50%	Can=5%, Fr=10%, J=15%, UK=10%, US=45%	Scudder Funds
24	Templeton Capital Accumulator	TECAX	03/01/1991	F=9%	A/P=10%, E=40%, J=10%, US/CAN=35%	Fr=10%, Ger=10%, J=10%, UK=10%, US=35%	Franklin Templeton Invest
25	Templeton Global Opportunities A	TEGOX	02/28/1990	F=5.75%	A/P=10%, E=40%, J=10%, US/CAN=35%	Fr=10%, Ger=10%, J=10%, UK=5%, US=35%	Franklin Templeton Invest
26	Templeton Global Small Co Gr A	TEMGX	06/01/1981	F=5.75%	A/P=20%, E=40%, J=5%, L=5%, US/CAN=25%	Can=5%, HK=15%, J=5%, Ntd=10%, Swiss=5%, US=20%	Franklin Templeton Invest
27	Templeton Growth A	TEPLX	11/29/1954	F=5.75%	A/P=15%, E=35%, J=5%, US/CAN=40%	HK=5%, J=5%, Kor=5%, Spn=5%, UK=10%, US=35%	Franklin Templeton Invest
28	Templeton World A	TEMWX	01/17/1978	F=5.75%	A/P=20%, E=20%, J=5%, L=5%, US/CAN=35%	Fr=5%, HK=10%, J=5%, Kor=10%, Ntd=5%, US=35%	Franklin Templeton Invest
29	USAA World Growth Fund	USAWX	10/01/1992	No	A/P=5%, E=40%, J=10%, US/CAN=45%	Fr=10%, J=10%, Swiss=10%, UK=15%, US=45%	USAA Group

I. International Bond Fund

#	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
1	Alliance Multi-Market Strategy A	AMMSX	05/29/1991	F=4.25%	E=65%, US/CAN=35%	Bel=5%, Can=5%, Dnm=5%, Ger=10%, Ity=20%, Ntd=5%, NZ=10%, Spn=5%, Swe=5%,	Alliance Funds
2	Alliance North Amer Govt Inc A	ANAGX	03/27/1992	F=4.25%	L=30% US/CAN=65%	Bzl=5%, Can=15%, Mex=20%, US=50%	Alliance Funds
3	American Century Intl Bond Inv	BEGBX	01/07/1992	No	E=80%, J=10%, US/CAN=10%	Aut=5%, Bel=5%, Fr=15%, Ger=15%, Ity=5%, J=10%, Ntd=5%	American Century Inv.
4	American Fds Cap World Bond A	CWBFX	08/04/1987	F=3.75%	E= 75%, J=10%, US/CAN=15%	Ger=10%, Gr=5%, J=10%, Spn=5%, Ntd=5%, US=10%	American Funds Group
5	AXP Global Bond A	IGBFX	03/20/1989	F=4.75%	E=75%, J=5%, US/Can=20%	Bel=5%, Can=5%, Fr=5%, Ger=10%, Ity=5%, J=5%, Spn=5%, UK=5%, US=15%	American Express Financial

Table A-1 Continued

I. International Bond Fund

#	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
6	BlackRock Intl Bond Svc	CIFIX	07/01/1991	No	E=85%, J=5%, US/CAN=10%	Aut=5%, Can=5%, Dnm=5%, Ger=15%, Gr=5%, Ir=5%, J=5%, Ntd=10%, Spn=5%, UK=5%, US=5%	BlackRock Funds
7	Consulting Group Intl Fixed Inv	TIFUX	11/18/1991	No	A/P=5%, E=75%, J=5%, US/Canada=15%	Aut=5%, Can=10%, Fr=25%, Ger=20%, J=5%, Mex=5%, NZ=5%, Swe=10%, UK=10%,	Consulting Group Capital Markets
8	Credit Suisse Global F/I Ret	CGFIX	11/01/1990	No	E=55%, J=5% US/Can=40%	Can=5%, Fr=5%, Ger=5%, Ity=10%, J=5%, Ntd=5%, Spn=5%, Swe=5%, UK=5%, US=30%	Credit Suisse
9	DFA Five Year Global Fix-Inc	DFGBX	11/06/1990	No	E=40%, J=10%, US/CAN=50%	Can=10%, Ger=10%, J=10%, Swe=5%, UK=10%, US=40%	DFA Investment Dimensions Group
10	Federated International Bond A	FTIIX	06/04/1991	F=4.50%	E=90%, US/CAN=10%	Can=5%, Dnm=5%, Fr=5%, Ger=35%, Ity=10%, Nor=5%, Spn=5%, UK=20%	Federated Funds
11	Franklin Temp Hard Currency A	ICPHX	11/17/1989	F=2.25%	E=90%, US/CAN=10%	Can=10%, Ger=10%, Aut=10%, Spn=10%, Por=5%	Franklin Templeton Investments
12	Goldman Sachs Global Inc A	GSGIX	08/02/1991	F=4.50%	E= 45%, J=15% US/CAN=40%,	Can=5%, Dnm=5%, Fr=10%, Ger=10%, Pol=5%, Ity=5%, Swe=5%, US=35%	Goldman Sachs Asset Mgmt Group
13	Lord Abbett Global Income A	LAGIX	09/30/1988	F=4.75%	E=50%, J=10%, US/CAN=40%	Bel=5%, Ger=5%, Ity=10%, J=10%, Spn=5%, US=40%	Lord Abbett Family of Funds
14	Merrill Lynch Global Bond B	MBGOX	08/29/1986	D=4%	E=65%, US/CAN=30%	Ger=30%, Ity=5%, Swe=10%, US=30%	Merrill Lynch Investment Managers
15	Morgan Stan Ins Gl FI A	MSGFX	05/01/1991	No	E=60%, J=10%, US/CAN=30%	Bel=5%, Can=10%, Fr=10%, Ger=10%, Ity=5%, J=10%, Spn=5%, US=20%	Morgan Stanley Institutional Funds
16	PIMCO Foreign Bond Instl	PFORX	12/02/1992	No	E=60%, J=5%, US/CAN=25%	Can=5%, Fr=5%, Ger=15%, Ity=5%, J=5%, Spn=5%, UK=5%, US=20%	PIMCO Funds
17	Putnam Global Govtl Income A	PGGIX	06/01/1987	F=4.75%	A/P=10%, E=45%, J=5%, US/CAN=40%	Can=5%, Ger=20%, J=5%, NZ=5%, Spn=5%, Swe=5%, US=35%,	Putnam Funds

Table A-1 Continued

I. International Bond Fund

#	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
18	Scudder Global Bond Fund S	SSTGX	03/01/1991	No	E=50%, J=5%, US/CAN=45%	Can=5%, Fr=10%, Ger=20%, Ity=5%, J=5%, Ntd=10%, Gr=5%, US=40%	Scudder Funds
19	Smith Barney Global Govt Bd A	SBGLX	07/22/1991	F=4.50%	E=60%, US/Canada=40%	Can=5%, Fr=20%, Ger=10%, Ity=10%, Spn=10%, Uk=5%, US=35%	Smith Barney Group
20	T. Rowe Price Intl Bond Fund	RPIBX	09/10/1986	No	E=80%, J=15%, US/CAN=5%	Aut=5%, Bel=5%, Dnm=5%, Fr=5%, Ger=10%, Ity=10%, J=15%, Ntd=10%, Spn=5%, UK=5%	T. Rowe Price Funds
21	Templeton Global Bond A	TPINX	09/18/1986	F=4.25%	A/P=25%, E=55% US/Canada=20%	Aus=5%, Aut=5%, Bel=5%, Can=5%, Dnm=5%, Ger=10%, NZ=10%, Phil=5%, Rus=5%, Spn=5%, Swe=5%, UK=5%, US/Mex=5%, Ven=5%	Franklin Templeton Investments

J. International Hybrid Fund

	Fund Name	Ticker	Inception Date	Maximum load	Approximate Regional Composition	Approximate Country Composition	Family
1	American Funds Cap Inc Builder A	CAIBX	07/30/1987	F=5.75%	A/P=10%, E=30%, US/CAN=60%	Aus=5%, Can=5% Ntd=5%, UK=15%, US=55%	American Funds Group
2	UBS (Brinson) Global Balanced Y	BPGLX	09/01/1992	No	E=25%, J=5%, US/CAN=70%	J=5%, UK=10%, US=60%	Brinson Partners Inc. Funds
3	First Eagle SoGen Global Fund A	SGENX	04/28/1970	F=5%	A/P=10%, E=30%, J=10%, L=5%, US/CAN=40%	Fr=5%, Ger=5%, J=10%, Swiss=5%, US=25%	First Eagle SoGen Funds
4	Fremont Global Fund	FMAFX	11/18/1988	No	A/P=5%, E=10%, J=5%, US/CAN=50%	J=5%, US=45%	Fremont Funds
5	Merrill Lynch Global Allocation A	MALOX	02/06/1989	F=5.25%	A/P=5%, E=20%, J=15%, US/CAN=60%	Fr=5%, J=15%, Kor=5%, UK=5%, US=55%	Merrill Lynch Investment Managers
6	MFS Global Total Return Fund A	MFWTX	09/04/1990	F=4.75%	A/P=5%, E=40%, J=5%, US/CAN=45%	Fr=10%, J=5%, Swiss=5%, UK=15%, US=45%	MFS Family of Funds

Note: Approximate regional or country composition of each mutual fund at the end of the sample period (October 31, 2002) is provided in Table A-1 above. Although fund companies rebalance their portfolios over time however the regional or country composition do not vary widely. The analysis section of various issues of "*Morningstar Mutual Fund*" is used to verify this belief. Therefore, I assume that the approximate regional or country composition at the end of the sample period remain almost same over the whole sample period.

Table A-2: Time Differences in Worldwide Equity Markets and the US Trading Hours

This table shows the time differences between US and other major global markets where most of the underlying shares of the sample mutual funds are domiciled. I consider the Eastern (New York) time because NAV is calculated daily at 4 PM New York time. Like the USA and Canada, some European and Asia-Pacific countries (mainly UK, Australia and New Zealand) use both the standard (October to April in USA) and day light saving time (April to October in USA). The trading time difference for those countries, which do not use the daylight saving time increases by 1 hour during standard USA time and the time difference is 1 hour less during daylight saving time. During Spring/Summer, Mexico market remains open from 7.30 AM to 2 PM.

Country	Trading hour (Local Standard Time)	Trading hour (New York Time)	Standard time Differences from New York* (in hours)
Australia	10 am – 4 p.m.	7 p.m. – 1 a.m.	+ 15
New Zealand	8:30 a.m. – 3:30 p.m.	4:30 p.m. – 10:30 p.m.	+ 17
Japan	9 a.m. – 11.10 a.m., 12:30 p.m. – 3 p.m.	7 p.m. – 9:10 p.m., 10:30 p.m. – 1 a.m.	+ 14
South Korea	9:30 a.m.-11:30 a.m., 1 p.m. – 3 p.m.	7:30 p.m. – 9:30 p.m., 11 p.m. – 1 p.m.	+14
Singapore	9 a.m. – 12:30 p.m., 2 p.m. – 5 p.m.	8 p.m. – 11:30 p.m., 1 a.m. – 4 a.m.	+ 13
China	9.30 a.m. – 11.30 a.m., 1 p.m. – 3.30 p.m.	8:30 p.m. – 10:30 p.m., 12 a.m. - 2:30 a.m.	+13
Taiwan	9 a.m. – 12 p.m.	8 p.m. – 11 p.m.	+ 13
Philippines	9:30 a.m. – 12:15 p.m.	8:30 p.m. – 11:15 p.m.	+ 13
Hong Kong	10 a.m. – 12:30 p.m., 2:30 – 3:55 p.m.	9 p.m. – 11:30 p.m., 1:30 a.m. – 2:55 a.m.	+ 13
Malaysia	9.30 am – 12.30 am, 2.30 pm – 5.00 pm	8:30 p.m. – 11:30 a.m., 1:30 p.m. – 4 p.m.	+ 13
Thailand	10 a.m. – 12:30 p.m., 2:30 p.m. – 4:30 p.m.	10 p.m. – 12:30 a.m., 2:30 – 4:30 a.m.	+ 12
Finland	8.30 am – 7 pm	1:30 a.m. – 12 p.m.	+ 7
Germany	8:30 a.m. – 8 p.m.	2:30 a.m. –2 p.m.	+ 6
South Africa	9.30 a.m. – 1 p.m., 2 p.m. – 4 p.m.	2:30 a.m. – 6 a.m., 7 a.m. – 9 a.m.	+ 7
Denmark	9 a.m. – 3.30 p.m.	3 a.m. – 9: 30 a.m.	+ 6
Austria	10:30 a.m. – 1.30 p.m.	4:30 a.m. – 7:30 a.m.	+ 6
Netherlands	9:30 a.m. – 4.30 p.m.	3:30 a.m. –10:30 a.m.	+ 6
UK	9 a.m. – 5 p.m.	4 a.m. –12 p.m.	+ 5
Belgium	12.30 p.m. – 2.30 p.m.	6:30 a.m. – 8:30 a.m.	+ 6
France	10 a.m. – 5 p.m.	4 a.m. –11:00 a.m.	+ 6
Italy	8 a.m. – 4.30 p.m.	2 a.m. –10:30 a.m.	+ 6
Norway	10 a.m. – 4 p.m.	4 a.m. –10 a.m.	+ 6
Spain	10:45 a.m. – 5.15 p.m.	4:45 a.m. –11.15 a.m.	+ 6

Table A-2 Continued

Country	Trading hour (Local Standard Time)	Trading hour (New York Time)	Standard time Differences from New York* (in hours)
Sweden	10 a.m. – 4 p.m.	4 a.m. –10 a.m.	+ 6
Switzerland	10 a.m. – 4.30 p.m.	4 a.m. –10:30 a.m.	+ 6
Argentina	9:30 a.m. – 6 p.m.	7:30 a.m. – 4 p.m.	+ 2
Brazil	9.30 a.m. – 4.30 p.m.	6:30 a.m. – 1:30 p.m.	+ 3
Canada	9:30 a.m. – 4:00 p.m.	9:30 a.m. – 4:00 p.m.	0
Chile	10.30 a.m. – 4.30 p.m.	9:30 a.m. – 3:30 p.m.	+1
Mexico	8.30 a.m. – 3 p.m.	10:30 a.m. – 5 p.m.	- 2
Peru	10 a.m. – 1.30 p.m.	10 a.m. – 1.30 p.m.	0
US (Chicago)	7 a.m. – 3.15 p.m.	8 a.m. – 4.15 p.m.	+ 1
US (New	9:30 a.m. – 4 p.m.	9:30 a.m. – 4 p.m.	0
Venezuela	9 a.m. – 12.15 p.m.	8:00 a.m. – 11.15 a.m.	-1

Sources: (a) *"Directory of World Stock Exchanges"*: The Economist Publications, The John Hopkins University Press, Baltimore, 1988; (b) *"The Foreign Guide to Securities Market Indices"* Henry Shilling, Foreign Publishing and Fitzroy Dearborn Publishers, Chicago, IL 60611, USA, 1996; and (c) *"Foreign Encyclopedia of the Stock Market"*, Fitzroy Dearborn Publishers, Chicago, 1999.

Table A-3: Serial Correlations in Mutual Fund Returns (Full Sample)

This table presents the results of serial correlations (equation 3) in sample fund returns. Column one lists the name and ticker symbol of sample funds. Columns two through four present the coefficients for AR (1), AR (2) and AR (3). The significance of AR coefficients at 1%, 5% and 10% level are represented by ***, ** and * respectively. The sample period is from January 4, 1993 through October 31, 2002.

A. Diversified Emerging Market Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Merrill Lynch Dev Cap Market A	(MADCX)	0.2568***	0.0594***	0.0808***
Montgomery Emerging Mkts R	(MNEMX)	0.2443***	0.0617***	0.0816***
Morgan Stan Ins Emerging Mkt A	(MGEMX)	0.2394***	0.0488**	0.0791***
Templeton Developing Mkts A	(TEDMX)	0.1551***	0.0340*	0.0983***
Portfolio		0.2690***	0.0566***	0.0970***

B. Diversified Pacific/Asia Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Fidelity Pacific Basin	(FPBFX)	0.1274***	-0.0025	-0.0121
GAM Pacific Basin A	(GAPCX)	0.1071***	0.0114	0.0087
J. Hancock Pacific Basin Eq A	(JHWPX)	0.1545***	0.0169	0.0122
Merrill Lynch Pacific A	(MAPCX)	0.0699***	-0.0042	-0.0343*
Morgan Stanley Pacific Growth B	(TGRBX)	0.1675***	0.0136	0.0335*
Prudential Pacific Growth B	(PRPBX)	0.1041***	-0.0412	0.0239
Templeton Pacific Growth A	(FKPGX)	0.1468***	0.0210	0.0601***
Portfolio		0.1035***	0.0034	0.0312

C. Europe Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance New Europe A	(ANEAX)	0.0737***	-0.0393	-0.0285
DFA Continental Small Compny	(DFCSX)	0.0332*	-0.0123	-0.0258
DFA United Kingdom Small Co	(DFUKX)	0.0435**	0.0370*	0.0021
Fidelity Europe	(FIEUX)	0.0993***	-0.0158	-0.0025
INVESCO European Inv	(FEURX)	0.1286***	-0.0285	-0.0268
Merrill Lynch Euro Fund B	(MBEFX)	0.0523***	-0.0004	-0.0211
Morgan Stanley European Growth B	(EUGBX)	0.0147	-0.0681***	-0.0559***
Pioneer Europe A	(PEURX)	0.0969***	-0.0402**	-0.0171
Putnam Europe Growth A	(PEUGX)	0.0743***	-0.0594***	-0.0316
T. Rowe Price European Stock	(PRESX)	0.0680***	-0.0711***	-0.0286
Vanguard Euro Stock Index Fund	(VEURX)	0.0328	-0.0640***	-0.0211
Portfolio		0.1228***	-0.0332*	-0.0139

D. Japan Fund

Fund Name and Ticker		AR (1)	AR(2)	AR(3)
DFA Japanese Small Company	(DFJSX)	0.1763***	0.0710***	0.0205
The Japan Fund-Adv S	(SJPNX)	0.0599***	-0.0181	-0.0369*
T. Rowe Price Japan Fund	(PRJPX)	0.0771***	-0.0311	-0.0188
Vanguard Pacific Stk Index Fd	(VPACX)	0.0153	-0.0364*	-0.0039
Portfolio		0.1054***	-0.0117	-0.0140

Table A-3 Continued

E. Pacific/Asia Ex. Japan Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Eaton Vance Grtr China Gr A	(EVCGX)	0.1312***	-0.0158	0.0707***
Liberty Newport Tiger T Fd***	(CNTTX)	0.0607***	-0.0322	0.0441**
Merrill Lynch Dragon Fund B	(MBDRX)	0.1722***	0.0177	0.0460**
Morgan Stan Ins Asian Eq A	(MSAEX)	0.1543***	0.0432**	0.0523***
T. Rowe Price New Asia Fd	(PRASX)	0.1554***	0.0266	0.0660***
Portfolio		0.1643***	0.0037	0.0671***

F. Foreign Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
ING International Growth I	(AEIGX)	0.1354***	-0.0175	-0.0018
AIM International Equity A	(AIIEX)	0.1962***	-0.0133	0.0063
American AAdvant Intl Eq Ins	(AAIEX)	0.0981***	-0.0203	-0.0103
American Cent Intl Gr Inv	(TWIEX)	0.1424***	0.0106	-0.0063
American Funds EuroPacific A	(AEPGX)	0.1454***	-0.0185	0.0245
AXP International Fund A	(INIFX)	0.0549***	-0.0447**	-0.0304
Babson-Stewart Ivory Intl	(BAINX)	0.1278***	-0.0243	-0.0197
Bernstein Tax-Mgd Intl Value	(SNIVX)	0.1176***	-0.0028	-0.0042
BlackRock Intl Equity Instl	(PNINX)	0.1032***	-0.0273	-0.0054
Calvert World Value Intl EqA	(CWVGX)	0.1372***	-0.0430**	-0.0141
CDC Nvest Intl Equity A	(NEFIX)	0.2097***	0.0134	-0.0023
Columbia International Stock	(CMISX)	0.1624***	-0.0087	0.0003
Consulting Grp Cap Mkt Intl Equity	(TIEUX)	0.1116***	-0.0132	-0.0029
Credit Suisse Instl Intl Ins	(RBIEX)	0.0718***	-0.0265	-0.0115
Dreyfus Premier Intl Gr A	(DRGLX)	0.0986***	0.0006	-0.0098
Eclipse EAFE Index Fd Nl	(NIEAX)	0.0717***	-0.0102	-0.0273
Enterprise Intl Growth A	(ENIGX)	0.0904***	-0.0423**	-0.0247
Excelsior International Fd	(UMINX)	0.1736***	-0.0006	0.0037
Federated Intl Equity A	(FTITX)	0.1617***	0.0079	-0.0037
Fidelity Adv Overseas Fund T	(FAERX)	0.1431***	-0.0180	0.0078
Fidelity Canada Fund	(FICDX)	0.0721***	0.0375*	0.0279
Fidelity Diversified Intl Fund	(FDIVX)	0.1635***	-0.0033	0.0094
Fidelity Intl Growth & Inc	(FIGRX)	0.1630***	-0.0032	0.0152
Fidelity Overseas Fund	(FOSFX)	0.1395***	-0.0196	0.0069
Fifth Third Intl GDP Inst	(KNINX)	0.1141	-0.0381*	0.0166
GAM International Fund A	(GAMNX)	0.1184***	0.0138	-0.0131
Goldman Sachs Intl Eqty A	(GSIFX)	0.1115***	-0.0376*	-0.0374*
Harbor International Fund	(HAINX)	0.1173***	-0.0301	-0.0033
Ivy International Fund A	(IVINX)	0.0870***	-0.0230	0.0038
Liberty Acorn Intl Fund Z	(ACINX)	0.2357***	0.0976***	0.0447**
Liberty Newport Intl Equity A	(CONAX)	0.1461***	-0.0221	-0.0003
Morgan Stan Ins Active Int All A	(MSACX)	0.0609***	-0.0359*	-0.0193
Morgan Stan Ins Intl Equity A***	(MSIQX)	0.0353*	-0.0273	-0.0223
Munder International Equity Y	(MUIYX)	0.1082***	-0.0306	0.0332*
Oakmark International Fund	(OAKIX)	0.1107***	0.0022	0.0544***
Phoenix-Aberdeen Intl Port. A	(PHITX)	0.0954***	-0.0405**	-0.0249
Preferred International Value Fund	(PFIFX)	0.0997***	-0.0051	-0.0329
Principal International A	(PRWLX)	0.1226***	-0.0049	0.0039
Schroder Intl Equity Inv	(SCIEX)	0.0321	-0.0064	-0.0079
Scudder Intl Fund S	(SCINX)	0.0989***	-0.0533***	-0.0232
SEI International Equity A	(SEITX)	0.0558***	-0.0406**	0.0020

Table A-3 Continued

F. Foreign Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Sit International Growth Fund	(SNGRX)	0.1876***	-0.0180	-0.0014
Smith Barney Intl All Cap Gr A	(SBIEX)	0.2009***	0.0264	-0.0076
Strong International Stock	(STISX)	0.1918***	0.0028	-0.0249
T. Rowe Price Foreign Equity	(PRFEX)	0.1455***	-0.0503**	-0.0032
T. Rowe Price Intl Discovery***	(PRIDX)	0.2230***	0.0865***	0.0573***
T. Rowe Price Intl Stock Fund	(PRITX)	0.1406***	-0.0523***	-0.0018
Templeton Foreign A	(TEMFX)	0.1348***	0.0370*	0.0304
Templeton Foreign Smaller Co A	(FINEX)	0.1087***	0.0611***	0.0766***
USAA International Fund	(USIFX)	0.1791***	-0.0221	0.0032
Vanguard International Value Fund	(VTRIX)	0.0731***	-0.0218	0.0152
Vanguard Intl Growth Fund	(VWIGX)	0.1239***	-0.0398	0.0080
Vontobel International Equity	(VNEPX)	0.1116***	-0.0277	0.0054
Waddell & Reed Adv Intl Gr A	(UNCGX)	0.1081***	-0.0463**	0.0076
WM Intl Growth A	(SRIGX)	0.1928***	-0.0466**	-0.0304
Wright Intl Blue Chip Equity Stand	(WIBCX)	0.0778***	-0.0173	0.0043
Portfolio		0.2080***	-0.0137	0.0103

G. Latin America Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Merrill Lynch Latin Amer B	(MBLTX)	0.1757***	0.0138	0.0431**

H. World Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance Global Small Cap A	(GSCAX)	0.1830***	0.0050	0.0473**
American Fds New Prospective A	(ANWPX)	0.1733***	-0.0045	-0.0085
American Fund Small Cap World A	(SMCWX)	0.1981***	0.0302	0.0900***
American Heritage Fund	(AHERX)	-0.1497***	-0.0529***	0.0259
AXP Global Growth A	(IGLGX)	0.1532***	-0.0166	-0.0016
Dreyfus Founders Wldwide Gr F***	(FWWGX)	0.1368***	-0.0250	0.0013
Elfun International Equity Fund	(EGLBX)	0.1223***	-0.0783***	-0.0183
Fidelity Worldwide Fund	(FWWFX)	0.1326***	0.0206	0.0441**
First Invest Global A	(FIISX)	0.1439***	-0.0394**	-0.0320
GAM Global Fund A	(GAGLX)	-0.4481***	0.0027	-0.0076
J. Hancock Global Fund B	(FGLOX)	0.1311***	-0.0353*	0.0114
Ivy Fund Global A	(MCGLX)	0.1759***	-0.0013	0.0258
Janus Worldwide Fund***	(JAWWX)	0.2214***	0.0068	0.0008
Lord Abbett Global Equity A	(LAGEX)	0.1229***	-0.0247	0.0016
MFS Global Equity Fund B	(MWEBX)	0.1663***	-0.0346*	-0.0146
Oppenheimer Global Fund A	(OPPAX)	0.1174	-0.0239	0.0143
Oppenheimer Global Gr & Inc Fd A	(OPGIX)	0.1218***	-0.0305	0.0440**
Oppenheimer Quest Glob Val A	(QVGLX)	0.1003***	0.0035	-0.0048
Phoenix-Aberdeen Wldwde Opp A	(NWWOX)	0.1121***	-0.0239	-0.0167
Prudential Global Growth Fund B	(PRGLX)	0.1781***	0.0035	0.0331*
Putnam Global Growth Fund A	(PEQUX)	0.1597***	-0.0434**	0.0108
Scudder Global Discovery Fd S***	(SGSCX)	0.2445***	0.0237	0.0206
Scudder Global Fund S	(SCOBX)	0.1026***	-0.0224	-0.0054
Templeton Capital Accumulator	(TECAX)	0.0473**	0.0013	0.0115
Templeton Global Opportunities A	(TEGOX)	0.1413***	0.0042	0.0216
Templeton Global Small Co Gr A	(TEMGX)	0.1967***	0.0931***	0.0900***

Table A-3 Continued

H. World Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Templeton Growth A	(TEPLX)	0.1404***	0.0291	0.0202
Templeton World A	(TEMWX)	0.1499***	0.0340*	0.0298
USAA World Growth Fund	(USAWX)	0.1817***	-0.0253	0.0150
Portfolio		0.21947***	-0.0092	0.0337*

I. International Bond Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance Multi-Market Strategy A	(AMMSX)	-0.1131***	0.2020***	-0.1189***
Alliance North Amer Govt Inc A	(ANAGX)	0.0631***	0.1145***	-0.0500**
American Century Intl Bond Inv	(BEGBX)	-0.0096	-0.0004	-0.0348*
American Fds Cap World Bond A	(CWBFX)	0.0604***	0.0188	-0.0406**
AXP Global Bond A	(IGBFX)	0.0658***	0.0134	-0.0057
BlackRock Intl Bond Svc	(CIFIX)	-0.0160	-0.0065	-0.0146
Consulting Group Intl Fixed Inv	(TIFUX)	0.0416**	0.0034	-0.0260
Credit Suisse Global F/I Ret	(CGFIX)	0.0518***	0.0039	-0.0175
DFA Five Year Global Fix-Inc	(DFGBX)	0.0203	0.0137	0.0129
Federated International Bond A	(FTIIX)	0.0307	-0.0176	-0.0187
Franklin Temp Hard Currency A	(ICPHX)	-0.0137	0.0033	-0.0504***
Goldman Sachs Global Inc A	(GSGIX)	0.0558***	0.0212	-0.0535***
Lord Abbett Global Income A	(LAGIX)	0.0886***	0.0131	-0.0324
Merrill Lynch Global Bond B	(MBGOX)	0.0549***	0.0071	-0.0238
Morgan Stan Ins Gl FI A	(MSGFX)	-0.0099	0.0114	-0.0101
PIMCO Foreign Bond Instl	(PFORX)	-0.0545***	0.0047	0.0081
Putnam Global Govtl Income A	(PGGIX)	0.0794***	0.0072	-0.0063
Scudder Global Bond Fund S	(SSTGX)	0.0335*	0.0334*	0.0096
Smith Barney Global Govt Bd A	(SBGLX)	0.0635***	0.05029	-0.0168
T. Rowe Price Intl Bond Fund	(RPIBX)	0.0402**	-0.0030	-0.0114
Templeton Global Bond A	(TPINX)	0.0890***	-0.0128	0.0095
Portfolio		0.1528***	0.0337*	-0.0288

J. International Hybrid Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
American Funds Cap Inc Builder A	(CAIBX)	0.0718***	-0.0086	0.0301
UBS (Brinson) Global Balanced Y	(BPGLX)	0.0974***	0.0035	0.0096
First Eagle SoGen Global Fund A	(SGENX)	0.0674***	0.0069	0.0008
Fremont Global Fund	(FMAFX)	0.1117***	0.0089	-0.0081
Merrill Lynch Global Allocation A	(MALOX)	0.1068***	0.0224	0.0207
MFS Global Total Return Fund A	(MFWTX)	-0.3885***	0.0016	-0.0047
Portfolio		0.1084***	0.0463**	0.0404**

Table A-4: Serial Correlations in Mutual Fund Returns (Holdout Sample)

This table presents the results of serial correlations (equation 3) in sample fund returns. Column one lists the name and ticker symbol of sample funds. Columns two through four present the coefficients for AR (1), AR (2) and AR (3). The significance of AR coefficients at 1%, 5% and 10% level are represented by ***, ** and * respectively. The sample period is from December 1, 1997 through October 31, 2002.

A. Diversified Emerging Market Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Merrill Lynch Dev Cap Market A	(MADCX)	0.2525***	0.0429	0.0729**
Montgomery Emerging Mkts R	(MNEMX)	0.2372***	0.0462	0.0758***
Morgan Stan Ins Emerging Mkt A	(MGEMX)	0.2219***	0.0368	0.0816***
Templeton Developing Mkts A	(TEDMX)	0.1255***	0.0204	0.0870***
Portfolio		0.2533***	0.0400***	0.0909***

B. Diversified Pacific/Asia Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Fidelity Pacific Basin	(FPBFX)	0.1388***	-0.0194	-0.0279
GAM Pacific Basin A	(GAPCX)	0.1539***	0.0026	0.0211
J. Hancock Pacific Basin Eq A	(JHWPX)	0.1915***	0.0117	-0.0265
Merrill Lynch Pacific A	(MAPCX)	0.0968***	0.0166	-0.0561**
Morgan Stanley Pacific Growth B	(TGRBX)	0.1715***	-0.0114	-0.0020***
Prudential Pacific Growth B	(PRPBX)	0.1172***	0.0367	0.0601**
Templeton Pacific Growth A	(FKPGX)	0.1217***	-0.0439	0.0227
Portfolio		0.1372***	-0.0191	0.0139

C. Europe Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance New Europe A	(ANEAX)	0.0864***	-0.0486*	-0.0360
DFA Continental Small Compny	(DFCSX)	0.0614***	-0.0214	-0.0305
DFA United Kingdom Small Co	(DFUKX)	0.0905***	0.0198	0.0073
Fidelity Europe	(FIEUX)	0.1166***	-0.0329	0.0009
INVESCO European Inv	(FEURX)	0.1405***	-0.0381	-0.0319
Merrill Lynch Euro Fund B	(MBEFX)	0.0314	-0.0046	-0.0306
Morgan Stanley European Growth B	(EUGBX)	0.0258	-0.0827***	-0.0652**
Pioneer Europe A	(PEURX)	0.1214***	-0.0486*	-0.0370
Putnam Europe Growth A	(PEUGX)	0.0959	-0.0771***	-0.0342
T. Rowe Price European Stock	(PRESX)	0.0807***	-0.0892***	-0.0358
Vanguard Euro Stock Index Fund	(VEURX)	0.0322	-0.0840***	-0.0171
Portfolio		0.1341***	-0.0502*	-0.0183

D. Japan Fund

Fund Name and Ticker		AR (1)	AR(2)	AR(3)
DFA Japanese Small Company	(DFJSX)	0.2002***	0.0819***	-0.0092
The Japan Fund-Adv S	(SJPNX)	0.0527*	-0.0094	-0.0518*
T. Rowe Price Japan Fund	(PRJPX)	0.0989***	-0.0240	-0.0362
Vanguard Pacific Stk Index Fd	(VPACX)	0.0307	-0.0278	-0.0186
Portfolio		0.1255**	-0.0011	-0.0355

Table A-4 Continued

E. Pacific/Asia Ex. Japan Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Eaton Vance Grtr China Gr A	(EVCGX)	0.1327***	-0.0336	0.0586**
Liberty Newport Tiger T Fd***	(CNTTX)	0.1530***	-0.0432	0.0332
Merrill Lynch Dragon Fund B	(MBDRX)	0.1915***	0.0045	0.0006
Morgan Stan Ins Asian Eq A	(MSAEX)	0.1369***	0.0141***	0.0275
T. Rowe Price New Asia Fd	(PRASX)	0.1615***	0.0055	0.0420
Portfolio		0.1891***	-0.0115	0.0374

F. Foreign Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
ING International Growth I	(AEIGX)	0.1511***	-0.0180	-0.0046
AIM International Equity A	(AIIEX)	0.2121***	-0.0186	-0.0045
American AAdvant Intl Eq Ins	(AAIEX)	0.1244***	-0.0366	-0.0112
American Cent Intl Gr Inv	(TWIEX)	0.1870***	-0.0002	-0.0028
American Funds EuroPacific A	(AEPGX)	0.1456***	-0.0251	0.0207
AXP International Fund A	(INIFX)	0.0942***	-0.0548*	-0.0550*
Babson-Stewart Ivory Intl	(BAINX)	0.1611***	-0.0397	-0.0351
Bernstein Tax-Mgd Intl Value	(SNIVX)	0.1320***	-0.0014	-0.0153
BlackRock Intl Equity Instl	(PNINX)	0.1165***	-0.0355	-0.0091
Calvert World Value Intl EqA	(CWVGX)	0.1420***	-0.0630**	-0.0259
CDC Nvest Intl Equity A	(NEFIX)	0.2672***	0.0115	-0.0169
Columbia International Stock	(CMISX)	0.1767***	-0.0089	-0.0021
Consulting Grp Cap Mkt Intl Equity	(TIEUX)	0.1399***	-0.0220	-0.0041
Credit Suisse Instl Intl Ins	(RBIEX)	0.0578**	-0.0383	-0.0194
Dreyfus Premier Intl Gr A	(DRGLX)	0.1068***	-0.0019	-0.0144
Eclipse EAFE Index Fd Nl	(NIEAX)	0.0793***	-0.0135	-0.0383
Enterprise Intl Growth A	(ENIGX)	0.1275***	-0.0566**	-0.0517*
Excelsior International Fd	(UMINX)	0.2014***	-0.0095	0.0032
Federated Intl Equity A	(FTITX)	0.2041***	0.0024	-0.0141
Fidelity Adv Overseas Fund T	(FAERX)	0.1655***	-0.0283	0.0089
Fidelity Canada Fund	(FICDX)	0.0999***	0.0252	0.0347
Fidelity Diversified Intl Fund	(FDIVX)	0.1867***	-0.0142	0.0141
Fidelity Intl Growth & Inc	(FIGRX)	0.1821***	-0.0082	0.0194
Fidelity Overseas Fund	(FOSFX)	0.1581***	-0.0276	0.0077
Fifth Third Intl GDP Inst	(KNINX)	0.1440***	-0.0543*	-0.0372
GAM International Fund A	(GAMNX)	0.1426***	0.0013	-0.0300
Goldman Sachs Intl Eqty A	(GSIFX)	0.1361***	-0.0482*	-0.0377
Harbor International Fund	(HAINX)	0.1198***	-0.0477*	-0.0251
Ivy International Fund A	(IVINX)	0.0754***	-0.0359	-0.0079
Liberty Acorn Intl Fund Z	(ACINX)	0.2470***	0.0926***	0.0392
Liberty Newport Intl Equity A	(CONAX)	0.1158***	-0.0480*	-0.0119
Morgan Stan Ins Active Int All A	(MSACX)	0.0672**	-0.0598**	-0.0298
Morgan Stan Ins Intl Equity A***	(MSIQX)	0.0472*	-0.0443	-0.0306
Munder International Equity Y	(MUIYX)	0.1019***	-0.0430	0.0288
Oakmark International Fund	(OAKIX)	0.1259***	0.0175	0.0530*
Phoenix-Aberdeen Intl Port. A	(PHITX)	0.1319***	-0.0619**	-0.0373
Preferred International Value Fund	(PFIFX)	0.1002***	-0.0130	-0.0479*
Principal International A	(PRWLX)	0.1218***	-0.0200	-0.0089
Schroder Intl Equity Inv	(SCIEX)	0.0319	-0.0208	-0.0146
Scudder Intl Fund S	(SCINX)	0.1039***	-0.0718**	-0.0345
SEI International Equity A	(SEITX)	0.1238***	-0.0636**	-0.0116

Table A-4 Continued

F. Foreign Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Sit International Growth Fund	(SNGRX)	0.1954***	-0.0374	-0.0154
Smith Barney Intl All Cap Gr A	(SBIEX)	0.2023***	0.0212	-0.0156
Strong International Stock	(STISX)	0.1969***	-0.0118	-0.0372
T. Rowe Price Foreign Equity	(PRFEX)	0.1533***	-0.0695**	-0.0171
T. Rowe Price Intl Discovery***	(PRIDX)	0.2452***	0.0823***	0.0524*
T. Rowe Price Intl Stock Fund	(PRITX)	0.1532***	-0.0734***	-0.0151
Templeton Foreign A	(TEMFX)	0.1675***	0.0167	0.0255
Templeton Foreign Smaller Co A	(FINEX)	0.1142***	0.0671**	0.1042***
USAA International Fund	(USIFX)	0.1872***	-0.0415	-0.0078
Vanguard International Value Fund	(VTRIX)	0.1226***	-0.0345	0.0087
Vanguard Intl Growth Fund	(VWIGX)	0.1265***	-0.0560**	0.0085
Vontobel International Equity	(VNEPX)	0.1159***	-0.0443	-0.0051
Waddell & Reed Adv Intl Gr A	(UNCGX)	0.1172***	-0.0484*	0.0057
WM Intl Growth A	(SRIGX)	0.2199***	-0.0633**	-0.0468
Wright Intl Blue Chip Equity Stand	(WIBCX)	0.0793***	-0.0235	0.0006
Portfolio		0.2187***	-0.0292	-0.0002

G. Latin America Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Merrill Lynch Latin Amer B	(MBLTX)	0.1683***	0.0085	0.0327

H. World Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance Global Small Cap A	(GSCAX)	0.2241***	0.0154	0.0711**
American Fds New Prospective A	(ANWPX)	0.1722***	0.0029	-0.0044
American Fund Small Cap World A	(SMCWX)	0.2182***	0.0347	0.1115***
American Heritage Fund	(AHERX)	-0.1574***	-0.0640*	0.0329
AXP Global Growth A	(IGLGX)	0.1446***	-0.0207	-0.0069
Dreyfus Founders Wldwide Gr F***	(FWWGX)	0.1275***	-0.0310	-0.0013
Elfun International Equity Fund	(EGLBX)	0.1296***	-0.0373	-0.0357
Fidelity Worldwide Fund	(FWWFX)	0.1256***	0.0256	0.0413
First Invest Global A	(FIISX)	0.1613***	-0.0526*	-0.0323
GAM Global Fund A	(GAGLX)	0.1596***	0.0063	-0.0323
J. Hancock Global Fund B	(FGLOX)	0.1434***	-0.0360	0.0198
Ivy Fund Global A	(MCGLX)	0.1947***	-0.0103	0.0209
Janus Worldwide Fund***	(JAWWX)	0.2333***	0.0104	0.0018
Lord Abbett Global Equity A	(LAGEX)	0.1259***	-0.0322	0.0049
MFS Global Equity Fund B	(MWEBX)	0.1714***	-0.0341	-0.0182
Oppenheimer Global Fund A	(OPPAX)	0.1624***	-0.0327	0.0153
Oppenheimer Global Gr & Inc Fd A	(OPGIX)	0.1210***	-0.0435	0.0484*
Oppenheimer Quest Glob Val A	(QVGLX)	0.0907***	0.0135	-0.0096
Phoenix-Aberdeen Wldwde Opp A	(NWWOX)	0.1062***	-0.0269	-0.0238
Prudential Global Growth Fund B	(PRGLX)	0.1803***	0.0011	0.0330
Putnam Global Growth Fund A	(PEQUX)	0.1605***	-0.0465	0.0114
Scudder Global Discovery Fd S***	(SGSCX)	0.2521***	0.0205	0.0214
Scudder Global Fund S	(SCOBX)	0.0858***	-0.0285	-0.0107
Templeton Capital Accumulator	(TECAX)	0.2021***	-0.0026	0.0297
Templeton Global Opportunities A	(TEGOX)	0.1091***	0.0017	0.0153
Templeton Global Small Co Gr A	(TEMGX)	0.2175***	0.0912***	0.1134***

Table A-4 Continued

H. World Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Templeton Growth A	(TEPLX)	0.1414***	0.0126	0.0126
Templeton World A	(TEMWX)	0.1721***	0.0210	0.0242
USAA World Growth Fund	(USAWX)	0.1700***	-0.0303	0.0153
Portfolio		0.2295***	-0.0232	0.0306

I. International Bond Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
Alliance Multi-Market Strategy A	(AMMSX)	-0.0531*	0.0116	-0.0571**
Alliance North Amer Govt Inc A	(ANAGX)	0.0572**	-0.0489*	-0.0619**
American Century Intl Bond Inv	(BEGBX)	-0.0173	0.0058	-0.0314
American Fds Cap World Bond A	(CWBFX)	0.0269	0.0229	-0.0436
AXP Global Bond A	(IGBFX)	0.0124	-0.0043	0.0088
BlackRock Intl Bond Svc	(CIFIX)	-0.0560**	-0.0143	-0.0288
Consulting Group Intl Fixed Inv	(TIFUX)	0.0636**	-0.0109	-0.0136
Credit Suisse Global F/I Ret	(CGFIX)	0.0624***	-0.0073	-0.0324
DFA Five Year Global Fix-Inc	(DFGBX)	-0.0083	0.0004	-0.0162
Federated International Bond A	(FTIIX)	0.0442	-0.0330	-0.0198
Franklin Temp Hard Currency A	(ICPHX)	-0.0251	0.0100	-0.0509*
Goldman Sachs Global Inc A	(GSGIX)	0.0414	0.0130	-0.0409
Lord Abbett Global Income A	(LAGIX)	0.0791***	-0.0215	-0.0330
Merrill Lynch Global Bond B	(MBGOX)	0.0067	0.0116	-0.0138
Morgan Stan Ins Gl FI A	(MSGFX)	-0.0651**	-0.0016	-0.0132
PIMCO Foreign Bond Instl	(PFORX)	-0.1460***	-0.0162	-0.0091
Putnam Global Govtl Income A	(PGGIX)	0.0714**	0.0246	0.0189
Scudder Global Bond Fund S	(SSTGX)	0.0553*	0.0263	-0.0174
Smith Barney Global Govt Bd A	(SBGLX)	0.0568**	0.0039	-0.0162
T. Rowe Price Intl Bond Fund	(RPIBX)	0.0170	-0.0100	-0.0010
Templeton Global Bond A	(TPINX)	0.0679**	-0.0215	0.0115
Portfolio		0.1041***	0.0080	-0.0229

J. International Hybrid Fund

Fund Name and Ticker		AR(1)	AR(2)	AR(3)
American Funds Cap Inc Builder A	(CAIBX)	0.0699**	-0.0209	0.0210
UBS (Brinson) Global Balanced Y	(BPGLX)	0.1101**	0.0105	0.0174
First Eagle SoGen Global Fund A	(SGENX)	0.0604**	0.0117	-0.0018
Fremont Global Fund	(FMAFX)	0.1220***	0.0049	-0.0096
Merrill Lynch Global Allocation A	(MALOX)	0.0947***	0.0194	0.0231
MFS Global Total Return Fund A	(MFWTX)	-0.4189***	0.0027	-0.0020
Portfolio		0.0733***	0.0520*	0.0403

Table A-5: Stepwise Regression Results Predicting Next Day International Bond Fund Return using 10-Year and 30-Year T-bill Yield

This table presents the results of stepwise regression (equation 4). Column one lists the name and ticker symbol of sample international bond funds. Column two presents the (slope) coefficients of the best predictor of funds. The t-statistics of all slope coefficients are significant at 1% (***) level. The sample is from January 4, 1993 through November 28, 1997. Panel A lists the results when 10 and 30 year T-bill yields are only used as independent variables in stepwise regression equation (4). Panel B lists the results when 10 and 30 year T-bill yields are used as independent variables along with the US stock market indices in stepwise regression equation (4).

Panel A

I. International Bond Fund

Fund Name and Ticker		Coefficient of Best predictor
Alliance Multi-Market Strategy A	(AMMSX)	-0.0510*** (TB 30 Yr)
Alliance North Amer Govt Inc A	(ANAGX)	-0.1150*** (TB 30 Yr)
American Century Intl Bond Inv	(BEGBX)	-0.1698*** (TB 30 Yr)
American Fds Cap World Bond A	(CWBFX)	-0.0928*** (TB 10 Yr)
AXP Global Bond A	(IGBFX)	-0.0809*** (TB 10 Yr)
BlackRock Intl Bond Svc	(CIFIX)	-0.0653*** (TB 10 Yr)
Consulting Group Intl Fixed Inv	(TIFUX)	-0.1026*** (TB 10 Yr)
Credit Suisse Global F/I Ret	(CGFIX)	-0.0992*** (TB 30 Yr)
DFA Five Year Global Fix-Inc	(DFGBX)	-0.0546*** (TB 10 Yr)
Federated International Bond A	(FTIIX)	-0.1125*** (TB 10 Yr)
Franklin Temp Hard Currency A	(ICPHX)	-0.0190 `(TB 10 Yr)
Goldman Sachs Global Inc A	(GSGIX)	-0.0705*** (TB 10 Yr)
Lord Abbett Global Income A	(LAGIX)	-0.0914*** (TB 10 Yr)
Merrill Lynch Global Bond B	(MBGOX)	-0.0813*** (TB 10 Yr)
Morgan Stan Ins Gl FI A	(MSGFX)	-0.0880*** (TB 10 Yr)
PIMCO Foreign Bond Instl	(PFORX)	-0.0955*** (TB 30 Yr)
Putnam Global Govtl Income A	(PGGIX)	-0.0812*** (TB 10 Yr)
Scudder Global Bond Fund S	(SSTGX)	-0.0453*** (TB 30 Yr)
Smith Barney Global Govt Bd A	(SBGLX)	-0.0623*** (TB 10 Yr)
T. Rowe Price Intl Bond Fund	(RPIBX)	-0.0873*** (TB 10 Yr)
Templeton Global Bond A	(TPINX)	-0.0834*** (TB 10 Yr)
Portfolio		-0.0773*** (TB 10 Yr)

Table A-5 Continued

Panel B.

I. International Bond Fund

Fund Name and Ticker		Coefficient of Best predictor
Alliance Multi-Market Strategy A	(AMMSX)	-0.0510*** (TB 30 Yr)
Alliance North Amer Govt Inc A	(ANAGX)	0.1329*** (S&P 500)
American Century Intl Bond Inv	(BEGBX)	-0.1698*** (TB 30 Yr)
American Fds Cap World Bond A	(CWBFX)	-0.0928*** (TB 10 Yr)
AXP Global Bond A	(IGBFX)	-0.0809*** (TB 10 Yr)
BlackRock Intl Bond Svc	(CIFIX)	-0.0653*** (TB 10 Yr)
Consulting Group Intl Fixed Inv	(TIFUX)	-0.1026*** (TB 10 Yr)
Credit Suisse Global F/I Ret	(CGFIX)	-0.0992*** (TB 30 Yr)
DFA Five Year Global Fix-Inc	(DFGBX)	-0.0546*** (TB 10 Yr)
Federated International Bond A	(FTIIX)	-0.1125*** (TB 10 Yr)
Franklin Temp Hard Currency A	(ICPHX)	-0.0536*** (Russell 3000)
Goldman Sachs Global Inc A	(GSGIX)	-0.0705*** (TB 10 Yr)
Lord Abbett Global Income A	(LAGIX)	-0.0914*** (TB 10 Yr)
Merrill Lynch Global Bond B	(MBGOX)	-0.0813*** (TB 10 Yr)
Morgan Stan Ins Gl FI A	(MSGFX)	-0.0880*** (TB 10 Yr)
PIMCO Foreign Bond Instl	(PFORX)	0.1083*** (Russell 1000)
Putnam Global Govtl Income A	(PGGIX)	-0.0812*** (TB 10 Yr)
Scudder Global Bond Fund S	(SSTGX)	-0.0453*** (TB 30 Yr)
Smith Barney Global Govt Bd A	(SBGLX)	-0.0623*** (TB 10 Yr)
T. Rowe Price Intl Bond Fund	(RPIBX)	-0.0873*** (TB 10 Yr)
Templeton Global Bond A	(TPINX)	-0.0834*** (TB 10 Yr)
Portfolio		-0.0773*** (TB 10 Yr)

Table A-6: Returns and Risks of Buy-and-hold and Conservative Trading Strategy with Exchange Restrictions (30 Days)

This table presents the returns and risks of buy-and-hold and conservative trading strategies. The conservative trading strategy is based on the facts that trades are executed when an Index value increases or decreases by at least 1.5% and investors cannot trade/exchange within 30 days of initial purchase of their funds. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of conservative trading strategy IV (switching between international fund and cash); columns six and seven provide mean daily returns and standard deviations of returns of conservative trading strategy V (switching between international fund and money market fund); and columns eight and nine exhibit mean daily returns and standard deviations of returns of conservative trading strategy VI (switching between international fund and index fund). The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MADCX	-0.0318%	1.3224%	0.0175%	0.9100%	0.0253%	0.9100%	0.0026%	1.3075%
MNEMX	-0.0424%	1.3434%	0.0576%	0.8929%	0.0655%	0.8925%	0.0363%	1.3486%
MGEMX	-0.0318%	1.4658%	0.0128%	1.3238%	0.0142%	1.3238%	-0.0316%	1.4307%
TEDMX	-0.0319%	1.3084%	0.0206%	0.9838%	0.0284%	0.9837%	0.0056%	1.3599%
Portfolio	-0.0345%	1.2831%	0.0187%	0.8975%	0.0265%	0.8974%	0.04036%	1.2988%

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FPBFX	-0.0014%	1.3893%	0.0529%	1.0193%	0.0609%	1.0190%	0.0320%	1.4354%
GAPCX	-0.0389%	1.4254%	-0.0110%	0.9907%	-0.0025%	0.9903%	-0.0323%	1.4292%
JHWPX	-0.0147%	1.3235%	0.0499%	0.9669%	0.0578%	0.9666%	0.0297%	1.3813%
MAPCX	-0.0347%	1.4110%	0.0387%	1.0623%	0.0466%	1.0621%	0.0189%	1.4497%
TGRBX	-0.0294%	1.3397%	0.0517%	0.9920%	0.0596%	0.9917%	0.0314%	1.3990%
PRPBX	-0.0471%	4.2347%	0.0261%	0.8869%	0.0340%	0.8868%	0.0052%	1.3442%
FKPGX	-0.0512%	1.2696%	0.0405%	0.9319%	0.0484%	0.9317%	0.0202%	1.3569%
Portfolio	-0.0310%	1.3295%	0.0462%	0.8761%	0.0541%	0.8757%	0.0261%	1.3192%

Table A-6 Continued

C. Europe Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANEAX	-0.0414%	1.5057%	0.0192%	1.1347%	0.0269%	1.1346%	0.0051%	1.4731%
DFCSX	-0.0511%	1.1944%	-0.0080%	0.9144%	-0.0002%	0.9146%	-0.0231%	1.3102%
DFUKX	-0.0592%	1.1280%	0.0005%	0.7703%	0.0084%	0.7704%	-0.0200%	1.2507%
FIEUX	-0.0443%	1.3766%	0.0268%	0.9290%	0.0348%	0.9289%	0.0064%	1.3726%
FEURX	-0.0666%	1.7461%	0.0071%	1.2738%	0.0150%	1.2738%	-0.0127%	1.6108%
MBEFX	-0.0495%	1.5844%	0.0186%	1.1830%	0.0266%	1.1829%	-0.0021%	1.5555%
EUGBX	-0.0418%	1.5714%	0.0039%	1.2246%	0.0116%	1.2247%	-0.0099%	1.5436%
PEURX	-0.0289%	1.3817%	0.0195%	1.0232%	0.0272%	1.0231%	0.0048%	1.3887%
PEUGX	-0.0280%	1.3644%	0.0206%	1.0320%	0.0283%	1.0319%	0.0063%	1.3954%
PRESX	-0.0370%	1.3908%	0.0106%	1.0243%	0.0184%	1.0243%	-0.0037%	1.3896%
VEURX	-0.0152%	1.3483%	0.0252%	1.0007%	0.0329%	1.0005%	0.0114%	1.3729%
Portfolio	-0.0421%	1.1558%	0.0087%	0.8543%	0.0165%	0.8543%	-0.0057%	1.2695%

D. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
DFJSX	-0.0193%	1.5653%	0.0043%	1.5088%	0.0059%	1.5088%	-0.0238%	1.5408%
SJPNX	-0.0195%	1.7005%	0.0093%	1.2045%	0.0181%	1.2045%	-0.0154%	1.5891%
PRJPX	-0.0320%	1.6781%	-0.0305%	1.1955%	-0.0218%	1.1958%	-0.0381%	1.5315%
VPACX	-0.0278%	1.5067%	0.0470%	1.1587%	0.0551%	1.1584%	-0.0419%	1.5016%
Portfolio	-0.0246%	1.4668%	0.0329%	1.1554%	0.0409%	1.1552%	-0.0561%	1.4983%

Table A-6 Continued

D. Pacific/Asia Ex. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
EVCGX	-0.0309%	1.7032%	0.0702%	1.2553%	0.0781%	1.2550%	0.0498%	1.5967%
CNTTX	-0.0088%	1.7435%	0.0367%	1.3261%	0.0445%	1.3259%	0.0225%	1.6252%
MBDRX	-0.0470%	1.7022%	0.0475%	1.3199%	0.0554%	1.3196%	0.0273%	1.6477%
MSAEX	-0.0237%	1.6030%	0.0768%	1.1667%	0.0847%	1.1662%	0.0555%	1.5283%
PRASX	-0.0025%	1.5777%	0.0874%	1.1399%	0.0953%	1.1394%	0.0665%	1.5239%
Portfolio	-0.0226%	1.5740%	0.0726%	1.1613%	0.0805%	1.1609%	0.0522%	1.5239%

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AEIGX	-0.0742%	1.5644%	-0.0232%	1.2922%	-0.0154%	1.2924%	-0.0375%	1.5971%
AIIEX	-0.0220%	1.2165%	0.0334%	0.8488%	0.0413%	0.8486%	0.0129%	1.3198%
AAIEX	-0.0268%	1.0590%	0.0267%	0.7611%	0.0346%	0.7610%	0.0066%	1.2456%
TWIEX	-0.0285%	1.3708%	0.0211%	0.9920%	0.0291%	0.9919%	0.0008%	1.4159%
AEPGX	-0.0143%	1.0919%	0.0268%	0.8392%	0.0348%	0.8390%	0.0066%	1.3136%
INIFX	-0.0601%	1.4149%	0.0014%	1.1391%	0.0091%	1.1392%	-0.0127%	1.4764%
BAINX	-0.0394%	1.1035%	0.0164%	0.7855%	0.0243%	0.7854%	-0.0036%	1.2606%
SNIVX	-0.0284%	1.0914%	0.0138%	0.8229%	0.0216%	0.8229%	-0.0006%	1.2486%
PNINX	-0.0492%	1.2633%	0.0114%	0.9205%	0.0191%	0.9205%	-0.0028%	1.3151%
CWVGX	-0.0371%	1.1629%	0.0164%	0.8701%	0.0242%	0.8701%	0.0021%	1.2803%
NEFIX	-0.0271%	1.1994%	0.0192%	0.9089%	0.0270%	0.9088%	0.0045%	1.3068%
CMISX	-0.0343%	1.2144%	0.0052%	0.9875%	0.0130%	0.9876%	-0.0089%	1.3628%
TIEUX	-0.0363%	1.2201%	0.0104%	0.9588%	0.0182%	0.9588%	-0.0038%	1.3422%
RBIEX	-0.0844%	1.6449%	0.0128%	0.9923%	0.0208%	0.9923%	-0.0140%	1.4111%
DRGLX	-0.0826%	1.6488%	0.0115%	1.0199%	0.0195%	1.0199%	-0.0088%	1.4355%
NIEAX	-0.0603%	1.4516%	-0.0068%	1.2352%	0.0010%	1.2353%	-0.0209%	1.5516%
ENIGX	-0.0444%	1.2462%	0.0133%	0.9565%	0.0211%	0.9565%	-0.0012%	1.3404%
UMINX	-0.0365%	1.1611%	0.0379%	0.8188%	0.0459%	0.8185%	0.0173%	1.3006%
FTITX	-0.0352%	1.3017%	0.0132%	0.9957%	0.0209%	0.9957%	-0.0013%	1.3686%

Table A-6 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FAERX	-0.0337%	1.2324%	0.0163%	0.8709%	0.0243%	0.8708%	-0.0040%	1.3339%
FICDX	-0.0023%	1.2627%	-0.0118%	0.9130%	-0.0037%	0.9132%	-0.0082%	1.2419%
FDIVX	-0.0023%	0.9626%	0.0345%	0.6823%	0.0425%	0.6820%	0.0139%	1.2192%
FIGRX	-0.0179%	1.1354%	0.0284%	0.7658%	0.0363%	0.7656%	0.0079%	1.2678%
FOSFX	-0.0339%	1.2513%	0.0176%	0.8738%	0.0256%	0.8738%	-0.0027%	1.3358%
KNINX	-0.0381%	1.1456%	0.0152%	0.8740%	0.0230%	0.8739%	0.0009%	1.2829%
GAMNX	-0.0633%	1.1455%	-0.0231%	0.8879%	0.0153%	0.8882%	-0.0368%	1.2927%
GSIFX	-0.0433%	1.2583%	0.0178%	0.9218%	0.0258%	0.9217%	-0.0030%	1.3673%
HAINX	-0.0243%	1.1808%	0.0334%	0.8113%	0.0413%	0.8111%	0.0132%	1.2770%
IVINX	-0.0698%	1.4221%	-0.0057%	1.1774%	0.0021%	1.1775%	-0.0202%	1.5058%
ACINX	-0.0212%	1.1016%	0.0415%	0.7127%	0.0494%	0.7124%	0.0212%	1.2168%
CONAX	-0.0543%	1.2062%	0.0021%	0.9479%	0.0098%	0.9480%	-0.0135%	1.3278%
MSACX	-0.0380%	1.1313%	0.0104%	0.8433%	0.0184%	0.8433%	-0.0099%	1.3159%
MSIQX	-0.0213%	1.1733%	0.0246%	0.7970%	0.0325%	0.7969%	0.0040%	1.2868%
MUIYX	-0.0370%	1.2390%	0.0095%	0.8785%	0.0175%	0.8785%	-0.0106%	1.3390%
OAKIX	-0.0020%	1.0669%	0.0435%	0.7205%	0.0514%	0.7201%	0.0236%	1.2216%
PHITX	-0.0591%	1.3587%	0.0173%	0.9584%	0.0252%	0.9584%	-0.0027%	1.3750%
PFIFX	-0.0297%	1.1863%	0.0247%	0.9097%	0.0325%	0.9096%	0.0104%	1.3075%
PRWLX	-0.0493%	1.1440%	0.0139%	0.8200%	0.0218%	0.8199%	-0.0062%	1.2822%
SCIEX	-0.0979%	2.0448%	0.0088%	0.9164%	0.0167%	0.9165%	-0.0115%	1.3458%
SCINX	-0.0409%	1.2615%	0.0090%	0.9494%	0.0168%	0.9494%	-0.0054%	1.3353%
SEITX	-0.0201%	1.1589%	0.0345%	0.8318%	0.0425%	0.8316%	0.0140%	1.3088%
SNGRX	-0.0533%	1.3328%	0.0179%	0.9906%	0.0258%	0.9905%	-0.0026%	1.4148%
SBIEX	-0.0577%	1.3789%	0.0349%	0.8951%	0.0428%	0.8948%	0.0147%	1.3318%
STISX	-0.0380%	1.4195%	0.0303%	1.0141%	0.0382%	1.0139%	0.0096%	1.4143%
PRFEX	-0.0353%	1.2384%	0.0231%	0.8838%	0.0310%	0.8837%	0.0026%	1.3423%
PRIDX	-0.0015%	1.2128%	0.0637%	0.7510%	0.0716%	0.7504%	0.0430%	1.2399%
PRITX	-0.0375%	1.2400%	0.0228%	0.8801%	0.0308%	0.8800%	0.0024%	1.3399%
TEMFX	-0.0166%	0.9423%	0.0311%	0.7023%	0.0390%	0.7021%	0.0110%	1.2107%
FINEX	-0.0142%	0.8438%	0.0396%	0.6255%	0.0475%	0.6251%	0.0190%	1.1677%
USIFX	-0.0228%	1.0414%	0.0145%	0.7631%	0.0225%	0.7630%	-0.0065%	1.2657%

Table A-6 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
VTRIX	-0.0277%	1.1546%	0.0176%	0.9108%	0.0254%	0.9107%	0.0031%	1.3081%
VWIGX	-0.0268%	1.2038%	0.0217%	0.8605%	0.0296%	0.8604%	0.0009%	1.3269%
VNEPX	-0.0417%	1.2982%	0.0311%	0.8414%	0.0390%	0.8412%	0.0103%	1.3147%
UNCGX	-0.0628%	1.5055%	0.0103%	1.0020%	0.0182%	1.0020%	-0.0096%	1.4057%
SRIGX	-0.0338%	1.1537%	0.0243%	0.8734%	0.0321%	0.8733%	0.0097%	1.2824%
WIBCX	-0.0407%	1.3074%	0.0105%	1.0292%	0.0183%	1.0292%	-0.0036%	1.3934%
Portfolio	-0.0380%	1.0174%	0.0230%	0.7162%	0.0310%	0.7161%	0.0024%	1.2383%

G. Latin Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MBLTX	-0.0358%	1.7505%	-0.0032%	1.6352%	-0.0020%	1.6353%	-0.0343%	1.7689%

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
GSCAX	-0.0614%	1.4194%	0.0172%	0.9191%	0.0207%	0.9108%	-0.0004%	1.3997%
ANWPX	-0.0115%	1.1286%	0.0248%	0.7617%	0.0328%	0.7615%	0.0048%	1.2656%
SMCWX	-0.0386%	1.3354%	0.0121%	1.0321%	0.0232%	1.0292%	-0.0096%	1.4211%
AHERX	-0.1966%	5.7550%	-0.1102%	4.2147%	-0.1086%	4.2085%	-0.1477%	4.3386%
IGLGX	-0.0466%	1.3768%	0.0290%	0.9117%	0.0370%	0.9116%	0.0028%	1.3566%
FWWGX	-0.0839%	1.5975%	-0.0171%	1.2288%	-0.0099%	1.2149%	-0.0343%	1.5881%
EGLBX	-0.0373%	1.3071%	0.0318%	0.9164%	0.0398%	0.9162%	0.0055%	1.3598%
FWWFX	-0.0284%	1.1874%	0.0149%	0.7900%	0.0229%	0.7899%	-0.0054%	1.2824%
FIISX	-0.0361%	1.1665%	0.0054%	0.8755%	0.0132%	0.8755%	-0.0088%	1.2839%
GAGLX	-0.0347%	1.1259%	-0.0040%	0.7989%	0.0040%	0.7991%	-0.0231%	1.2895%

Table A-6 Continued

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FGLOX	-0.0625%	1.2150%	0.0004%	0.8392%	0.0083%	0.8393%	-0.0194%	1.3137%
MCGLX	-0.0444%	1.1753%	0.0059%	0.8903%	0.0137%	0.8903%	-0.0088%	1.2938%
JAWWX	-0.0159%	1.3633%	0.0357%	0.9437%	0.0437%	0.9435%	0.0092%	1.3781%
LAGEX	-0.0367%	1.1777%	0.0102%	0.8309%	0.0182%	0.8309%	-0.0100%	1.3081%
MWEBX	-0.0186%	0.9791%	0.0171%	0.7023%	0.0250%	0.7022%	-0.0034%	1.2303%
OPPAX	-0.0203%	1.3836%	0.0200%	0.9178%	0.0279%	0.9177%	-0.0002%	1.3469%
OPGIX	-0.0114%	1.4375%	0.0293%	0.9728%	0.0373%	0.9727%	0.0027%	1.3980%
QVGLX	-0.0336%	1.1754%	0.0001%	0.9176%	0.0186%	0.9176%	-0.0089%	1.3471%
NWWOX	-0.0501%	1.3561%	0.0049%	0.9179%	0.0128%	0.9179%	-0.0155%	1.3648%
PRGLX	-0.0448%	1.4691%	0.0076%	0.9892%	0.0156%	0.9892%	-0.0126%	1.4139%
PEQUX	-0.0577%	1.6394%	0.0106%	1.1608%	0.0186%	1.1608%	-0.0159%	1.5346%
SGSCX	-0.0135%	1.3259%	0.0206%	0.9451%	0.0315%	0.9445%	0.0024%	1.3703%
SCOBX	-0.0515%	1.1389%	-0.0072%	0.8482%	0.0007%	0.8484%	-0.0273%	1.3191%
TECAX	-0.0178%	1.0038%	0.0201%	0.7232%	0.0311%	0.7211%	-0.0011%	1.3491%
TEGOX	-0.0387%	1.0452%	0.0168%	0.7984%	0.0248%	0.7984%	-0.0100%	1.2823%
TEMGX	-0.0371%	0.8336%	0.0142%	0.6004%	0.0222%	0.6004%	-0.0065%	1.1749%
TEPLX	-0.0186%	0.9710%	0.0155%	0.7665%	0.0235%	0.7664%	-0.0050%	1.2680%
TEMWX	-0.0228%	0.9728%	0.0197%	0.7560%	0.0276%	0.7559%	-0.0006%	1.2620%
USAWX	-0.0254%	1.1032%	0.0078%	0.7855%	0.0157%	0.7855%	-0.0130%	1.2793%
Portfolio	-0.0413%	1.0276%	0.0119%	0.7024%	0.0199%	0.7024%	-0.0084%	1.2303%

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AMMSX	-0.0151%	0.1862%	-0.0109%	0.1579%	-0.0032%	0.1589%	-0.0259%	0.9515%
ANAGX	-0.0128%	0.6116%	-0.0069%	0.4180%	0.0009%	0.4183%	-0.0215%	1.0274%
BEGBX	0.0028%	0.6045%	0.0023%	0.4645%	0.0104%	0.4646%	0.0047%	0.9612%

Table A-6 Continued

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CWBFX	-0.0041%	0.3786%	0.0004%	0.2979%	0.0084%	0.2982%	0.0031%	0.8926%
IGBFX	-0.0033%	0.3549%	0.0005%	0.2528%	0.0083%	0.2531%	-0.0146%	0.9720%
CIFIX	-0.0005%	0.3133%	0.0001%	0.1716%	0.0080%	0.1721%	-0.0205%	1.0001%
TIFUX	-0.0101%	0.5215%	0.0002%	0.3731%	0.0083%	0.3733%	0.0027%	0.9205%
CGFIX	-0.0076%	0.3437%	-0.0051%	0.2972%	0.0030%	0.2976%	-0.0022%	0.8924%
DFGBX	0.0011%	0.3281%	-0.0018%	0.2700%	0.0061%	0.2704%	-0.0291%	1.0383%
FTIIX	-0.0056%	0.5530%	0.0006%	0.3984%	0.0087%	0.3986%	0.0029%	0.9312%
ICPHX	-0.0123%	0.5449%	-0.0060%	0.3918%	0.0020%	0.3921%	-0.0277%	1.0828%
GSGIX	-0.0043%	0.2792%	-0.0089%	0.1815%	-0.0011%	0.2373%	-0.0238%	0.9678%
LAGIX	-0.0156%	0.3666%	-0.0090%	0.2629%	-0.0013%	0.2635%	-0.0242%	0.9745%
MBGOX	-0.0079%	0.4022%	-0.0028%	0.2886%	0.0050%	0.2889%	-0.0180%	0.9818%
MSGFX	0.0058%	0.4596%	0.0010%	0.2975%	0.0088%	0.2977%	-0.0143%	0.9846%
PFORX	-0.0012%	0.3320%	-0.0013%	0.2458%	0.0067%	0.2462%	-0.0288%	1.0323%
PGGIX	-0.0147%	0.3622%	-0.0060%	0.2747%	0.0020%	0.2752%	-0.0274%	1.0460%
SSTGX	-0.0005%	0.2829%	-0.0014%	0.2047%	0.0064%	0.2051%	-0.0167%	0.9606%
SBGLX	-0.0090%	0.3525%	-0.0082%	0.2328%	-0.0003%	0.2334%	-0.0356%	1.0291%
RPIBX	-0.0083%	0.5263%	-0.0028%	0.3787%	0.0049%	0.3790%	-0.0184%	1.0121%
TPINX	-0.0118%	0.3702%	-0.0035%	0.2614%	0.0044%	0.2618%	-0.0312%	1.0360%
Portfolio	-0.0064%	0.2792%	-0.0051%	0.1977%	0.0027%	0.1983%	-0.0203%	0.9590%

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CAIBX	-0.0122%	0.5977%	0.0036%	0.4161%	0.0115%	0.4163%	-0.0232%	1.0860%
BPGLX	-0.0237%	0.7600%	0.0131%	0.5182%	0.0210%	0.5182%	-0.0141%	1.1290%
SGENX	-0.0123%	0.8839%	0.0170%	0.5602%	0.0249%	0.5601%	-0.0034%	1.1338%
FMAFX	-0.0327%	0.8491%	-0.0006%	0.6069%	0.0073%	0.6070%	-0.0274%	1.1723%
MALOX	-0.0281%	0.9170%	0.0063%	0.6363%	0.0142%	0.6364%	-0.0145%	1.1935%
MFWTX	-0.0163%	1.8306%	0.0048%	1.7550%	0.0128%	1.7550%	-0.0161%	2.0246%
Portfolio	-0.0209%	0.6328%	0.0086%	0.4825%	0.0166%	0.4825%	-0.0185%	1.1130%

Table A-7: Returns and Risks of Buy-and-hold and Conservative Trading Strategy with Exchange Restrictions (60 Days)

This table presents the returns and risks of buy-and-hold and conservative trading strategies. The conservative trading strategy is based on the facts that trades are executed when an Index value increases or decreases by at least 1.5% and investors cannot trade/exchange within 60 days of initial purchase of their funds. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of conservative trading strategy IV (switching between international fund and cash); columns six and seven provide mean daily returns and standard deviations of returns of conservative trading strategy V (switching between international fund and money market fund); and columns eight and nine exhibit mean daily returns and standard deviations of returns of conservative trading strategy VI (switching between international fund and index fund). The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MADCX	-0.0318%	1.3224%	0.0284%	0.9527%	0.0365%	0.9526%	0.0239%	1.3405%
MNEMX	-0.0424%	1.3434%	0.0334%	0.9718%	0.0416%	0.9716%	0.0261%	1.3686%
MGEMX	-0.0318%	1.4658%	-0.0153%	1.4383%	-0.0147%	1.4383%	-0.0304%	1.4638%
TEDMX	-0.0319%	1.3084%	0.0507%	1.0233%	0.0588%	1.0230%	0.0460%	1.3916%
Portfolio	-0.0345%	1.2831%	0.0345%	0.9316%	0.0426%	0.9314%	0.0299%	1.3256%

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FPBFX	-0.0014%	1.3893%	0.0221%	1.0374%	0.0302%	1.0373%	0.0150%	1.4159%
GAPCX	-0.0389%	1.4254%	-0.0018%	1.1245%	0.0068%	1.1246%	-0.0237%	1.5172%
JHWPX	-0.0147%	1.3235%	0.0263%	0.9560%	0.0344%	0.9558%	0.0029%	1.3352%
MAPCX	-0.0347%	1.4110%	-0.0031%	1.1638%	0.0051%	1.1639%	-0.0262%	1.4907%
TGRBX	-0.0294%	1.3397%	0.0269%	1.0066%	0.0350%	1.0065%	0.0034%	1.3719%
PRPBX	-0.0471%	4.2347%	0.0042%	4.1547%	0.0124%	4.1547%	-0.0028%	4.2650%
FKPGX	-0.0512%	1.2696%	0.0215%	0.9652%	0.0297%	0.9651%	-0.0020%	1.3417%
Portfolio	-0.0310%	1.3295%	0.0181%	1.0695%	0.0262%	1.0695%	-0.0053%	1.4186%

Table A-7 Continued

C. Europe Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANEAX	-0.0414%	1.5057%	-0.0095%	1.1130%	-0.0014%	1.1132%	-0.0132%	1.4591%
DFCSX	-0.0511%	1.1944%	-0.0190%	0.9913%	-0.0110%	0.9915%	-0.0237%	1.3680%
DFUKX	-0.0592%	1.1280%	-0.0098%	0.8407%	-0.0017%	0.8409%	-0.0336%	1.2544%
FIEUX	-0.0443%	1.3766%	-0.0151%	1.0065%	-0.0069%	1.0067%	-0.0216%	1.3935%
FEURX	-0.0666%	1.7461%	-0.0145%	1.3131%	-0.0064%	1.3132%	-0.0375%	1.6099%
MBEFX	-0.0495%	1.5844%	-0.0154%	1.1720%	-0.0072%	1.1721%	-0.0223%	1.5172%
EUGBX	-0.0418%	1.5714%	-0.0211%	1.2404%	-0.0130%	1.2406%	-0.0245%	1.5586%
PEURX	-0.0289%	1.3817%	0.0012%	1.0125%	0.0093%	1.0126%	-0.0031%	1.3836%
PEUGX	-0.0280%	1.3644%	-0.0035%	1.0271%	0.0046%	1.0271%	-0.0073%	1.3945%
PRESX	-0.0370%	1.3908%	-0.0082%	1.0193%	-0.0001%	1.0194%	-0.0121%	1.3888%
VEURX	-0.0152%	1.3483%	0.0033%	1.0021%	0.0113%	1.0022%	-0.0002%	1.3767%
Portfolio	-0.0421%	1.1558%	-0.0122%	0.8413%	-0.0042%	0.8415%	-0.0162%	1.2638%

D. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
DFJSX	-0.0193%	1.5653%	-0.0265%	1.5350%	-0.0258%	1.5351%	-0.0364%	1.5451%
SJPNX	-0.0195%	1.7005%	0.0312%	1.2930%	0.0388%	1.2929%	0.0214%	1.6180%
PRJPX	-0.0320%	1.6781%	0.0405%	1.2462%	-0.0218%	1.1958%	0.0400%	1.5749%
VPACX	-0.0278%	1.5067%	0.0213%	1.1642%	0.0291%	1.1641%	-0.0257%	1.4899%
Portfolio	-0.0246%	1.4668%	0.0233%	1.1135%	0.0312%	1.1134%	-0.0236%	1.4507%

Table A-7 Continued

D. Pacific/Asia Ex. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
EVCGX	-0.0309%	1.7032%	0.0523%	1.2485%	0.0604%	1.2482%	0.0287%	1.5584%
CNTTX	-0.0088%	1.7435%	0.0584%	1.3341%	0.0665%	1.3339%	0.0546%	1.6341%
MBDRX	-0.0470%	1.7022%	0.0354%	1.2953%	0.0435%	1.2952%	0.0120%	1.5960%
MSAEX	-0.0237%	1.6030%	0.0567%	1.1509%	0.0649%	1.1506%	0.0322%	1.4816%
PRASX	-0.0025%	1.5777%	0.0639%	1.1129%	0.0721%	1.1125%	0.0570%	1.4723%
Portfolio	-0.0226%	1.5740%	0.0528%	1.1451%	0.0609%	1.1448%	0.0292%	1.4769%

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AEIGX	-0.0742%	1.5644%	-0.0372%	1.2937%	-0.0292%	1.2940%	-0.0411%	1.6010%
AIIEX	-0.0220%	1.2165%	0.0104%	0.9121%	0.0186%	0.9121%	0.0039%	1.3271%
AAIEX	-0.0268%	1.0590%	0.0105%	0.8010%	0.0186%	0.8010%	-0.0128%	1.2288%
TWIEX	-0.0285%	1.3708%	-0.0046%	1.1112%	0.0036%	1.1113%	-0.0110%	1.4710%
AEPGX	-0.0143%	1.0919%	0.0040%	0.8535%	0.0122%	0.8535%	-0.0022%	1.2876%
INIFX	-0.0601%	1.4149%	-0.0302%	1.1553%	-0.0222%	1.1556%	-0.0339%	1.4916%
BAINX	-0.0394%	1.1035%	0.0042%	0.8084%	0.0124%	0.8085%	-0.0190%	1.2335%
SNIVX	-0.0284%	1.0914%	-0.0019%	0.8067%	0.0062%	0.8068%	-0.0059%	1.2411%
PNINX	-0.0492%	1.2633%	-0.0190%	1.0185%	-0.0109%	1.0187%	-0.0227%	1.3882%
CWVGX	-0.0371%	1.1629%	-0.0069%	0.8700%	0.0012%	0.8702%	-0.0108%	1.2832%
NEFIX	-0.0271%	1.1994%	0.0235%	0.8715%	0.0316%	0.8714%	0.0192%	1.2841%
CMISX	-0.0343%	1.2144%	-0.0155%	0.9891%	-0.0074%	0.9893%	-0.0193%	1.3668%
TIEUX	-0.0363%	1.2201%	-0.0115%	0.9543%	-0.0034%	0.9545%	-0.0153%	1.3419%
RBIEX	-0.0844%	1.6449%	-0.0549%	1.4266%	-0.0463%	1.4269%	-0.0549%	1.7218%
DRGLX	-0.0826%	1.6488%	-0.0451%	1.4122%	-0.0369%	1.4125%	-0.0515%	1.7097%
NIEAX	-0.0603%	1.4516%	-0.0308%	1.2369%	-0.0227%	1.2371%	-0.0346%	1.5556%
ENIGX	-0.0444%	1.2462%	-0.0182%	0.9295%	-0.0101%	0.9297%	-0.0223%	1.3240%
UMINX	-0.0365%	1.1611%	0.0073%	0.8639%	0.0155%	0.8640%	0.0007%	1.2943%
FTITX	-0.0352%	1.3017%	-0.0067%	0.9689%	0.0014%	0.9690%	-0.0107%	1.3521%

Table A-7 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FAERX	-0.0337%	1.2324%	-0.0132%	0.9528%	-0.0050%	0.9530%	-0.0195%	1.3554%
FICDX	-0.0023%	1.2627%	0.0367%	0.8994%	0.0446%	0.8992%	0.0140%	1.2653%
FDIVX	-0.0023%	0.9626%	0.0189%	0.7206%	0.0271%	0.7205%	0.0122%	1.2034%
FIGRX	-0.0179%	1.1354%	-0.0031%	0.8853%	0.0051%	0.8854%	-0.0097%	1.3087%
FOSFX	-0.0339%	1.2513%	-0.0133%	0.9747%	-0.0051%	0.9749%	-0.0197%	1.3708%
KNINX	-0.0381%	1.1456%	-0.0120%	0.8696%	-0.0039%	0.8698%	-0.0159%	1.2829%
GAMNX	-0.0633%	1.1455%	-0.0235%	0.8293%	-0.0154%	0.8296%	-0.0268%	1.2566%
GSIFX	-0.0433%	1.2583%	-0.0176%	0.9705%	-0.0094%	0.9708%	-0.0246%	1.3675%
HAINX	-0.0243%	1.1808%	0.0143%	0.9005%	0.0224%	0.9004%	-0.0091%	1.2958%
IVINX	-0.0698%	1.4221%	-0.0356%	1.2007%	-0.0275%	1.2010%	-0.0397%	1.5267%
ACINX	-0.0212%	1.1016%	0.0174%	0.8633%	0.0255%	0.8633%	-0.0062%	1.2703%
CONAX	-0.0543%	1.2062%	0.0009%	0.9663%	0.0089%	0.9663%	-0.0122%	1.3137%
MSACX	-0.0380%	1.1313%	-0.0162%	0.9071%	-0.0080%	0.9073%	-0.0225%	1.3236%
MSIQX	-0.0213%	1.1733%	-0.0043%	0.9459%	0.0040%	0.9460%	-0.0109%	1.3503%
MUIYX	-0.0370%	1.2390%	-0.0089%	0.9167%	-0.0007%	0.9168%	-0.0151%	1.3305%
OAKIX	-0.0020%	1.0669%	0.0404%	0.8523%	0.0486%	0.8521%	0.0173%	1.2635%
PHITX	-0.0591%	1.3587%	-0.0077%	1.0305%	0.0005%	1.0306%	-0.0309%	1.3890%
PFIFX	-0.0297%	1.1863%	-0.0096%	0.9742%	-0.0015%	0.9743%	-0.0136%	1.3559%
PRWLX	-0.0493%	1.1440%	-0.0064%	0.8590%	0.0017%	0.8592%	-0.0297%	1.2671%
SCIEX	-0.0979%	2.0448%	-0.0494%	1.8087%	-0.0413%	1.8089%	-0.0729%	2.0338%
SCINX	-0.0409%	1.2615%	-0.0021%	0.9304%	0.0059%	0.9305%	-0.0062%	1.3248%
SEITX	-0.0201%	1.1589%	0.0061%	0.8557%	0.0143%	0.8557%	-0.0005%	1.2888%
SNGRX	-0.0533%	1.3328%	-0.0192%	1.0208%	-0.0110%	1.0210%	-0.0258%	1.4038%
SBIEX	-0.0577%	1.3789%	-0.0199%	1.0924%	-0.0118%	1.0926%	-0.0433%	1.4352%
STISX	-0.0380%	1.4195%	0.0054%	1.0563%	0.0135%	1.0563%	-0.0184%	1.4083%
PRFEX	-0.0353%	1.2384%	-0.0077%	0.9299%	0.0005%	0.9301%	-0.0143%	1.3393%
PRIDX	-0.0015%	1.2128%	0.0234%	0.9546%	0.0316%	0.9545%	-0.0005%	1.3340%
PRITX	-0.0375%	1.2400%	-0.0075%	0.9297%	0.0007%	0.9298%	-0.0140%	1.3391%
TEMFX	-0.0166%	0.9423%	0.0288%	0.7298%	0.0369%	0.7296%	0.0055%	1.1839%
FINEX	-0.0142%	0.8438%	0.0295%	0.6372%	0.0377%	0.6369%	0.0057%	1.1290%
USIFX	-0.0228%	1.0414%	0.0043%	0.7726%	0.0125%	0.7727%	-0.0028%	1.2350%

Table A-7 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
VTRIX	-0.0277%	1.1546%	0.0056%	0.8986%	0.0137%	0.8987%	0.0014%	1.3026%
VWIGX	-0.0268%	1.2038%	-0.0005%	0.8951%	0.0077%	0.8952%	-0.0073%	1.3152%
VNEPX	-0.0417%	1.2982%	-0.0118%	1.0322%	-0.0036%	1.0324%	-0.0186%	1.4120%
UNCGX	-0.0628%	1.5055%	-0.0220%	1.2649%	-0.0139%	1.2651%	-0.0451%	1.5707%
SRIGX	-0.0338%	1.1537%	-0.0076%	0.8693%	0.0005%	0.8694%	-0.0118%	1.2825%
WIBCX	-0.0407%	1.3074%	-0.0090%	0.9709%	-0.0009%	0.9711%	-0.0128%	1.3537%
Portfolio	-0.0380%	1.0174%	-0.0075%	0.7445%	0.0007%	0.7447%	-0.0142%	1.2178%

G. Latin Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MBLTX	-0.0358%	1.7505%	-0.0401%	1.7223%	-0.0395%	1.7223%	-0.0383%	1.7515%

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
GSCAX	-0.0614%	1.4194%	-0.0198%	1.1604%	-0.0098%	1.1598%	-0.0212%	1.4301%
ANWPX	-0.0115%	1.1286%	-0.0035%	0.8731%	0.0047%	0.8732%	-0.0096%	1.3008%
SMCWX	-0.0386%	1.3354%	0.0069%	0.8156%	0.0161%	0.8152%	-0.0173%	1.3165%
AHERX	-0.1966%	5.7550%	-0.1043%	4.3035%	-0.0967%	4.3029%	-0.1180%	4.4713%
IGLGX	-0.0466%	1.3768%	-0.0294%	1.0921%	-0.0213%	1.0924%	-0.0293%	1.4574%
FWWGX	-0.0839%	1.5975%	-0.0497%	1.3114%	-0.0468%	1.3104%	-0.0555%	1.6452%
EGLBX	-0.0373%	1.3071%	-0.0168%	1.0601%	-0.0087%	1.0603%	-0.0167%	1.4335%
FWWFX	-0.0284%	1.1874%	-0.0135%	0.9447%	-0.0053%	0.9449%	-0.0199%	1.3497%
FIISX	-0.0361%	1.1665%	-0.0247%	0.9232%	-0.0167%	0.9235%	-0.0286%	1.3198%
GAGLX	-0.0347%	1.1259%	-0.0253%	0.7929%	-0.0171%	0.7933%	-0.0305%	1.2499%

Table A-7 Continued

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FGLOX	-0.0625%	1.2150%	-0.0372%	0.8947%	-0.0290%	0.8951%	-0.0431%	1.3156%
MCGLX	-0.0444%	1.1753%	-0.0073%	0.8905%	0.0008%	0.8906%	-0.0116%	1.2969%
JAWWX	-0.0159%	1.3633%	-0.0074%	1.0481%	0.0007%	1.0482%	-0.0076%	1.4243%
LAGEX	-0.0367%	1.1777%	-0.0072%	0.8913%	0.0010%	0.8914%	-0.0135%	1.3129%
MWEBX	-0.0186%	0.9791%	0.0009%	0.7489%	0.0091%	0.7490%	-0.0057%	1.2205%
OPPAX	-0.0203%	1.3836%	0.0073%	1.1201%	0.0154%	1.1201%	-0.0161%	1.4569%
OPGIX	-0.0114%	1.4375%	0.0177%	1.0016%	0.0257%	1.0015%	0.0174%	1.3904%
QVGLX	-0.0336%	1.1754%	-0.0026%	0.9767%	0.0055%	0.9768%	-0.0255%	1.3500%
NWWOX	-0.0501%	1.3561%	-0.0135%	0.9113%	-0.0053%	0.9115%	-0.0200%	1.3264%
PRGLX	-0.0448%	1.4691%	-0.0248%	1.1326%	-0.0166%	1.1329%	-0.0311%	1.4873%
PEQUX	-0.0577%	1.6394%	-0.0455%	1.3525%	-0.0374%	1.3528%	-0.0457%	1.6612%
SGSCX	-0.0135%	1.3259%	0.0071%	1.0087%	0.0156%	1.0082%	-0.0002%	1.3809%
SCOBX	-0.0515%	1.1389%	-0.0120%	0.8702%	-0.0038%	0.8704%	-0.0182%	1.2989%
TECAX	-0.0178%	1.0038%	0.0167%	0.7179%	0.0249%	0.7175%	0.0101%	1.1956%
TEGOX	-0.0387%	1.0452%	-0.0057%	0.7944%	0.0024%	0.7946%	-0.0062%	1.2492%
TEMGX	-0.0371%	0.8336%	0.0093%	0.6108%	0.0175%	0.6108%	0.0024%	1.1409%
TEPLX	-0.0186%	0.9710%	0.0125%	0.7640%	0.0207%	0.7640%	0.0059%	1.2300%
TEMWX	-0.0228%	0.9728%	0.0067%	0.7529%	0.0149%	0.7529%	0.0004%	1.2233%
USAWX	-0.0254%	1.1032%	-0.0039%	0.8045%	0.0043%	0.8046%	-0.0107%	1.2552%
Portfolio	-0.0413%	1.0276%	-0.0106%	0.7372%	-0.0023%	0.7374%	-0.0171%	1.2134%

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AMMSX	-0.0151%	0.1862%	-0.0101%	0.1662%	-0.0020%	0.1672%	-0.0147%	0.9573%
ANAGX	-0.0128%	0.6116%	0.0023%	0.4581%	0.0104%	0.4583%	-0.0019%	1.0484%
BEGBX	0.0028%	0.6045%	0.0032%	0.4414%	0.0111%	0.4415%	-0.0207%	0.9925%

Table A-7 Continued

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CWBFX	-0.0041%	0.3786%	-0.0000%	0.2755%	0.0079%	0.2758%	-0.0237%	0.9304%
IGBFX	-0.0033%	0.3549%	0.0065%	0.2709%	0.0145%	0.2710%	0.0017%	0.9810%
CIFIX	-0.0005%	0.3133%	-0.0021%	0.2772%	0.0060%	0.2775%	-0.0259%	0.9716%
TIFUX	-0.0101%	0.5215%	-0.0022%	0.3881%	0.0058%	0.3884%	-0.0260%	0.9698%
CGFIX	-0.0076%	0.3437%	-0.0007%	0.2618%	0.0072%	0.2622%	-0.0242%	0.9264%
DFGBX	0.0011%	0.3281%	-0.0056%	0.3046%	0.0024%	0.3050%	-0.0066%	1.0108%
FTIIX	-0.0056%	0.5530%	0.0017%	0.4018%	0.0097%	0.4020%	-0.0223%	0.9755%
ICPHX	-0.0123%	0.5449%	0.0004%	0.4028%	0.0086%	0.4030%	-0.0074%	1.0444%
GSGIX	-0.0043%	0.2792%	0.0006%	0.2364%	0.0086%	0.2367%	-0.0040%	0.9720%
LAGIX	-0.0156%	0.3666%	-0.0005%	0.2734%	0.0076%	0.2737%	-0.0053%	0.9817%
MBGOX	-0.0079%	0.4022%	0.0057%	0.2984%	0.0137%	0.2985%	0.0009%	0.9890%
MSGFX	0.0058%	0.4596%	0.0130%	0.3705%	0.0211%	0.3704%	0.0080%	1.0131%
PFORX	-0.0012%	0.3320%	-0.0006%	0.2629%	0.0075%	0.2632%	-0.0018%	0.9990%
PGGIX	-0.0147%	0.3622%	-0.0003%	0.2847%	0.0079%	0.2850%	-0.0078%	1.0046%
SSTGX	-0.0005%	0.2829%	0.0066%	0.2127%	0.0146%	0.2129%	0.0017%	0.9666%
SBGLX	-0.0090%	0.3525%	-0.0076%	0.3242%	0.0005%	0.3246%	-0.0086%	1.0169%
RPIBX	-0.0083%	0.5263%	0.0083%	0.3931%	0.0163%	0.3932%	0.0030%	1.0217%
TPINX	-0.0118%	0.3702%	0.0026%	0.2816%	0.0107%	0.2818%	0.0012%	1.0040%
Portfolio	-0.0064%	0.2792%	0.0027%	0.2115%	0.0108%	0.2117%	-0.0021%	0.9663%

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CAIBX	-0.0122%	0.5977%	-0.0032%	0.4379%	0.0115%	0.4163%	-0.0232%	1.0860%
BPGLX	-0.0237%	0.7600%	-0.0096%	0.5936%	0.0048%	0.4382%	-0.0037%	1.0589%
SGENX	-0.0123%	0.8839%	0.0067%	0.7728%	-0.0016%	0.5938%	-0.0105%	1.1320%
FMAFX	-0.0327%	0.8491%	-0.0104%	0.6125%	0.0149%	0.7728%	-0.0168%	1.2103%
MALOX	-0.0281%	0.9170%	-0.0102%	0.7588%	-0.0024%	0.6128%	-0.0109%	1.1423%
MFWTX	-0.0163%	1.8306%	-0.0042%	1.7782%	-0.0020%	0.7590%	-0.0170%	1.2264%
Portfolio	-0.0209%	0.6328%	-0.0088%	0.5104%	0.0040%	1.7782%	-0.0113%	2.0224%

Table A-8: Returns and Risks of Buy-and-hold and Conservative Trading Strategy with Exchange Restrictions (90 Days)

This table presents the returns and risks of buy-and-hold and conservative trading strategies. The conservative trading strategy is based on the facts that trades are executed when an Index value increases or decreases by at least 1.5% and investors cannot trade/exchange within 90 days of initial purchase of their funds. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of conservative trading strategy IV (switching between international fund and cash); columns six and seven provide mean daily returns and standard deviations of returns of conservative trading strategy V (switching between international fund and money market fund); and columns eight and nine exhibit mean daily returns and standard deviations of returns of conservative trading strategy VI (switching between international fund and index fund). The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MADCX	-0.0318%	1.3224%	-0.0018%	0.9837%	0.0065%	0.9838%	-0.0178%	1.3034%
MNEMX	-0.0424%	1.3434%	-0.0080%	1.0236%	0.0004%	1.0237%	-0.0241%	1.3223%
MGEMX	-0.0318%	1.4658%	-0.0243%	1.4457%	-0.0238%	1.4457%	-0.0335%	1.4670%
TEDMX	-0.0319%	1.3084%	-0.0068%	1.0498%	0.0016%	1.0499%	-0.0228%	1.3538%
Portfolio	-0.0345%	1.2831%	-0.0071%	0.9669%	0.0013%	0.9670%	-0.0232%	1.2906%

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FPBFX	-0.0014%	1.3893%	-0.0044%	1.0679%	0.0040%	1.0680%	-0.0202%	1.3570%
GAPCX	-0.0389%	1.4254%	0.0217%	1.0286%	0.0305%	1.0285%	-0.0226%	1.5648%
JHWPX	-0.0147%	1.3235%	-0.0218%	1.0048%	-0.0134%	1.0050%	-0.0354%	1.3114%
MAPCX	-0.0347%	1.4110%	-0.0281%	1.1737%	-0.0198%	1.1739%	-0.0414%	1.4450%
TGRBX	-0.0294%	1.3397%	0.0022%	1.0353%	0.0105%	1.0354%	-0.0115%	1.3352%
PRPBX	-0.0471%	4.2347%	-0.0177%	0.9587%	-0.0094%	0.9589%	-0.0335%	1.2727%
FKPGX	-0.0512%	1.2696%	-0.0155%	0.9745%	0.0071%	0.9746%	-0.0292%	1.2882%
Portfolio	-0.0310%	1.3295%	-0.0118%	0.9157%	-0.0035%	0.9159%	-0.0254%	1.2445%

Table A-8 Continued

C. Europe Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANEAX	-0.0414%	1.5057%	-0.0145%	1.2150%	-0.0061%	1.2151%	-0.0297%	1.4859%
DFCSX	-0.0511%	1.1944%	-0.0242%	0.9585%	-0.0158%	0.9588%	-0.0403%	1.2841%
DFUKX	-0.0592%	1.1280%	-0.0376%	0.9266%	-0.0293%	0.9270%	-0.0516%	1.2522%
FIEUX	-0.0443%	1.3766%	-0.0065%	1.1085%	0.0018%	1.1086%	-0.0218%	1.3894%
FEURX	-0.0666%	1.7461%	-0.0326%	1.4350%	-0.0243%	1.4352%	-0.0459%	1.6642%
MBEFX	-0.0495%	1.5844%	-0.0141%	1.3247%	-0.0058%	1.3249%	-0.0297%	1.5671%
EUGBX	-0.0418%	1.5714%	-0.0197%	1.2764%	-0.0113%	1.2766%	-0.0345%	1.5368%
PEURX	-0.0289%	1.3817%	-0.0108%	1.0984%	-0.0024%	1.0985%	-0.0265%	1.3918%
PEUGX	-0.0280%	1.3644%	-0.0123%	1.1092%	-0.0039%	1.1093%	-0.0275%	1.4006%
PRESX	-0.0370%	1.3908%	-0.0157%	1.1211%	-0.0073%	1.1213%	-0.0310%	1.4100%
VEURX	-0.0152%	1.3483%	0.0030%	1.0974%	0.0114%	1.0974%	-0.0118%	1.3919%
Portfolio	-0.0421%	1.1558%	-0.0174%	0.9142%	-0.0090%	0.9145%	-0.0328%	1.2518%

D. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
DFJSX	-0.0193%	1.5653%	-0.0247%	1.5300%	-0.0243%	1.5301%	-0.0349%	1.5692%
SJPNX	-0.0195%	1.7005%	0.0566%	1.1781%	0.0654%	1.1778%	0.0167%	1.6021%
PRJPX	-0.0320%	1.6781%	0.0517%	1.1406%	0.0604%	1.1403%	0.0124%	1.5815%
VPACX	-0.0278%	1.5067%	0.0412%	1.0855%	0.0495%	1.0852%	-0.0092%	1.5336%
Portfolio	-0.0246%	1.4668%	0.0475%	1.0620%	0.0558%	1.0617%	-0.0029%	1.5173%

Table A-8 Continued

D. Pacific/Asia Ex. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
EVCGX	-0.0309%	1.7032%	0.0006%	1.2865%	0.0089%	1.2866%	-0.0132%	1.5381%
CNTTX	-0.0088%	1.7435%	0.0235%	1.3416%	0.0319%	1.3415%	0.0083%	1.5914%
MBDRX	-0.0470%	1.7022%	-0.0271%	1.3562%	-0.0187%	1.3565%	-0.0407%	1.5967%
MSAEX	-0.0237%	1.6030%	0.0046%	1.2445%	0.0130%	1.2446%	-0.0101%	1.5033%
PRASX	-0.0025%	1.5777%	0.0107%	1.2062%	0.0190%	1.2062%	-0.0050%	1.4686%
Portfolio	-0.0226%	1.5740%	0.0018%	1.2093%	0.0101%	1.2094%	-0.0120%	1.4741%

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AEIGX	-0.0742%	1.5644%	-0.0471%	1.3138%	-0.0387%	1.3142%	-0.0624%	1.5673%
AIIEX	-0.0220%	1.2165%	-0.0148%	0.9626%	-0.0065%	0.9628%	-0.0302%	1.2760%
AAIEX	-0.0268%	1.0590%	-0.0034%	0.8381%	0.0049%	0.8382%	-0.0169%	1.1888%
TWIEX	-0.0285%	1.3708%	-0.0306%	1.1263%	-0.0223%	1.1266%	-0.0459%	1.4034%
AEPGX	-0.0143%	1.0919%	0.0041%	0.8171%	0.0124%	0.8172%	-0.0110%	1.1706%
INIFX	-0.0601%	1.4149%	-0.0277%	1.1102%	-0.0193%	1.1104%	-0.0428%	1.4015%
BAINX	-0.0394%	1.1035%	-0.0125%	0.8847%	-0.0041%	0.8850%	-0.0259%	1.2221%
SNIVX	-0.0284%	1.0914%	-0.0189%	0.9027%	-0.0105%	0.9030%	-0.0343%	1.2434%
PNINX	-0.0492%	1.2633%	-0.0025%	0.8889%	0.0059%	0.8890%	-0.0177%	1.2338%
CWVGX	-0.0371%	1.1629%	-0.0150%	0.9262%	-0.0066%	0.9265%	-0.0304%	1.2606%
NEFIX	-0.0271%	1.1994%	-0.0275%	0.9146%	-0.0192%	0.9149%	-0.0433%	1.2517%
CMISX	-0.0343%	1.2144%	-0.0236%	0.9988%	-0.0152%	0.9991%	-0.0388%	1.3149%
TIEUX	-0.0363%	1.2201%	-0.0192%	0.9764%	-0.0108%	0.9766%	-0.0344%	1.2980%
RBIEX	-0.0844%	1.6449%	-0.0551%	1.3716%	-0.0470%	1.3720%	-0.0532%	1.6472%
DRGLX	-0.0826%	1.6488%	-0.0633%	1.4354%	-0.0550%	1.4358%	-0.0785%	1.6615%
NIEAX	-0.0603%	1.4516%	-0.0344%	1.2601%	-0.0260%	1.2604%	-0.0496%	1.5229%
ENIGX	-0.0444%	1.2462%	-0.0283%	1.0059%	-0.0199%	1.0062%	-0.0438%	1.3200%
UMINX	-0.0365%	1.1611%	-0.0147%	0.8848%	-0.0064%	0.8850%	-0.0302%	1.2182%

Table A-8 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FTITX	-0.0352%	1.3017%	-0.0230%	0.9883%	-0.0147%	0.9886%	-0.0385%	1.3067%
FAERX	-0.0337%	1.2324%	-0.0149%	0.9901%	-0.0066%	0.9903%	-0.0301%	1.2970%
FICDX	-0.0023%	1.2627%	0.0337%	0.8383%	0.0425%	0.8380%	0.0074%	1.2802%
FDIVX	-0.0023%	0.9626%	0.0001%	0.7543%	0.0084%	0.7544%	-0.0154%	1.1272%
FIGRX	-0.0179%	1.1354%	-0.0102%	0.9009%	-0.0019%	0.9011%	-0.0256%	1.2301%
FOSFX	-0.0339%	1.2513%	-0.0146%	1.0071%	-0.0062%	1.0073%	-0.0298%	1.3100%
KNINX	-0.0381%	1.1456%	-0.0139%	0.9113%	-0.0055%	0.9116%	-0.0292%	1.2498%
GAMNX	-0.0633%	1.1455%	-0.0495%	0.8807%	-0.0411%	0.8813%	-0.0642%	1.2279%
GSIFX	-0.0433%	1.2583%	-0.0131%	1.0006%	-0.0048%	1.0008%	-0.0289%	1.3047%
HAINX	-0.0243%	1.1808%	-0.0043%	0.9658%	0.0040%	0.9659%	-0.0179%	1.2819%
IVINX	-0.0698%	1.4221%	-0.0307%	1.2338%	-0.0223%	1.2341%	-0.0463%	1.5009%
ACINX	-0.0212%	1.1016%	-0.0046%	0.7704%	0.0037%	0.7705%	-0.0184%	1.1419%
CONAX	-0.0543%	1.2062%	-0.0073%	0.9582%	0.0010%	0.9583%	-0.0200%	1.3843%
MSACX	-0.0380%	1.1313%	-0.0239%	0.9511%	-0.0156%	0.9514%	-0.0391%	1.2674%
MSIQX	-0.0213%	1.1733%	-0.0076%	1.0214%	0.0007%	1.0216%	-0.0231%	1.3209%
MUIYX	-0.0370%	1.2390%	-0.0117%	0.9746%	-0.0033%	0.9747%	-0.0266%	1.2854%
OAKIX	-0.0020%	1.0669%	0.0123%	0.7629%	0.0206%	0.7629%	-0.0011%	1.1373%
PHITX	-0.0591%	1.3587%	-0.0235%	1.0625%	-0.0152%	1.0628%	-0.0369%	1.3562%
PFIFX	-0.0297%	1.1863%	-0.0147%	1.0007%	-0.0063%	1.0009%	-0.0301%	1.3163%
PRWLX	-0.0493%	1.1440%	-0.0049%	0.8524%	0.0035%	0.8526%	-0.0183%	1.1989%
SCIEX	-0.0979%	2.0448%	-0.0784%	1.9160%	-0.0701%	1.9163%	-0.0921%	2.0927%
SCINX	-0.0409%	1.2615%	-0.0232%	1.0158%	-0.0148%	1.0161%	-0.0386%	1.3277%
SEITX	-0.0201%	1.1589%	-0.0053%	0.9323%	0.0030%	0.9325%	-0.0208%	1.2533%
SNGRX	-0.0533%	1.3328%	-0.0259%	1.0144%	-0.0176%	1.0146%	-0.0413%	1.3153%
SBIEX	-0.0577%	1.3789%	-0.0241%	1.1077%	-0.0157%	1.1079%	-0.0377%	1.3918%
STISX	-0.0380%	1.4195%	-0.0290%	1.0815%	-0.0207%	1.0818%	-0.0431%	1.3708%
PRFEX	-0.0353%	1.2384%	-0.0137%	0.9975%	-0.0054%	0.9979%	-0.0291%	1.3025%
PRIDX	-0.0015%	1.2128%	-0.0109%	0.9784%	-0.0026%	0.9786%	-0.0251%	1.2913%
PRITX	-0.0375%	1.2400%	-0.0167%	1.0058%	-0.0084%	1.0060%	-0.0321%	1.3088%
TEMFX	-0.0166%	0.9423%	-0.0012%	0.7530%	0.0071%	0.7531%	-0.0147%	1.1304%

Table A-8 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FINEX	-0.0142%	0.8438%	0.0038%	0.6805%	0.0122%	0.6806%	-0.0102%	1.0834%
USIFX	-0.0228%	1.0414%	0.0038%	0.8310%	0.0121%	0.8311%	-0.0121%	1.1798%
VTRIX	-0.0277%	1.1546%	-0.0049%	0.9586%	0.0035%	0.9587%	-0.0205%	1.2846%
VWIGX	-0.0268%	1.2038%	-0.0062%	0.9653%	0.0021%	0.9654%	-0.0219%	1.2779%
VNEPX	-0.0417%	1.2982%	-0.0196%	0.9408%	-0.0113%	0.9411%	-0.0353%	1.2594%
UNCGX	-0.0628%	1.5055%	-0.0499%	1.3010%	-0.0416%	1.3013%	-0.0632%	1.5500%
SRIGX	-0.0338%	1.1537%	-0.0081%	0.9060%	0.0003%	0.9062%	-0.0238%	1.2458%
WIBCX	-0.0407%	1.3074%	-0.0104%	0.9664%	-0.0020%	0.9666%	-0.0256%	1.2907%
Portfolio	-0.0380%	1.0174%	-0.0183%	0.8047%	-0.0100%	0.8050%	-0.0338%	1.1613%

G. Latin Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MBLTX	-0.0358%	1.7505%	-0.0146%	1.6724%	-0.0141%	1.6724%	-0.0341%	1.7670%

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
GSCAX	-0.0614%	1.4194%	-0.0506%	1.1536%	-0.0425%	1.1540%	-0.0490%	1.4705%
ANWPX	-0.0115%	1.1286%	0.0020%	0.9119%	0.0103%	0.9119%	-0.0130%	1.2387%
SMCWX	-0.0386%	1.3354%	0.0324%	0.7651%	0.0412%	0.7648%	-0.0122%	1.4059%
AHERX	-0.1966%	5.7550%	0.0309%	3.6597%	0.0397%	3.6597%	-0.0150%	3.8452%
IGLGX	-0.0466%	1.3768%	-0.0353%	1.0626%	-0.0272%	1.0629%	-0.0328%	1.4010%
FWWGX	-0.0839%	1.5975%	-0.0313%	1.0555%	-0.0230%	1.0558%	-0.0467%	1.3472%
EGLBX	-0.0373%	1.3071%	-0.0136%	1.0304%	-0.0054%	1.0305%	-0.0001%	1.3767%

Table A-8 Continued

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FWWFX	-0.0284%	1.1874%	-0.0077%	0.9630%	0.0006%	0.9631%	-0.0229%	1.2764%
FIISX	-0.0361%	1.1665%	-0.0046%	0.8730%	0.0038%	0.8732%	-0.0198%	1.2223%
GAGLX	-0.0347%	1.1259%	-0.0338%	0.8950%	-0.0254%	0.8954%	-0.0478%	1.2276%
FGLOX	-0.0625%	1.2150%	-0.0230%	0.9790%	-0.0147%	0.9793%	-0.0377%	1.2890%
MCGLX	-0.0444%	1.1753%	-0.0000%	0.9437%	0.0084%	0.9438%	-0.0157%	1.2735%
JAWWX	-0.0159%	1.3633%	-0.0229%	1.0624%	-0.0148%	1.0626%	-0.0207%	1.4005%
LAGEX	-0.0367%	1.1777%	-0.0292%	0.9487%	-0.0209%	0.9491%	-0.0444%	1.2656%
MWEBX	-0.0186%	0.9791%	0.0027%	0.7774%	0.0110%	0.7775%	-0.0127%	1.1429%
OPPAX	-0.0203%	1.3836%	-0.0087%	0.9991%	-0.0004%	0.9993%	-0.0223%	1.3072%
OPGIX	-0.0114%	1.4375%	-0.0141%	1.1219%	-0.0059%	1.1221%	-0.0119%	1.4461%
QVGLX	-0.0336%	1.1754%	0.0016%	0.7706%	0.0099%	0.7707%	-0.0114%	1.1427%
NWWOX	-0.0501%	1.3561%	-0.0415%	1.1908%	-0.0332%	1.1912%	-0.0568%	1.4557%
PRGLX	-0.0448%	1.4691%	-0.0027%	1.0342%	0.0056%	1.0343%	-0.0179%	1.3311%
PEQUX	-0.0577%	1.6394%	-0.0580%	1.3423%	-0.0499%	1.3427%	-0.0558%	1.6232%
SGSCX	-0.0135%	1.3259%	-0.0105%	1.0598%	-0.0023%	1.0596%	-0.0259%	1.3531%
SCOBX	-0.0515%	1.1389%	-0.0239%	0.8844%	-0.0156%	0.8847%	-0.0389%	1.2183%
TECAX	-0.0178%	1.0038%	0.0014%	0.7661%	0.0092%	0.7656%	-0.0145%	1.1391%
TEGOX	-0.0387%	1.0452%	-0.0246%	0.8273%	-0.0165%	0.8276%	-0.0227%	1.2314%
TEMGX	-0.0371%	0.8336%	-0.0065%	0.6067%	0.0018%	0.6069%	-0.0222%	1.0341%
TEPLX	-0.0186%	0.9710%	-0.0010%	0.7886%	0.0073%	0.7888%	-0.0164%	1.1505%
TEMWX	-0.0228%	0.9728%	-0.0003%	0.7556%	0.0080%	0.7557%	-0.0154%	1.1284%
USAWX	-0.0254%	1.1032%	0.0020%	0.8604%	0.0103%	0.8605%	-0.0137%	1.2008%
Portfolio	-0.0413%	1.0276%	-0.0162%	0.8027%	-0.0079%	0.8030%	-0.0315%	1.1601%

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AMMSX	-0.0151%	0.1862%	-0.0108%	0.1691%	-0.0024%	0.1701%	-0.0268%	0.8714%

Table A-8 Continued

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANAGX	-0.0128%	0.6116%	-0.0072%	0.4577%	0.0012%	0.4580%	-0.0228%	0.9699%
BEGBX	0.0028%	0.6045%	0.0045%	0.3919%	0.0133%	0.3920%	-0.0230%	1.0429%
CWBFX	-0.0041%	0.3786%	0.0006%	0.2689%	0.0095%	0.2692%	-0.0265%	1.0030%
IGBFX	-0.0033%	0.3549%	0.0029%	0.2771%	0.0113%	0.2773%	-0.0131%	0.8988%
CIFIX	-0.0005%	0.3133%	-0.0010%	0.2776%	0.0074%	0.2780%	-0.0150%	0.8874%
TIFUX	-0.0101%	0.5215%	-0.0023%	0.3498%	0.0066%	0.3501%	-0.0297%	1.0276%
CGFIX	-0.0076%	0.3437%	-0.0020%	0.2407%	0.0068%	0.2411%	-0.0290%	0.9957%
DFGBX	0.0011%	0.3281%	-0.0002%	0.2845%	0.0080%	0.2848%	0.0013%	0.9551%
FTIIX	-0.0056%	0.5530%	0.0019%	0.3499%	0.0108%	0.3501%	-0.0257%	1.0279%
ICPHX	-0.0123%	0.5449%	-0.0025%	0.4133%	0.0058%	0.4135%	-0.0191%	0.9339%
GSGIX	-0.0043%	0.2792%	-0.0061%	0.2483%	0.0023%	0.2489%	-0.0220%	0.8902%
LAGIX	-0.0156%	0.3666%	-0.0028%	0.2813%	0.0056%	0.2817%	-0.0190%	0.9000%
MBGOX	-0.0079%	0.4022%	-0.0013%	0.3130%	0.0071%	0.3133%	-0.0175%	0.9105%
MSGFX	0.0058%	0.4596%	0.0066%	0.3127%	0.0150%	0.3128%	-0.0097%	0.9106%
PFORX	-0.0012%	0.3320%	0.0009%	0.2654%	0.0090%	0.2657%	0.0021%	0.9495%
PGGIX	-0.0147%	0.3622%	0.0001%	0.2809%	0.0084%	0.2812%	-0.0162%	0.8832%
SSTGX	-0.0005%	0.2829%	0.0049%	0.2246%	0.0133%	0.2247%	-0.0114%	0.8841%
SBGLX	-0.0090%	0.3525%	-0.0036%	0.3034%	0.0046%	0.3038%	-0.0021%	0.9609%
RPIBX	-0.0083%	0.5263%	0.0034%	0.3982%	0.0118%	0.3984%	-0.0132%	0.9434%
TPINX	-0.0118%	0.3702%	-0.0038%	0.2769%	0.0043%	0.2773%	-0.0027%	0.9528%
Portfolio	-0.0064%	0.2792%	-0.0017%	0.2162%	0.0067%	0.2166%	-0.0179%	0.8819%

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CAIBX	-0.0122%	0.5977%	-0.0059%	0.4470%	0.0023%	0.4473%	-0.0039%	1.0158%
BPGLX	-0.0237%	0.7600%	-0.0071%	0.5792%	0.0010%	0.5795%	-0.0055%	1.0803%
SGENX	-0.0123%	0.8839%	-0.0030%	0.7269%	0.0053%	0.7271%	-0.0167%	1.1131%

Table A-8 Continued

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FMAFX	-0.0327%	0.8491%	-0.0217%	0.6467%	-0.0136%	0.6471%	-0.0198%	1.1181%
MALOX	-0.0281%	0.9170%	-0.0116%	0.7717%	-0.0033%	0.7720%	-0.0273%	1.1387%
MFWTX	-0.0163%	1.8306%	-0.0070%	1.7827%	0.0013%	1.7827%	-0.0229%	1.9695%
Portfolio	-0.0209%	0.6328%	-0.0123%	0.4335%	-0.0042%	0.4340%	-0.0106%	1.0097%

Table A-9: Returns and Risks of Buy-and-hold and Conservative Trading Strategy with Exchange Restrictions (120 Days)

This table presents the returns and risks of buy-and-hold and conservative trading strategies. The conservative trading strategy is based on the facts that trades are executed when an Index value increases or decreases by at least 1.5% and investors cannot trade/exchange within 120 days of initial purchase of their funds. Column one lists the ticker symbol of sample funds. Columns two and three show mean daily returns and standard deviations of buy-and-hold strategy. Columns four and five present mean daily returns and standard deviations of returns of conservative trading strategy IV (switching between international fund and cash); columns six and seven provide mean daily returns and standard deviations of returns of conservative trading strategy V (switching between international fund and money market fund); and columns eight and nine exhibit mean daily returns and standard deviations of returns of conservative trading strategy VI (switching between international fund and index fund). The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MADCX	-0.0318%	1.3224%	-0.0107%	0.9371%	-0.0021%	0.9373%	-0.0232%	1.3411%
MNEMX	-0.0424%	1.3434%	-0.0223%	0.9163%	-0.0140%	0.9166%	-0.0241%	1.3487%
MGEMX	-0.0318%	1.4658%	-0.0180%	1.4506%	-0.0175%	1.4507%	-0.0289%	1.4622%
TEDMX	-0.0319%	1.3084%	-0.0155%	1.0022%	-0.0069%	1.0024%	-0.0282%	1.3873%
Portfolio	-0.0345%	1.2831%	-0.0160%	0.8955%	-0.0074%	0.8957%	-0.0287%	1.3123%

B. Diversified Pacific/Asia Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FPBFX	-0.0014%	1.3893%	0.0083%	0.9322%	0.0166%	0.9322%	0.0068%	1.3596%
GAPCX	-0.0389%	1.4254%	-0.0067%	0.8977%	0.0018%	0.8978%	-0.0230%	1.4043%
JHWPX	-0.0147%	1.3235%	-0.0037%	0.9966%	0.0045%	0.9967%	-0.0031%	1.3936%
MAPCX	-0.0347%	1.4110%	-0.0130%	1.0036%	-0.0048%	1.0038%	-0.0121%	1.3988%
TGRBX	-0.0294%	1.3397%	-0.0098%	0.9736%	-0.0015%	0.9737%	-0.0092%	1.3772%
PRPBX	-0.0471%	4.2347%	-0.0116%	0.8992%	-0.0033%	0.8994%	-0.0131%	1.3372%
FKPGX	-0.0512%	1.2696%	-0.0318%	0.9359%	-0.0236%	0.9362%	-0.0314%	1.3508%
Portfolio	-0.0310%	1.3295%	-0.0132%	0.8476%	-0.0050%	0.8478%	-0.0126%	1.2913%

Table A-9 Continued

C. Europe Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
ANEAX	-0.0414%	1.5057%	-0.0080%	1.0730%	0.0006%	1.0731%	-0.0198%	1.4398%
DFCSX	-0.0511%	1.1944%	0.0088%	0.7007%	0.0174%	0.7007%	-0.0040%	1.1882%
DFUKX	-0.0592%	1.1280%	-0.0107%	0.8177%	-0.0025%	0.8179%	-0.0104%	1.2717%
FIEUX	-0.0443%	1.3766%	-0.0262%	0.8869%	-0.0179%	0.8872%	-0.0271%	1.3291%
FEURX	-0.0666%	1.7461%	-0.0371%	1.2985%	-0.0289%	1.2988%	-0.0362%	1.6235%
MBEFX	-0.0495%	1.5844%	-0.0277%	1.1528%	-0.0194%	1.1531%	-0.0291%	1.5194%
EUGBX	-0.0418%	1.5714%	-0.0000%	1.0193%	0.0086%	1.0194%	-0.0115%	1.4006%
PEURX	-0.0289%	1.3817%	0.0077%	0.9662%	0.0163%	0.9662%	-0.0047%	1.3618%
PEUGX	-0.0280%	1.3644%	0.0049%	0.9278%	0.0135%	0.9279%	-0.0070%	1.3351%
PRESX	-0.0370%	1.3908%	-0.0012%	0.9560%	0.0074%	0.9561%	-0.0132%	1.3548%
VEURX	-0.0152%	1.3483%	0.0119%	0.9386%	0.0205%	0.9386%	0.0004%	1.3432%
Portfolio	-0.0421%	1.1558%	-0.0021%	0.7796%	0.0065%	0.7798%	-0.0142%	1.2366%

D. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
DFJSX	-0.0193%	1.5653%	-0.0197%	1.5609%	-0.0194%	1.5609%	-0.0171%	1.5630%
SJPNX	-0.0195%	1.7005%	-0.0163%	1.2492%	-0.0084%	1.2494%	-0.0286%	1.5292%
PRJPX	-0.0320%	1.6781%	-0.0218%	1.1790%	-0.0139%	1.1792%	-0.0358%	1.4756%
VPACX	-0.0278%	1.5067%	-0.0320%	1.0479%	-0.0241%	1.0482%	-0.0603%	1.3630%
Portfolio	-0.0246%	1.4668%	-0.0192%	1.0462%	-0.0113%	1.0464%	-0.0475%	1.3619%

Table A-9 Continued

D. Pacific/Asia Ex. Japan Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
EVCGX	-0.0309%	1.7032%	-0.0261%	1.2769%	-0.0179%	1.2771%	-0.0257%	1.6060%
CNTTX	-0.0088%	1.7435%	-0.0261%	1.2626%	-0.0175%	1.2628%	-0.0380%	1.5859%
MBDRX	-0.0470%	1.7022%	-0.0477%	1.3026%	-0.0395%	1.3030%	-0.0471%	1.6266%
MSAEX	-0.0237%	1.6030%	-0.0138%	1.1653%	-0.0056%	1.1655%	-0.0143%	1.5189%
PRASX	-0.0025%	1.5777%	-0.0162%	1.1379%	-0.0079%	1.1381%	-0.0176%	1.5081%
Portfolio	-0.0226%	1.5740%	-0.0267%	1.1606%	-0.0185%	1.1608%	0.0263%	1.5151%

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AEIGX	-0.0742%	1.5644%	-0.0190%	1.1094%	-0.0104%	1.1096%	-0.0309%	1.4669%
AIIEX	-0.0220%	1.2165%	0.0007%	0.8371%	0.0090%	0.8372%	-0.0003%	1.2965%
AAIEX	-0.0268%	1.0590%	-0.0016%	0.6909%	0.0066%	0.6910%	-0.0009%	1.1943%
TWIEX	-0.0285%	1.3708%	-0.0037%	0.9402%	0.0046%	0.9403%	-0.0046%	1.3654%
AEPGX	-0.0143%	1.0919%	0.0012%	0.7037%	0.0095%	0.7038%	0.0004%	1.2148%
INIFX	-0.0601%	1.4149%	0.0035%	0.8557%	0.0121%	0.8557%	-0.0082%	1.2862%
BAINX	-0.0394%	1.1035%	-0.0238%	0.7626%	-0.0155%	0.7630%	-0.0230%	1.2372%
SNIVX	-0.0284%	1.0914%	0.0129%	0.7429%	0.0215%	0.7429%	0.0009%	1.2139%
PNINX	-0.0492%	1.2633%	0.0067%	0.7604%	0.0153%	0.7604%	-0.0051%	1.2248%
CWVGX	-0.0371%	1.1629%	-0.0068%	0.8125%	0.0018%	0.8127%	-0.0187%	1.2576%
NEFIX	-0.0271%	1.1994%	-0.0117%	0.8452%	-0.0031%	0.8454%	-0.0240%	1.2786%
CMISX	-0.0343%	1.2144%	-0.0036%	0.7852%	0.0050%	0.7854%	-0.0154%	1.2403%
TIEUX	-0.0363%	1.2201%	-0.0012%	0.7752%	0.0074%	0.7753%	-0.0130%	1.2340%
RBIEX	-0.0844%	1.6449%	-0.0159%	0.9210%	-0.0073%	0.9213%	-0.0249%	1.3465%
DRGLX	-0.0826%	1.6488%	-0.0288%	0.9593%	-0.0205%	0.9597%	-0.0297%	1.3786%
NIEAX	-0.0603%	1.4516%	-0.0256%	1.1890%	-0.0170%	1.1892%	-0.0374%	1.5281%
ENIGX	-0.0444%	1.2462%	-0.0113%	0.8447%	-0.0027%	0.8449%	-0.0234%	1.2784%
UMINX	-0.0365%	1.1611%	-0.0062%	0.7916%	0.0021%	0.7918%	-0.0073%	1.2675%
FTITX	-0.0352%	1.3017%	-0.0043%	0.9092%	0.0043%	0.9093%	-0.0164%	1.3220%

Table A-9 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FAERX	-0.0337%	1.2324%	-0.0071%	0.7943%	0.0012%	0.7945%	-0.0080%	1.2694%
FICDX	-0.0023%	1.2627%	-0.0068%	0.9096%	0.0007%	0.9097%	0.0099%	1.1992%
FDIVX	-0.0023%	0.9626%	0.0069%	0.6447%	0.0152%	0.6448%	0.0058%	1.1813%
FIGRX	-0.0179%	1.1354%	0.0002%	0.7224%	0.0085%	0.7226%	-0.0009%	1.2255%
FOSFX	-0.0339%	1.2513%	-0.0058%	0.7954%	0.0026%	0.7956%	-0.0066%	1.2700%
KNINX	-0.0381%	1.1456%	-0.0012%	0.7797%	0.0074%	0.7798%	-0.0131%	1.2367%
GAMNX	-0.0633%	1.1455%	-0.0213%	0.7780%	-0.0127%	0.7784%	-0.0326%	1.2361%
GSIFX	-0.0433%	1.2583%	-0.0088%	0.8080%	-0.0005%	0.8082%	-0.0102%	1.2776%
HAINX	-0.0243%	1.1808%	-0.0039%	0.7534%	0.0042%	0.7536%	-0.0033%	1.2315%
IVINX	-0.0698%	1.4221%	-0.0072%	0.8090%	0.0014%	0.8092%	-0.0194%	1.2552%
ACINX	-0.0212%	1.1016%	0.0024%	0.7274%	0.0107%	0.7274%	0.0029%	1.2156%
CONAX	-0.0543%	1.2062%	-0.0317%	0.9351%	-0.0233%	0.9354%	-0.0307%	1.3356%
MSACX	-0.0380%	1.1313%	-0.0128%	0.8135%	-0.0045%	0.8137%	-0.0137%	1.2815%
MSIQX	-0.0213%	1.1733%	0.0056%	0.7701%	0.0139%	0.7701%	0.0044%	1.2541%
MUIYX	-0.0370%	1.2390%	-0.0145%	0.8345%	-0.0061%	0.8348%	-0.0151%	1.2952%
OAKIX	-0.0020%	1.0669%	0.0252%	0.6176%	0.0334%	0.6174%	0.0260%	1.1535%
PHITX	-0.0591%	1.3587%	-0.0220%	0.9258%	-0.0138%	0.9261%	-0.0212%	1.3440%
PFIFX	-0.0297%	1.1863%	0.0177%	0.6580%	0.0263%	0.6579%	0.0056%	1.1639%
PRWLX	-0.0493%	1.1440%	-0.0095%	0.7406%	-0.0012%	0.7409%	-0.0087%	1.2238%
SCIEX	-0.0979%	2.0448%	-0.0292%	1.0204%	-0.0210%	1.0207%	-0.0287%	1.4106%
SCINX	-0.0409%	1.2615%	-0.0072%	0.9154%	0.0014%	0.9156%	-0.0192%	1.3263%
SEITX	-0.0201%	1.1589%	0.0003%	0.7781%	0.0086%	0.7782%	-0.0009%	1.2591%
SNGRX	-0.0533%	1.3328%	-0.0339%	0.8915%	-0.0256%	0.8919%	-0.0350%	1.3322%
SBIEX	-0.0577%	1.3789%	-0.0241%	0.8387%	-0.0159%	0.8391%	-0.0235%	1.2854%
STISX	-0.0380%	1.4195%	-0.0072%	0.9598%	0.0011%	0.9599%	-0.0070%	1.3674%
PRFEX	-0.0353%	1.2384%	-0.0134%	0.8139%	-0.0051%	0.8141%	-0.0144%	1.2816%
PRIDX	-0.0015%	1.2128%	0.0265%	0.7343%	0.0348%	0.7342%	0.0266%	1.2198%
PRITX	-0.0375%	1.2400%	-0.0160%	0.8235%	-0.0077%	0.8238%	-0.0170%	1.2877%
TEMFX	-0.0166%	0.9423%	0.0070%	0.5840%	0.0152%	0.5840%	0.0077%	1.1358%
FINEX	-0.0142%	0.8438%	0.0114%	0.6293%	0.0196%	0.6292%	0.0116%	1.1596%
USIFX	-0.0228%	1.0414%	-0.0009%	0.6997%	0.0074%	0.6999%	-0.0024%	1.2120%

Table A-9 Continued

F. Foreign Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
VTRIX	-0.0277%	1.1546%	0.0001%	0.8526%	0.0087%	0.8527%	-0.0121%	1.2837%
VWIGX	-0.0268%	1.2038%	-0.0068%	0.8188%	0.0015%	0.8190%	-0.0081%	1.2845%
VNEPX	-0.0417%	1.2982%	-0.0080%	0.7984%	0.0003%	0.7986%	-0.0093%	1.2716%
UNCGX	-0.0628%	1.5055%	-0.0220%	1.0025%	-0.0138%	1.0028%	-0.0211%	1.3980%
SRIGX	-0.0338%	1.1537%	-0.0052%	0.8036%	0.0034%	0.8037%	-0.0175%	1.2516%
WIBCX	-0.0407%	1.3074%	-0.0059%	0.8713%	0.0027%	0.8715%	-0.0177%	1.2965%
Portfolio	-0.0380%	1.0174%	-0.0093%	0.6857%	-0.0010%	0.6860%	-0.0105%	1.2042%

G. Latin Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
MBLTX	-0.0358%	1.7505%	-0.0268%	1.7290%	-0.0263%	1.7291%	-0.0330%	1.7554%

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
GSCAX	-0.0614%	1.4194%	-0.0198%	0.9981%	-0.0107%	0.9974%	-0.0279%	1.3896%
ANWPX	-0.0115%	1.1286%	-0.0003%	0.7247%	0.0080%	0.7248%	-0.0009%	1.2272%
SMCWX	-0.0386%	1.3354%	0.0037%	0.8077%	0.0123%	0.8076%	-0.0184%	1.3654%
AHERX	-0.1966%	5.7550%	-0.0398%	3.4071%	-0.0348%	3.4068%	0.0573%	3.7574%
IGLGX	-0.0466%	1.3768%	-0.0027%	0.8943%	0.0058%	0.8944%	-0.0112%	1.3291%
FWWGX	-0.0839%	1.5975%	-0.0342%	0.9408%	-0.0294%	0.9402%	-0.0393%	1.3675%
EGLBX	-0.0373%	1.3071%	0.0114%	0.8314%	0.0199%	0.8314%	0.0029%	1.2877%
FWWFX	-0.0284%	1.1874%	0.0023%	0.7320%	0.0106%	0.7321%	0.0014%	1.2313%
FIISX	-0.0361%	1.1665%	-0.0001%	0.7811%	0.0085%	0.7812%	-0.0119%	1.2877%
GAGLX	-0.0347%	1.1259%	-0.0268%	0.8348%	-0.0184%	0.8352%	-0.0264%	1.2969%

Table A-9 Continued

H. World Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
FGLOX	-0.0625%	1.2150%	-0.0370%	0.8453%	-0.0287%	0.8457%	-0.0373%	1.3024%
MCGLX	-0.0444%	1.1753%	0.0007%	0.8152%	0.0093%	0.8153%	-0.0116%	1.2592%
JAWWX	-0.0159%	1.3633%	0.0024%	0.9321%	0.0110%	0.9322%	-0.0064%	1.3545%
LAGEX	-0.0367%	1.1777%	-0.0274%	0.8005%	-0.0191%	0.8009%	-0.0282%	1.2733%
MWEBX	-0.0186%	0.9791%	-0.0035%	0.6434%	0.0048%	0.6436%	-0.0047%	1.1806%
OPPAX	-0.0203%	1.3836%	-0.0055%	0.8968%	0.0027%	0.8970%	-0.0049%	1.3241%
OPGIX	-0.0114%	1.4375%	0.0025%	0.9540%	0.0111%	0.9541%	-0.0063%	1.3696%
QVGLX	-0.0336%	1.1754%	-0.0099%	0.6632%	-0.0017%	0.6635%	-0.0087%	1.1789%
NWWOX	-0.0501%	1.3561%	-0.0197%	0.9729%	-0.0114%	0.9731%	-0.0206%	1.3881%
PRGLX	-0.0448%	1.4691%	0.0193%	0.9223%	-0.0110%	0.9226%	-0.0201%	1.3532%
PEQUX	-0.0577%	1.6394%	-0.0213%	1.1455%	-0.0127%	1.1457%	-0.0300%	1.5092%
SGSCX	-0.0135%	1.3259%	-0.0013%	0.9464%	0.0064%	0.9462%	-0.0041%	1.3693%
SCOBX	-0.0515%	1.1389%	-0.0207%	0.8306%	-0.0124%	0.8309%	-0.0213%	1.2926%
TECAX	-0.0178%	1.0038%	0.0082%	0.6202%	0.0156%	0.6199%	0.0076%	1.1711%
TEGOX	-0.0387%	1.0452%	-0.0097%	0.7770%	-0.0012%	0.7772%	-0.0188%	1.2525%
TEMGX	-0.0371%	0.8336%	0.0059%	0.5328%	0.0142%	0.5328%	0.0045%	1.1240%
TEPLX	-0.0186%	0.9710%	0.0113%	0.5570%	0.0196%	0.5569%	0.0102%	1.1359%
TEMWX	-0.0228%	0.9728%	0.0034%	0.5778%	0.0117%	0.5779%	0.0026%	1.1465%
USAWX	-0.0254%	1.1032%	-0.0067%	0.7485%	0.0016%	0.7487%	-0.0080%	1.2409%
Portfolio	-0.0413%	1.0276%	-0.0127%	0.6861%	-0.0044%	0.6863%	-0.0137%	1.2045%

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
AMMSX	-0.0151%	0.1862%	-0.0078%	0.1409%	0.0008%	0.1420%	-0.0204%	0.9697%
ANAGX	-0.0128%	0.6116%	-0.0052%	0.4355%	0.0034%	0.4358%	-0.0174%	1.0538%
BEGBX	0.0028%	0.6045%	-0.0025%	0.4666%	0.0050%	0.4668%	0.0130%	0.9098%

Table A-9 Continued

I. International Bond Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CWBFX	-0.0041%	0.3786%	-0.0035%	0.2840%	0.0040%	0.2844%	0.0124%	0.8310%
IGBFX	-0.0033%	0.3549%	-0.0004%	0.2577%	0.0083%	0.2580%	-0.0131%	0.9935%
CIFIX	-0.0005%	0.3133%	0.0030%	0.1633%	0.0112%	0.1637%	0.0032%	0.9876%
TIFUX	-0.0101%	0.5215%	-0.0092%	0.3941%	-0.0017%	0.3945%	0.0064%	0.8749%
CGFIX	-0.0076%	0.3437%	-0.0036%	0.2357%	0.0040%	0.2362%	0.0125%	0.8157%
DFGBX	0.0011%	0.3281%	-0.0003%	0.2602%	0.0083%	0.2606%	-0.0098%	1.0160%
FTIIX	-0.0056%	0.5530%	-0.0049%	0.4199%	0.0026%	0.4202%	0.0105%	0.8869%
ICPHX	-0.0123%	0.5449%	-0.0182%	0.3785%	-0.0099%	0.3791%	-0.0205%	1.0596%
GSGIX	-0.0043%	0.2792%	-0.0024%	0.1761%	0.0062%	0.1767%	-0.0150%	0.9755%
LAGIX	-0.0156%	0.3666%	-0.0065%	0.2571%	0.0021%	0.2577%	-0.0194%	0.9933%
MBGOX	-0.0079%	0.4022%	-0.0008%	0.2905%	0.0078%	0.2908%	-0.0136%	1.0025%
MSGFX	0.0058%	0.4596%	0.0056%	0.3525%	0.0142%	0.3527%	-0.0074%	1.0224%
PFORX	-0.0012%	0.3320%	-0.0011%	0.2341%	0.0075%	0.2345%	-0.0109%	1.0096%
PGGIX	-0.0147%	0.3622%	-0.0119%	0.2381%	-0.0036%	0.2388%	-0.0139%	1.0178%
SSTGX	-0.0005%	0.2829%	-0.0021%	0.1968%	0.0065%	0.1973%	-0.0150%	0.9795%
SBGLX	-0.0090%	0.3525%	-0.0006%	0.1938%	0.0079%	0.1943%	-0.0102%	1.0010%
RPIBX	-0.0083%	0.5263%	-0.0032%	0.3705%	0.0054%	0.3708%	-0.0165%	1.0287%
TPINX	-0.0118%	0.3702%	-0.0091%	0.2625%	-0.0005%	0.2631%	-0.0190%	1.0164%
Portfolio	-0.0064%	0.2792%	-0.0029%	0.1952%	0.0057%	0.1958%	-0.0157%	0.9792%

J. International Hybrid Fund

Ticker	Buy-and-hold		Trading Strategy IV		Trading Strategy V		Trading Strategy VI	
	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD	Mean Daily Return	Mean Daily SD
CAIBX	-0.0122%	0.5977%	0.0007%	0.4235%	0.0092%	0.4237%	-0.0084%	1.0699%
BPGLX	-0.0237%	0.7600%	0.0028%	0.4740%	0.0114%	0.4742%	-0.0066%	1.0906%
SGENX	-0.0123%	0.8839%	0.0127%	0.4524%	0.0210%	0.4524%	0.0132%	1.0740%
FMAFX	-0.0327%	0.8491%	-0.0097%	0.5867%	-0.0011%	0.5870%	-0.0187%	1.1442%
MALOX	-0.0281%	0.9170%	-0.0055%	0.5961%	0.0028%	0.5964%	-0.0069%	1.1554%
MFWTX	-0.0163%	1.8306%	-0.0045%	1.7556%	0.0039%	1.7556%	-0.0060%	2.0153%
Portfolio	-0.0209%	0.6328%	0.0006%	0.4722%	0.0092%	0.4723%	-0.0087%	1.0898%

Table A-10: Chronology of Major Scandals in the Mutual Fund Industry

1. **September 3, 2003**: The New York Attorney General (NYAG) Eliot Spitzer alleged that approximately 30 leading fund companies gave **Canary Capital Partners LLC**, a hedge fund, special trading opportunity (late trading) and explicit exemptions to time their funds in exchange for 'sticky assets' or 'guaranteed investments'; for example, Canary agreed to leave millions of dollars in Bank of America's bond funds on a long-term basis. These trading opportunities allowed Canary to realize tens of millions of dollars in profits. Canary has agreed to pay $30 million in restitution and a $10 million fine ['*State of New York V. Canary Capital Partners, LLC, et. al*., NY Sup. Ct., filed Sept. 3, 2003', at http://www.oag.state.ny.us/press/2003/sep/canary_complaint.pdf]

2. **September 9, 2003**: **Janus fund** declared that it had market timing assets of as much as $750 million in 2002 and 2003 and would make restitution to shareholders for any economic harm. Bank of America also said that it would reimburse fund shareholders who lost money because of improper trading ['*Don't Let Crooks Manage Your Money*' by Timothy Middleton, at http://moneycentral.msn.com/content/P59975.asp]

3. **September 11, 2003**: **Bank of America** fired broker Theodor Sihpol III and charged him with grand larceny and a violation of business law. Charles Bryceland, former head of the bank's brokerage and private-banking office, and Robert H. Gordon, former head of the bank's mutual-fund business, were also fired. [source: http://www.morningstar.com]

4. **September 12, 2003**: Morning star withdraws –across the board- its **Janus Fund** recommendations. It has been recommended to avoid all categories of **Strong funds, Janus funds** and to some extent **Bank one group's funds**. [(a) '*Janus Third Strike*' by Brian Portnoy, at http://news.morningstar.com/doc/article/0,,96464,00.html; (b) '*Until further notice, Strong should be avoided*' by Paul Herbert, at http://news.morningstar.com/doc/article/0,,96475,00.html; (c) '*One Group Investors Need to Take Action*' by Dan McNeela, at http://advisor.morningstar.com/advisor/doc/article/0,8832,3205,00.html?track-dbarticles]

5. **October 2, 2003**: The NYAG Eliot Spitzer and the SEC announced criminal and civil actions against Steven B. Markovitz, a former executive of **Millennium Partners, L.P.** (Hedge Fund). Markovitz engaged in late trading of fund shares on behalf of Millennium with the assistance of certain registered broker-dealers. **Merrill Lynch** fired three senior brokers to help Millennium partners to complete market timing trades. ['*Trader Pleads Guilty to a Felony in NYAG's Action; Agrees to Lifetime Bar From Association With an Investment Adviser or Mutual Fund in SEC Action*', at http://www.sec.gov/news/press/2003-132.htm]

Table A-9 Continued

6. **October 15, 2003**: **Bank One** Group president Mark Beeson and John Abu Nassar, former head of Bank One's institutional asset management left the company after being connected to market timing trading by Canary Capital Partners. Bank. They allowed Canary to market time 11 of its mutual funds, allegedly in exchange for Canary's taking out a large loan and weighing a large investment in a Bank One hedge fund ['*Bank One Mutual Fund Chiefs Quit*' by Matthew Goldstein, at http://www.thestreet.com/_yahoo/markets/matthewGoldstein/10119651.html]

7. **October 16, 2003**: The NYAG Eliot Spitzer and the SEC announced the arrest, conviction and lifetime industry bar on James P. Connelly, Jr., former Vice Chairman and Chief Mutual Fund office of **Fred Alger & Company Inc.** to permit selective investors to time certain Alger mutual funds. Connelly also deceived his own firm's lawyers by preventing them from identifying and producing documents; he was pleaded guilty to obstruction of justice ['*New York AG and SEC Bring Criminal and Civil Actions Against Mutual Fund Executive*', at http://www.sec.gov/news/press/2003-138.htm]

8. **October 28, 2003**: The SEC filed a civil injunctive action in federal district court in Boston against Justin M. Scott and Omid Kamshad, Managing Directors and chief investment officers of Putnam's international equity group. It is alleged that both of them engaged in self-dealing excessive short-term trading in their personal accounts of **Putnam international and Europe equity mutual funds** during 1888-2003 by misusing non-public information and adviser code of ethics; ['Civil Action No. 03-12082-EFH', District Court of Massachusetts, United States District Court, at http://www.sec.gov/litigation/complaints/comp18428.htm]

9. **November 3, 2003**: CEO Lawrence Lasser resigned after 33 years of service at Putnam. Mutual fund. Putnam also fired four fund managers - Justin Scott, Omid Kamshad, Carmel Peter and Geirluv Lode - for making frequent trades in the funds they managed. ['*Putnam CEO Replaced*', at http://money.cnn.com/2003/11/03/funds/putnam]

10. **November 4, 2003**: The SEC and Massachusetts regulators charged former **Prudential Securities Inc**. brokers and managers with improper mutual fund trading. Civil securities-fraud charges were filed against brokers Martin Druffner, Justin Ficken and Skifter Ajro, who were fired in September from Prudential's Boston office for excessive short-term trades. Regulators also made similar allegations against former Prudential brokers Marc Bilotti and John Peffer. ['*SEC brings Charges against Ex. Prudential Brokers*', Bloomberg News, at http://www.eagletribune.com/news/stories/20031104/BU_001.htm]

Table A-9 Continued

11. **November 10, 2003**: The **Alliance Capital** Management fired president John Carifa and Michael Laughlin, chairman of the mutual fund distribution unit for allowing market timing under their watch. The group also suspended two executives – Gerald T. Malone and Charles B. Schaffran - on September 30, 2003 for allowing market timing transactions. ['*2 More Fired in Mutual Fund Scanda*l' by Greg Farrell, at http://www.usatoday.com/money/perfi/funds/2003-11-10-alliance-execs_x.htm]

12. **November 13, 2003**: The NYAG Eliot Spitzer and the SEC announced civil charges against the founders of **Pilgrim Baxter & Associates Ltd. (PBHG)**. Gary Pilgrim resigned as president and Harold Baxter stepped down as chief executive of PBHG funds. Pilgrim disclosed the daily portfolio holding information to a hedge fund, Appalachian Trail, which eventually formed a "shadow portfolio" by buying securities that mimicked the fund's portfolio. It made a total of 120 buy-sell round trips in a mere 21 months, according to the suits. That's far more than the limit of 4 round trips a year that PBHG allows to other investors. According to the SEC, Appalachian made $13 million from its trades in Growth. [(a) '*Pilgrim Baxter Founders Step Down After Market Timing Probe*' by Kara Wetzel, at http://news.morningstar.com/news/DJ/M11/D13/1068740469134.html; (b) '*The Mutual Fund Scandal: Unfair Fight*' by Allan Sloan, at http://msnbc.com/news/999378.asp?0dm=B14MB]

13. **December 2, 2003**: The SEC and the NYAG Eliot Spitzer separately filed charges that accuse the **Invesco Fund** Groups and CEO Raymond Cunningham to allow Canary Capital Partners to make 141 exchanges in the Invesco Dynamics Fund in two years even though Invesco's prospectus limited investors to 4 exchanges out of a fund a year. Colorado Attorney General Ken Salazar also filed a lawsuit today accusing Denver-based Invesco of violating state's Consumer Protection Act. ['*Invesco Hit With Civil Fraud Charge*', by Christine Dugas, at USA Today, Wednesday, December 3, 2003]

14. **December 2, 2003:** Richard S. Strong resigned as chairman of **Strong mutual fund** after the allegation of short-term trades he made in his own funds. ['*Strong Financial Corporation Announces Management Changes*', at http://www.valic.com/valic2003/aigvalic.nsf/images/news/$file/news_2003-12-02-2.pdf]

Table B 1: Relationships between International Mutual Funds and Foreign Indices

This table documents the results of regression equation (3): $R_{i,t} = \alpha + \beta I_{i,t} + \varepsilon_t$. Column one lists the ticker symbol of sample funds. Other columns represent a particular country or regional index used as an independent variable in the regression (based on the fund's geographical portfolio composition). The significance of T-statistics are represented by ***, ** and * for 1%, 5% and 10% respectively. The sample period is from January 4, 1993 through November 28, 1997.

A. Diversified Emerging Market Fund

Ticker	Brazil	Mexico	Taiwan	MSCI		Hong Kong	Korea	
				EMFE	EMLA		Kospi 200	Kospi Comp
MADCX	0.1292***	0.2076***	0.0482***	0.2871***	0.3270***	0.1890***	0.1322***	0.1387***
MNEMX	0.1422***	0.1986***	0.0968***	0.3628***	0.3463***	0.2124	0.1580***	0.1625***
MGEMX	0.1719***	0.2117	0.0865***	0.3209***	0.4060***	0.1980	0.1511***	0.1528***
TEDMX	0.1227***	0.1578***	0.0346***	0.2631***	0.2829***	0.2001***	0.1155***	0.1210***
Portfolio	0.1415***	0.1939***	0.0665***	0.3085***	0.3405***	0.1999***	0.1392***	0.1437***

B. Diversified Pacific/Asia Fund

Ticker	Australia	Hong Kong	Japan			Taiwan	Korea	
			Topix 1st Sec	Topix 2nd Sec	Nikkei 225		Kospi 200	Kospi Comp
FPBFX	0.3551***	0.2186***	0.4771***	0.5140***	0.3771***	0.0355**	0.0411**	0.0445**
GAPCX	0.3456***	0.2673***	0.4280***	0.5329***	0.3627***	0.0723	0.0989	0.1114*
JHWPX	0.5861***	0.4248	0.4017***	0.4406***	0.3128***	0.1016***	0.0993***	0.1085***
MAPCX	0.4142***	0.2425***	0.6221***	0.6346***	0.4918***	0.0561***	0.0392**	0.0487**
TGRBX	0.5698***	0.4867***	0.3312***	0.3823***	0.2514***	0.1227***	0.1283***	0.1353***
PRPBX	0.4650***	0.2954***	0.3894***	0.4869***	0.3008	0.0719***	0.0755***	0.0790***
FKPGX	0.5645***	0.4146***	0.3162***	0.3597***	0.2465***	0.0784***	0.0971	0.1057***
Portfolio	0.4715***	0.3357***	0.4237***	0.4787***	0.3347***	0.0769	0.0828***	0.0904***

C. Europe Fund

Ticker	UK FTSE100	France CAC40	Germany DAX30	Netherlands AEX	Spain	Switzerland
ANEAX	0.5428***	0.3569***	0.3900***	0.4072***	0.3575***	0.3975***
DFCSX	0.0911***	0.0700***	0.1595***	0.1003***	0.1195***	0.0965***
DFUKX	0.0001	-0.0181***	0.0531**	0.0136	0.0171	-0.0017
FIEUX	0.4487***	0.2815***	0.3268***	0.3525***	0.3215***	0.3423***
FEURX	0.5529***	0.3226***	0.3703***	0.3740***	0.3378***	0.3937***
MBEFX	0.5192***	0.3244***	0.3686***	0.3958***	0.3514***	0.3790***

Table B 1 Continued

C. Europe Fund

Ticker	UK FTSE100	France CAC40	Germany DAX30	Netherlands AEX	Spain	Switzerland
EUGBX	0.5421***	0.3189***	0.3478***	0.4102***	0.3536***	0.3742***
PEURX	0.3994***	0.2676***	0.3506***	0.3449***	0.3181***	0.3411***
PEUGX	0.4915***	0.3351***	0.3835***	0.4253***	0.3405***	0.4094***
PRESX	0.5213***	0.3295***	0.3446***	0.4081***	0.3395***	0.3870***
VEURX	0.6180***	0.3599***	0.3919***	0.4164***	0.3750***	0.4161***
Portfolio	0.4298	0.2680***	0.3170***	0.3317***	0.2938***	0.3214***

D. Pacific/Asia ex. Japan Fund

Ticker	Taiwan	Hong Kong	Korea		China			
			Kospi 200	Kospi Comp	Shanghai A	Shanghai B	Shanghai Composite	ShenZhen Composite
EVCGX	0.1624***	0.6283***	0.1468***	0.1620***	0.0194*	0.1609***	0.0219**	0.0322***
CNTTX	0.0148	0.7167***	0.1168****	0.1263**	0.0130	0.1319***	0.0150	0.0338
MBDRX	0.1210***	0.5936***	0.1115***	0.1210***	0.0134	0.1255***	0.0153	0.0226
MSAEX	0.1615***	0.5101***	0.1450***	0.1547***	0.0119	0.1262***	0.0138	0.0157
PRASX	0.1311***	0.5193***	0.1350***	0.1414***	0.0150*	0.1140***	0.0167*	0.0204**
Portfolio	0.1182***	0.5936***	0.1310***	0.1411***	0.0145	0.1317***	0.0165	0.0249**

D. Latin America Fund

Ticker	Brazil	Mexico	MSCI Latin
MBLTX	0.3214***	0.4850***	0.8087***

Note: The following Indices are used in this table: All Ordinaries Share Index (Australia); Bovespa Index (Brazil); Shanghai A index, Shanghai B index, Shanghai Composite index and Shenzhen Composite index (China); CAC40 index (France); DAX30 index (Germany); Hang Seng Index (Hong Kong); Nikkei 225 index, Topix 1st section index and Topix 2nd section index (Japan); Kospi 200 index and Kospi Composite index (Korea); IPC index (Mexico); MSCI Emerging Market Far East free index (EMFE) and MSCI Emerging Market Latin Index (EMLA); AEX General Index (Netherlands); Madrid General index (Spain); Swiss Market index (Switzerland); Taipei weighted index (Taiwan); FTSE 100 (United Kingdom). For categories of Japan, Foreign, World and international Hybrid funds, a single country or benchmark index was used for each category of funds and the results were reported in Table 13.

Table B-2: Treynor and Mazuy (TM) and Henriksson and Merton (HM) Market Timing Results for Buy-and-hold Strategy

This table reports the Treynor-Mazuy market timing model of equation (12): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)^2 + \varepsilon$ and the Henriksson and Merton market timing model of equation (13): $R_p - R_f = \alpha + \beta(R_m - R_f) + \gamma(R_m - R_f)D + \varepsilon$ for buy-and-hold strategy. Column one lists the ticker symbol of sample funds. Columns two through five present the coefficients of risk adjusted returns in percent (α), systematic risks (β), market timing (γ) and coefficient of determinations (R^2) of TM model. Columns six through nine present the coefficients of risk-adjusted returns in perce9nt (α), systematic risks (β), market timing (γ) and coefficient of determinations (R^2) of HM model. Absolute t-values are given in parentheses and significance levels are provided in 1% (***), 5% (**) and 10% (*) level. The sample is from December 1, 1997 to October 31, 2002.

A. Diversified Emerging Market Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MADCX	0.0011	0.9838	-0.3034	0.9094	0.0319	1.0196	-0.0777	0.9099
	(0.0888)	(103.1421)***	(1.2029)		(1.9172)*	(72.8807)***	(2.9132)***	
MNEMX	-0.0170	0.9837	0.1462	0.8704	0.0157	1.0085	-0.0661	0.8708
	(1.1587)	(84.9125)***	(0.4771)		(0.7755)	(59.2829)***	(2.0387)**	
MGEMX	-0.0019	1.0484	0.0625	0.8323	-0.0009	1.0475	-0.0001	0.8323
	(0.1035)	(72.8867)***	(0.1644)		(0.0355)	(49.5136)***	(0.0000)	
TEDMX	-0.0074	0.8554	-0.1572	0.7000	0.0107	0.8757	-0.0447	0.7002
	(0.3401)	(49.8183)***	(0.3461)		(0.3551)	(34.6863)***	(0.9285)	
Portfolio	-0.0063	0.9678	-0.0630	0.6880	0.0144	0.9878	-0.0471	0.9289
	(0.6059)	(117.8369)***	(0.2899)		(0.9997)	(81.9092)***	(2.0497)**	

B. Diversified Pacific/Asia Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FPBFX	0.0389	0.8160	-1.0923	0.7006	0.0738	0.7853	-0.2109	0.5886
	(1.6425)	(53.4286)***	(2.3687)**		(2.1141)**	(26.0032)***	(4.2729)***	

Table B-2 Continued

B. Diversified Pacific/Asia Fund

Ticker	TM measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
GAPCX	0.0284	0.7116	-2.6273	0.5016	0.0770	0.7974	-0.1905	0.4981
	(0.9071)	(35.23417)***	(4.3059)***		(1.7557)*	(21.3036)***	(3.1161)***	
JHWPX	0.0805	0.7281	-3.9482	0.6089	0.1664	0.8694	-0.3100	0.6014
	(3.1211)***	(43.8018)***	(7.8615)***		(4.5808)***	(28.0507)***	(6.1240)***	
MAPCX	0.0147	0.7717	-1.6306	0.6052	0.0417	0.8219	-0.1124	0.6036
	(0.5328)	(43.3629)***	(3.0328)***		(1.0801)	(24.9585)***	(2.0889)**	
TGRBX	0.0386	0.7691	-2.5356	0.6634	0.0782	0.8450	-0.1704	0.6591
	(1.5944)	(49.2855)***	(5.3782)***		(2.3014)**	(29.1334)***	(3.5976)***	
PRPBX	0.0029	0.6580	-1.8990	0.0487	-0.0460	0.6398	0.1761	0.0483
	(0.0227)	(7.9400)***	(0.7585)		(0.2569)	(4.1790)***	(0.0704)	
FKPGX	0.0110	0.6879	-2.4292	0.5906	0.0242	0.6058	-1.3290	0.5323
	(0.4363)	(42.1708)***	(4.9291)***		(0.9612)	(37.3585)***	(2.7151)*	
Portfolio	0.0307	0.7346	-2.3089	0.6147	0.0665	0.8035	-0.1547	0.6110
	(1.1950)	(44.3284)***	(4.6115)***		(1.8467)*	(26.1286)***	(3.0804)***	

C. Europe Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
ANEAX	-0.0209	1.0075	-0.3703	0.7709	0.0075	1.0418	-0.0707	0.7712
	(0.9018)	(64.2067)***	(0.5865)		(0.2420)	(37.9414)***	(1.4878)	
DFCSX	-0.0260	0.3869	-1.7871	0.1858	-0.0091	0.4360	-0.0965	0.1847
	(0.7484)	(16.4866)***	(1.8913)*		(0.1959)	(10.6032)***	(1.3552)	
DFUKX	-0.0359	0.2066	-2.0106	0.0631	-0.0146	0.2642	-0.1134	0.0617
	(1.0232)	(8.6911)***	(2.1026)		(0.3100)	(6.3417)***	(1.5722)	
FIEUX	-0.0280	0.8731	-0.3745	0.6921	-0.0251	0.8828	-0.0189	0.6920
	(1.1367)	(52.4687)***	(0.5595)		(0.7604)	(30.2916)***	(0.3738)	

Table B-2 Continued

C. Europe Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FEURX	-0.0504	1.1214	0.0886	0.7087	-0.0430	1.1269	-0.0118	0.7087
	(1.6606)*	(54.6471)***	(0.1073)		(1.0572)	(31.3587)***	(0.1904)	
MBEFX	-0.0430	0.8157	0.0901	0.4557	-0.0326	0.8241	-0.0180	0.4557
	(1.1427)	(32.0565)***	(0.0880)		(0.6453)	(18.4948)***	(0.2338)	
EUGBX	-0.0343	0.9941	0.3624	0.6872	-0.0424	0.9796	0.0291	0.6872
	(1.2135)	(51.9557)***	(0.4708)		(1.1178)	(29.2375)***	(0.5013)	
PEURX	-0.0036	0.9627	-0.7326	0.8375	0.0198	0.9988	-0.0731	0.8377
	(0.2021)	(79.3915)***	(1.5019)		(0.8224)	(47.0674)***	(1.9890)**	
PEUGX	0.0048	0.9592	-1.1742	0.8543	0.0279	1.0031	-0.0879	0.8543
	(0.2850)	(84.5797)***	(2.5738)**		(1.2404)	(50.5100)***	(2.5568)**	
PRESX	-0.0158	0.9532	-0.5123	0.8093	0.0053	0.9829	-0.0606	0.8095
	(0.8069)	(72.0915)***	(0.9632)		(0.2005)	(42.4753)***	(1.5123)	
VEURX	0.0064	0.9642	-0.5147	0.8810	0.0073	0.9745	-0.0198	0.8809
	(0.4288)	(95.2078)***	(1.2634)		(0.3655)	(54.9271)***	(0.6449)	
Portfolio	-0.0224	0.8404	-0.6305	0.9116	-0.0090	0.8650	-0.0492	0.9116
	(2.0275)**	(112.3232)***	(2.0947)**		(0.6070)	(66.0255)***	(2.1710)**	

D. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
DFJSX	-0.0350	0.5896	-0.1334	0.1884	-0.0164	0.6142	-0.0510	0.1885
	(0.8070)	(15.8399)***	(0.8958)		(0.2846)	(10.5217)***	(0.5075)	
SJPNX	-0.0256	0.7755	-0.8599	0.2812	-0.0072	0.8180	-0.0745	0.2811
	(0.5767)	(20.3739)***	(0.8260)		(0.1219)	(13.6990)***	(0.7245)	

Table B-2 Continued

D. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
PRJPX	-0.0676	0.7498	1.3753	0.2555	-0.0458	0.7405	-0.0091	0.2544
	(1.5176)	(19.6156)***	(1.3157)		(0.7744)	(12.3414)***	(0.0876)	
VPACX	-0.0414	0.5513	-0.2908	0.1787	-0.0228	0.5800	-0.0564	0.1789
	(0.9864)	(15.2907)***	(0.2950)		(0.4081)	(10.2559)***	(0.5791)	
Portfolio	-0.0424	0.6665	0.0228	0.2726	-0.0230	0.6882	-0.0477	0.2728
	(1.1018)	(20.1805)***	(0.0253)		(0.4509)	(13.2846)***	(0.5352)	

E. Pacific/Asia ex. Japan Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
EVCGX	-0.0028	1.0255	-0.6373	0.6695	0.0100	1.0540	-0.0505	0.6692
	(0.0962)	(48.8953)***	(1.2932)		(0.2513)	(30.6098)***	(0.8525)	
CNTTX	-0.0165	1.1269	1.5022	0.7504	-0.0328	1.0733	0.0900	0.7486
	(0.6346)	(60.4032)***	(3.4268)***		(0.9209)	(34.9306)***	(1.7023)*	
MBDRX	-0.0253	0.9711	-0.3869	0.5986	0.0166	1.0213	-0.1014	0.5992
	(0.7857)	(42.0305)***	(0.7127)		(0.3771)	(26.9562)***	(1.5555)	
MSAEX	0.0270	0.9109	-2.0814	0.6163	0.0829	1.0173	-0.1938	0.6142
	(0.9096)	(42.8121)***	(4.1635)***		(2.0418)	(29.0545)***	(3.2171)***	
PRASX	0.0406	0.8960	-1.6956	0.6107	0.0832	0.9799	-0.1519	0.6090
	(1.3792)	(42.4903)***	(3.4221)***		(2.0697)**	(28.2568)***	(2.5456)**	
Portfolio	0.0046	0.9861	-0.6598	0.7257	0.0320	1.0292	-0.0815	0.7258
	(0.1861)	(55.8580)***	(1.5907)		(0.9521)	(35.5262)***	(1.6356)	

Table B-2 Continued

F. Foreign Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
AEIGX	-0.0375	0.9811	-1.5331	0.4978	-0.0203	1.0247	-0.0865	0.4977
	(1.0447)	(34.6483)***	(1.1158)		(0.4229)	(20.9332)***	(1.0067)	
AIIEX	0.0251	0.9261	-2.5193	0.7387	0.0750	1.0216	-0.1934	0.7398
	(1.2460)	(58.3085)***	(3.2690)		(2.7911)	(37.2918)***	(4.0197)***	
AAIEX	0.0091	0.8241	-1.9259	0.7698	0.0315	0.8797	-0.1105	0.7696
	(0.5546)	(63.5024)***	(3.0582)***		(1.4330)	(39.1914)***	(2.8026)***	
TWIEX	0.0115	0.9467	-1.8978	0.6051	0.0487	1.0183	-0.1449	0.6056
	(0.4115)	(43.0226)***	(1.7773)*		(1.3076)	(26.7877)***	(2.1710)**	
AEPGX	0.0093	0.7876	-1.0470	0.6578	0.0291	0.8263	-0.0783	0.6581
	(0.4490)	(48.2853)***	(1.3228)		(1.0538)	(29.3148)***	(1.5809)	
INIFX	-0.0448	1.0086	0.2455	0.6376	-0.0307	1.0203	-0.0262	0.6376
	(1.6225)	(46.3623)***	(0.2325)		(0.8323)	(27.1329)***	(0.3974)	
BAINX	-0.0154	0.8946	-0.7755	0.8289	0.0103	0.9354	-0.0840	0.8295
	(1.0381)	(76.7496)***	(1.3709)		(0.5212)	(46.4952)***	(2.3773)**	
SNIVX	0.0074	0.7786	-2.0447	0.6483	0.0166	0.8215	-0.0826	0.6472
	(0.3537)	(47.0934)***	(2.5487)**		(0.5925)	(28.7005)***	(1.6438)	
PNINX	-0.0275	0.9355	-0.4748	0.6904	-0.0063	0.9666	-0.0646	0.6907
	(1.2084)	(52.1080)***	(0.5451)		(0.2064)	(31.1617)***	(1.1865)	
CWVGX	-0.0142	0.8883	-0.7023	0.7353	0.0109	0.9274	-0.0807	0.7357
	(0.7343)	(58.1172)***	(0.9468)		(0.4226)	(35.1318)***	(1.7415)*	
NEFIX	0.0126	0.8874	-2.0439	0.6962	0.0483	0.9597	-0.1457	0.6966
	(0.5875)	(52.5645)***	(2.4949)**		(1.6901)	(32.9096)***	(2.8448)***	
CMISX	0.0027	0.8563	-1.9137	0.6311	0.0298	0.9170	-0.1214	0.6312
	(0.1123)	(45.4316)***	(2.0924)**		(0.9341)	(28.1459)***	(2.1220)**	
TIEUX	-0.0022	0.9387	-1.4475	0.7489	0.0204	0.9869	-0.0968	0.7491
	(0.1117)	(60.1111)***	(1.9102)		(0.7715)	(36.5679)***	(2.0423)**	
RBIEX	-0.0491	0.9364	-1.5501	0.4103	-0.0156	0.9983	-0.1257	0.4106
	(1.2001)	(20.0214)***	(0.9900)		(0.2856)	(17.9039)***	(1.2842)	
DRGLX	-0.0334	0.9533	-2.6105	0.4261	0.0222	1.0566	-0.2098	0.4269
	(0.8256)	(29.8782)***	(1.6862)*		(0.4106)	(19.1726)***	(2.1676)**	

Table B-2 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
NIEAX	-0.0471	0.9527	0.2531	0.5406	-0.0535	0.9416	0.0226	0.5406
	(1.4777)	(37.9155)***	(0.2076)		(1.2554)	(21.6797)***	(0.2964)	
ENIGX	-0.0132	0.9856	-1.0842	0.7896	0.0180	1.0375	-0.1066	0.7902
	(0.7151)	(67.5061)***	(1.5304)		(0.7300)	(41.1698)***	(2.4085)**	
UMINX	0.0105	0.8762	-2.6551	0.7277	0.0422	0.9538	-0.1543	0.7273
	(0.5351)	(56.6271)***	(3.5362)***		(1.6096)	(35.6354)***	(3.2831)***	
FTITX	0.0334	0.9132	-4.5080	0.6380	0.0888	1.0433	-0.2583	0.6370
	(1.4342)	(45.6623)***	(4.6451)***		(2.6142)***	(30.1350)***	(4.2493)***	
FAERX	-0.0227	0.9333	0.3703	0.7188	-0.0168	0.9339	-0.0030	0.7188
	(1.0705)	(55.9014)***	(0.4571)		(0.5932)	(32.3575)***	(0.0594)	
FICDX	0.0348	0.5430	-2.8218	0.2401	0.0727	0.6302	-0.1740	0.2401
	(0.9753)	(19.3155)***	(2.0684)**		(1.5261)	(12.9661)***	(2.0387)**	
FDIVX	0.0328	0.7372	-1.7437	0.7455	0.0570	0.7918	-0.1092	0.7455
	(2.0845)**	(59.4224)***	(2.8966)***		(2.7083)***	(36.9226)***	(2.8988)***	
FIGRX	0.0122	0.8212	-1.4750	0.6625	0.0343	0.8692	-0.0962	0.6625
	(0.5721)	(48.7214)***	(1.8034)*		(1.1997)	(29.8358)***	(1.8803)*	
FOSFX	-0.0221	0.9312	0.3080	0.6942	-0.0143	0.9349	-0.0095	0.6942
	(0.9870)	(52.6793)***	(0.3591)***		(0.4767)	(30.5976)***	(0.1777)	
KNINX	-0.0120	0.9654	0.7328	0.8945	-0.0002	0.9902	-0.0499	0.8945
	(0.9974)	(101.5448)***	(1.5885)		(0.0121)	(60.2663)***	(1.7299)*	
GAMNX	0.0113	0.7361	-5.2471	0.5453	0.0624	0.8766	-0.2774	0.5421
	(0.4498)	(37.2944)***	(5.4786)***		(1.8590)*	(25.6050)***	(4.6166)***	
GSIFX	-0.0436	0.9572	1.3431	0.7233	-0.0304	0.9505	0.0083	0.7227
	(2.0345)**	(56.6341)***	(1.6376)		(1.0587)	(32.4964)***	(0.1621)	
HAINX	0.0092	0.8520	-1.6557	0.6604	0.0256	0.8966	-0.0881	0.6602
	(0.4129)	(48.4820)***	(1.9415)*		(0.8585)	(29.5029)***	(1.6509)*	
IVINX	-0.0382	0.9124	-1.3345	0.5200	-0.0226	0.9509	-0.0766	0.5199
	(1.1939)	(36.2301)***	(1.0921)		(0.5300)	(21.8428)***	(1.0014)	
ACINX	0.0521	0.6570	-5.3770	0.4748	0.1261	0.8249	-0.3357	0.4747
	(2.0121)**	(32.2061)***	(5.4322)***		(3.6476)***	(23.3936)***	(5.4217)***	

Table B-2 Continued

F. Foreign Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
CONAX	-0.0330	0.8271	-0.7513	0.5935	-0.0162	0.8578	-0.0624	0.5935
	(1.3243)	(42.1209)***	(0.7885)		(0.4854)	(25.2755)***	(1.0465)	
MSACX	-0.0226	0.8340	-0.2654	0.6837	-0.0309	0.8291	0.0118	0.6837
	(1.0953)	(51.3241)***	(0.3365)		(1.1203)	(29.5156)***	(0.2388)	
MSIQX	-0.0263	0.7446	1.1039	0.5030	-0.0587	0.6911	0.1097	0.5037
	(0.9798)	(35.2428)***	(1.0768)		(1.6387)	(18.9368)***	(1.7126)*	
MUIYX	-0.0245	0.8856	0.1190	0.6414	-0.0287	0.8791	0.0135	0.6414
	(1.0191)	(46.7390)***	(0.1295)		(0.8931)	(26.8398)***	(0.2342)	
OAKIX	0.0672	0.6205	-5.1535	0.4517	0.1185	0.7597	-0.2751	0.4484
	(2.6216)***	(30.7253)***	(5.2593)***		(3.4519)***	(21.6976)***	(4.4743)***	
PHITX	-0.0207	0.9584	-1.7308	0.6308	0.0178	1.0288	-0.1430	0.6314
	(0.7750)	(45.4571)***	(1.6917)*		(0.4986)	(28.2518)***	(2.2368)**	
PFIFX	0.0179	0.7038	-3.1945	0.4539	0.0498	0.7903	-0.1708	0.4529
	(0.6288)	(31.4091)***	(2.9379)***		(1.3101)	(20.3824)***	(2.5084)***	
PRWLX	-0.0275	0.8425	-0.7457	0.6846	0.0095	0.8954	-0.1101	0.6857
	(1.3212)	(51.3687)***	(0.9369)		(0.3421)	(31.6341)***	(2.2152)**	
SCIEX	-0.0838	0.9064	0.0449	0.2468	-0.1189	0.8668	0.0847	0.2470
	(1.4566)	(20.0002)***	(0.0204)		(1.5475)	(11.0668)***	(0.6161)	
SCINX	-0.0034	0.9344	-1.7370	0.6959	0.0197	0.9878	-0.1066	0.6958
	(0.1509)	(52.5942)***	(2.0148)**		(0.6549)	(32.16222)***	(1.9760)**	
SEITX	0.0034	0.9878	-0.4739	0.9144	0.0143	1.0075	-0.0400	0.9145
	(0.3137)	(114.0908)***	(1.1280)		(0.9768)	(67.3419)***	(1.5207)	
SNGRX	-0.0250	1.0057	-0.7946	0.7180	0.0021	1.0484	-0.0880	0.7184
	(1.0915)	(55.6444)***	(0.9060)		(0.0671)	(33.5812)***	(1.6052)	
SBIEX	-0.0258	0.9113	-1.3541	0.5528	-0.0057	0.9552	-0.0880	0.5528
	(0.8637)	(38.7009)***	(1.1851)		(0.1435)	(23.4679)***	(1.2307)	
STISX	0.0437	1.0190	-5.0110	0.6678	0.1353	1.2004	-0.3664	0.6702
	(1.6497)*	(48.7665)***	(4.9422)***		(3.8327)***	(33.3565)***	(5.7976)***	

Table B-2 Continued

Ticker	TM Measures α	β	γ	R^2	HM Measures α	β	γ	R^2
PRFEX	-0.0145	1.0005	-0.2148	0.8208	0.0107	1.0319	-0.0664	0.8212
	(0.8544)	(74.7356)***	(0.3306)		(0.4741)	(44.6385)***	(1.6366)	
PRIDX	0.0655	0.6344	-4.9339	0.3640	0.1366	0.7921	-0.3157	0.3644
	(2.0886)	(25.6785)***	(4.1156)***		(3.2639)***	(18.5532)***	(4.2111)***	
PRITX	-0.0153	1.0010	-0.3268	0.8198	0.0109	1.0351	-0.0718	0.8203
	(0.8950)	(74.4704)***	(0.5011)		(0.4770)	(44.6028)***	(1.7620)*	
TEMFX	0.0156	0.6453	-2.1345	0.5994	0.0321	0.6977	-0.1027	0.5983
	(0.8039)	(42.3348)***	(2.8857)***		(1.2393)	(26.4436)***	(2.2155)**	
FINEX	0.0363	0.4598	-4.1246	0.3993	0.0659	0.5585	-0.1929	0.3938
	(1.7101)*	(27.5003)***	(5.0839)***		(2.3238)**	(19.2359)***	(3.7825)***	
USIFX	0.0027	0.8282	-1.0839	0.7986	0.0168	0.8612	-0.0657	0.7986
	(0.1791)	(69.3514)***	(1.8703)		(0.8292)	(41.7107)***	(1.8107)*	
VTRIX	-0.0141	0.8333	-0.1187	0.6543	-0.0149	0.8343	-0.0017	0.6542
	(0.6406)	(48.0425)***	(0.1410)		(0.5055)	(27.8278)***	(0.0325)	
VWIGX	0.0007	0.9536	-0.8871	0.7911	0.0202	0.9894	-0.0727	0.7913
	(0.0398)	(67.8275)***	(1.3004)		(0.8492)	(40.7315)***	(1.7055)*	
VNEPX	-0.0205	0.9277	-0.4561	0.6427	-0.0114	0.9451	-0.0352	0.6428
	(0.8145)	(46.8080)***	(0.4742)		(0.3389)	(27.5869)***	(0.5848)	
UNCGX	-0.0335	0.8467	-1.3325	0.4006	0.0110	0.9172	-0.1453	0.4015
	(0.8858)	(28.4519)***	(0.9228)		(0.2188)	(17.8438)***	(1.6099)	
SRIGX	-0.0031	0.9235	-1.2215	0.8100	0.0161	0.9644	-0.0820	0.8101
	(0.1927)	(71.8962)***	(1.9596)*		(0.7387)	(43.4405)***	(2.1028)**	
WIBCX	-0.0098	0.9595	-1.1377	0.6803	0.0026	0.9914	-0.0632	0.6802
	(0.4072)	(50.8153)***	(1.2416)		(0.0813)	(30.3694)***	(1.1020)	
Portfolio	-0.0053	0.8663	-1.5449	0.9184	0.0190	0.9179	-0.1037	0.9186
	(0.5621)	(116.6862)***	(4.2885)***		(1.5119)	(71.6054)***	(4.6049)***	

Table B-2 Continued

G. Latin Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MBLTX	0.0238	0.9109	-0.6113	0.8913	0.0540	0.9491	-0.0791	0.8910
	(1.3710)	(100.3928)***	(3.5787)		(2.3337)**	(62.6565)***	(3.0871)***	

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
GSCAX	-0.0350	0.9959	-1.2279	0.5568	0.0060	1.0635	-0.1380	0.5577
	(1.1581)	(39.2474)***	(1.0096)		(0.1477)	(23.8736)***	(1.8060)*	
ANWPX	0.0040	0.8916	-0.5359	0.7053	0.0093	0.9060	-0.0288	0.7053
	(0.2020)	(54.2210)***	(0.6799)		(0.3551)	(31.3538)***	(0.5801)	
SMCWX	0.0128	0.9046	-3.6853	0.5258	0.0763	1.0358	-0.2645	0.5269
	(0.4368)	(36.6277)***	(3.1131)***		(1.9359)*	(23.8953)***	(3.5574)***	
AHERX	-0.0544	0.9865	-11.5047	0.0360	0.1169	1.3635	-0.7579	0.0362
	(0.3014)	(6.5051)***	(1.5827)		(0.4824)	(5.1171)***	(1.6582)*	
IGLGX	-0.0234	1.0623	-0.7612	0.6730	0.0028	1.1052	-0.0876	0.6733
	(0.9308)	(50.2670)***	(0.7515)		(0.0821)	(29.7770)***	(1.3751)	
FWWGX	-0.0396	1.0204	-2.7466	0.4647	0.0018	1.1110	-0.1822	0.4648
	(1.0602)	(32.5249)***	(1.8264)*		(0.0361)	(20.1555)***	(1.9265)*	
EGLBX	-0.0070	0.8737	-1.8977	0.5076	0.0161	0.9295	-0.1119	0.5075
	(0.2378)	(35.4874)***	(1.6081)		(0.4082)	(21.4839)***	(1.5070)	
FWWFX	-0.0067	0.9211	-1.0004	0.6800	0.0036	0.9484	-0.0544	0.6799
	(0.3143)	(51.0469)***	(1.1566)		(0.1241)	(29.9055)***	(0.9998)	
FIISX	-0.0190	0.9512	-0.5206	0.7512	-0.0182	0.9597	-0.0166	0.7511
	(1.0204)	(60.5959)***	(0.6953)		(0.7306)	(34.9616)***	(0.3519)	
GAGLX	-0.0037	0.8534	-2.0221	0.6531	0.0177	0.9091	-0.1112	0.6527
	(0.1733)	(47.9356)***	(2.3695)**		(0.6220)	(29.0445)***	(2.0713)**	

Table B-2 Continued

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
FGLOX	-0.0263	1.0234	-2.0128	0.8049	-0.0143	1.0676	-0.0873	0.8042
	(1.5348)	(71.0247)***	(2.9143)***		(0.6196)	(42.0905)***	(2.0073)**	
MCGLX	-0.0365	0.9625	0.3269	0.7552	-0.0478	0.9439	0.0378	0.7553
	(1.9628)**	(61.6287)***	(0.4367)		(1.9155)*	(34.4030)***	(0.8041)	
JAWWX	0.0210	1.0886	-1.9024	0.7231	0.0551	1.1578	-0.1396	0.7234
	(0.9185)	(56.5215)***	(2.0608)**		(1.7892)*	(34.2316)***	(2.4068)**	
LAGEX	-0.0197	0.8842	-0.6929	0.6373	-0.0142	0.9011	-0.0335	0.6372
	(0.8706)	(46.4434)***	(0.7593)		(0.4672)	(26.9323)***	(0.5839)	
MWEBX	-0.0120	0.7816	-0.0436	0.7186	-0.0107	0.7838	-0.0046	0.7186
	(0.7248)	(56.0411)***	(0.0652)		(0.4795)	(31.9844)***	(0.1095)	
OPPAX	0.0220	0.9524	-2.7495	0.5400	0.0469	1.0231	-0.1408	0.5393
	(0.7340)	(37.8057)***	(2.2771)**		(1.1645)	(23.0962)***	(1.8227)*	
OPGIX	0.0288	0.9586	-2.5493	0.5061	0.0686	1.0444	-0.1726	0.5064
	(0.8931)	(35.3423)***	(1.9608)*		(1.5831)	(21.9174)***	(2.1114)*	
QVGLX	-0.0185	0.7810	0.8031	0.4993	-0.0137	0.7986	-0.0349	0.4992
	(0.6958)	(34.9763)***	(0.7504)		(0.3829)	(20.3527)***	(0.5186)	
NWWOX	-0.0246	0.9281	-1.3216	0.5309	-0.0212	0.9518	-0.0462	0.5305
	(0.8304)	(37.2319)***	(1.1061)		(0.5310)	(21.7216)***	(0.6165)	
PRGLX	-0.0232	1.0915	-0.5415	0.6235	-0.0039	1.1228	-0.0640	0.6237
	(0.8051)	(45.1057)***	(0.4668)		(0.1002)	(26.4117)***	(0.8776)	
PEQUX	-0.0200	1.2171	-1.6247	0.6240	-0.0013	1.2638	-0.0933	0.6239
	(0.6229)	(45.0967)***	(1.2559)		(0.0292)	(26.6446)***	(1.1467)	
SGSCX	0.0436	0.9406	-4.0953	0.5782	0.0943	1.0624	-0.2440	0.5777
	(1.5853)	(40.6903)***	(3.6959)***		(2.5514)**	(26.1397)***	(3.4992)***	
SCOBX	-0.0331	0.6894	-1.3403	0.4161	-0.0138	0.7326	-0.0867	0.4161
	(1.1918)	(29.5177)***	(1.1972)		(0.3693)	(17.8503)***	(1.2318)	
TECAX	0.0085	0.7724	-1.8207	0.6728	0.0198	0.8130	-0.0801	0.6720
	(0.4653)	(50.0971)***	(2.4634)**		(0.8042)	(29.9687)***	(1.7218)*	

Table B-2 Continued

H. World Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
TEGOX	-0.0231	0.7470	-0.9395	0.5779	-0.0086	0.7784	-0.0631	0.5780
	(1.0626)	(40.9696)***	(1.0750)		(0.2942)	(24.2959)***	(1.1485)	
TEMGX	0.0101	0.4954	-4.4178	0.4194	0.0579	0.6184	-0.2458	0.4164
	(0.4968)	(29.0152)***	(5.3985)***		(2.1162)	(20.5600)***	(4.7630)***	
TEPLX	-0.0071	0.6322	-0.8835	0.4799	-0.0037	0.6494	-0.0337	0.4796
	(0.3192)	(33.6200)***	(0.9802)		(0.1238)	(19.6477)***	(0.5938)	
TEMWX	-0.0056	0.6848	-1.2549	0.5617	0.0018	0.7122	-0.0541	0.5612
	(0.2698)	(39.5906)***	(1.5136)		(0.0654)	(23.4212)***	(1.0377)	
USAWX	-0.0104	0.9598	-0.3096	0.8536	-0.0032	0.9731	-0.0270	0.8537
	(0.7719)	(84.6657)***	(0.5698)		(0.1766)	(48.8550)***	(0.7888)	
Portfolio	-0.0103	0.8983	-1.8924	0.8674	0.0145	0.9562	-0.1161	0.8673
	(0.8591)	(89.3946)***	(3.9288)***		(0.9024)	(54.1349)***	(3.8311)***	

I. International Hybrid Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
CAIBX	-0.0098	0.3938	0.7261	0.4932	-0.0108	0.4033	-0.0179	0.4926
	(0.7189)	(34.5038)***	(1.3272)		(0.5928)	(20.0941)***	(0.5204)	
BPGLX	-0.0362	0.4344	0.7076	0.3675	-0.0445	0.4139	0.0409	0.3674
	(1.8754)*	(26.7693)***	(0.9097)		(1.7144)*	(14.5165)***	(0.8360)	
SGENX	-0.0002	0.3261	-1.7693	0.1573	0.0113	0.3661	-0.0791	0.1563
	(0.0079)	(14.9637)***	(1.6939)*		(0.3237)	(9.5549)***	(1.2037)	
FMAFX	-0.0337	0.6566	0.2891	0.6738	-0.0388	0.6463	0.0209	0.6739
	(2.1784)**	(50.4380)***	(0.4632)		(1.8644)*	(28.2506)***	(0.5336)	
MALOX	-0.0043	0.5317	-2.2479	0.3859	0.0377	0.6157	-0.1697	0.3872
	(0.1891)	(27.5601)***	(2.4310)**		(1.2240)	(18.1817)***	(2.9213)***	

Table B-2 Continued

I. International Hybrid Fund

Ticker	TM Measures				HM Measures			
	α	β	γ	R^2	α	β	γ	R^2
MFWTX	-0.0228	0.4288	0.1562	0.0618	-0.0250	0.4239	0.0100	0.0618
	(0.4025)	(9.0074)***	(0.0684)		(0.3285)	(5.0666)***	(0.0695)	
Portfolio	-0.0178	0.4619	-0.5984	0.6024	-0.0117	0.4782	-0.0325	0.6023
	(1.3991)	(43.0929)***	(1.1648)		(0.6818)	(25.3843)***	(1.0053)	

VITA

M. Imtiaz Mazumder was born at Comilla, Bangladesh. Mr. Mazumder received his primary, high school and college education from Comilla Modern School, Comilla Zilla School, and Comilla Victoria College respectively. He stood first in the merit list of Humanities Group in Secondary School Certificate (SSC) and Higher Secondary Certificate (HSC) Examinations in 1986 and 1988 respectively from Comilla Board, Bangladesh. He received Bachelor of Social Science (BSS) with honors in Economics (first class) and Masters of Social Science (MSS) in Economics (first class) from University of Dhaka in 1993 and 1995 respectively. After his graduation from University of Dhaka, he worked as a probationary officer at Bank of Small Industries and Commerce, Bangladesh Ltd. and as a Young Economist at the Research and Evaluation Division of Bangladesh Rural Advancement Committee (BRAC). Then he worked as a Lecturer of Economics at Shahjalal University of Science and Technology, Sylhet, Bangladesh for two years. He was accepted into the Ph.D. program of University of New Orleans in Fall 1998. After the completion of his Ph.D. coursework, he taught at the Division of Business of Dillard University, New Orleans for two years. He received a Doctorate in Financial Economics in Summer 2004. He is married to Nazneen Ahmad, currently a Ph.D. Candidate at the Department of Economics and Finance of University of New Orleans.