Comparing Active and Passive Fund Management in Emerging Markets

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Abstract

Since 2008, emerging markets have represented over two thirds of global GDP growth, presenting diversification, as well as excess return opportunities for US equity investors. Much debate surrounding equity markets has focused on the performance of active fund management versus passive fund management in the face of near market efficiency. Shifting the focus of this question to increasingly important emerging markets, this paper seeks to empirically determine whether, given lower market efficiency and thus greater opportunities for arbitrage, actively managed funds investing in emerging markets systematically outperform their passive counterparts. Using data from TD Ameritrade Research and the Standard and Poors NetAdvantage database on all existing US mutual funds and ETFs dedicated to emerging markets, the regression analysis (controlling for fundamental fund characteristics) finds that, before tax, actively managed mutual funds yielded superior average 3 year net-of-fees returns of approximately 2.87% over passively managed ETFs: a striking result. The paper also seeks to investigate the tax advantages of ETFs and to decompose what areas of stock selection explain the superior mutual fund returns. The results indicate that post tax returns of actively managed funds still outperform ETFs by 2.75%, and that the book to market effect primarily explains this advantage.

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Introduction

With currently stagnant growth in the developed world and relatively high unemployment in the US, emerging markets have become the engine of global economic growth following the financial crisis of 2008. The trend of emerging market growth has been an increasing force in global economics and politics[2]. US investment in emerging markets between 1985 and 1993 grew from $138 million to $45 billion[3], and has continued growing. As such, emerging markets have provided strong opportunities for excess returns[4] and portfolio diversification[5], exhibiting low correlations[6] with developed markets and thus offering diversification possibilities for US investors, reducing portfolio risk[7].

With these opportunities, many US investors will look to maximize the potential of emerging markets through equity investment in either actively managed mutual funds or passively managed ETFs[8] and index funds. The premise of active management is that investment in management talent and analytical resources translates into higher returns as skilled managers, together with powerful analytics and superior information about securities, can identify profitable opportunities in the market. This primarily occurs when, unbeknownst to the average investor, similar securities are differentially priced, and so informed investment managers can profit from advantageous positions in the market by

[2] According to the IMF, in the next 2-3 years, approximately 70% of Global GDP growth will be represented by emerging markets, with China and India accounting for 40% of that growth.

[3] See Kawakatsu Morey (1999)

[4] Excess return (alpha) is the return on investment above the risk free rate (T-bill rate).

[5] Aiello et al (1999) find evidence that modest emerging markets investment may reduce overall portfolio risk, and that diversified international funds investing in emerging markets have superior performance to the US equity market.

[6] See Errunza (1983).

[7] See Markowitz (1959): modern portfolio theory suggests that diversification between uncorrelated securities reduces total portfolio risk, leading to better risk adjusted returns.

[8] ETFs (exchange traded funds) are groups of securities that are designed to mirror certain indexes, or more specifically, certain sectors of an index, such as small cap S&P 500 stocks etc., whereas Index funds are groups of securities that strictly track known stock market indexes such as the S&P 500 or the Dow Jones 30 Industrial Average. Index funds and ETFs vary in their technical structure, but both are passively managed.

buying the underpriced security and selling it at the price of the overpriced security. This process is known as arbitrage, and serves to equilibrate prices in equity markets as this process continuously takes place. The efficient market hypothesis, however, states that all information provided by past prices is already embodied in present prices, making it difficult (impossible in the case of perfect market efficiency) to adopt such positions, which take advantage of mispricing in order to earn abnormal returns: essentially the objective of active management. In practice, mutual fund managers can outperform the market[9] through superior security selection and timing, which indicates that markets are not completely efficient. This is powerfully illustrated by the fact that by 2000, 20 billion dollars a year was spent on active management (Wermers, 2000), reflecting investor belief in the potential benefits of active management (and perhaps the recognition that markets are not completely efficient).

Despite this belief, many studies such as that by Malkiel (2003) find, however, that up to 71% of mutual funds underperform the S&P 500, net of fees[10]. This has led to the view that with the highly efficient nature of the US equity market, with its sophisticated information technologies, that investment in active management, entailing high fees and analytical costs (thus higher fees offsetting gross returns), does not appropriately compensate investors to the point where the net returns are consistently superior to that of the market benchmark. This paradigm has given rise to the burgeoning industry of passively managed funds. As opposed to actively managed funds, where managers utilize high stock turnover (frequently buying and selling stocks) in the pursuit of arbitrage,

[9] The US equity "Market" level or "benchmark" will, as in other financial literature, be defined as the value of the S&P 500 index: a value weighted index representing 90% of the US equity market capitalization.
[10] Interestingly, these results almost exactly apply to developed, European equity markets, where, according to Malkiel (2003), 69% of active funds are outperformed by market benchmark: the MSCI Europe Index.

passively managed index funds and ETFs simply mirror market indexes and specific sector indexes (such as the S&P 500 small cap) where stock turnover and fees are low, believing that market efficiency and lower fees will lead to comparatively superior net of fees returns. An important additional advantage of passive funds is their tax efficiency, especially the organizational advantages of ETFs. Mutual funds are subject to tax laws which pass realized capital gains from trading onto their shareholders (Poterba et al (2002)). The high trading volume of mutual funds means that this tax burden is much more significant for their shareholders than for those of passive funds. However, even within the category of passively managed funds, ETFs and index funds provide slightly different investment options. ETFs are essentially passively managed funds that track indices like index funds, but have different organizational structures, which lead to the aforementioned tax efficiencies. Poterba et al (2002) find that when adjusted for tax, returns between equity mutual funds and passive ETFs yielded comparable pretax returns, despite having lower fees and tax advantages, resulting in higher net returns. Also, unlike index funds, Svetina (2010) finds that 83% of all ETFs mirror indices for which there are no index funds, often tracking esoteric non-mainstream indexes, providing a greater array of diversification options for those investors seeking passively managed equity investments. This is represented by the fact that there are currently only two main index funds tracking emerging market equities: the Vanguard Emerging Markets Index Fund and the MSCI Emerging Markets Index fund; whereas there are approximately 46 emerging market ETFs available to American investors.

Because of its potential advantages, the passive investment market in the US has grown substantially over the last 20 years, and according Standard and Poors, by 2010, the

value of the total index fund market had risen to well over 2 trillion dollars[11]. According to Poterba et al (2002), the share of fund assets held in ETFs doubled in 2000 alone, and rose fifty percent in 2001, at which point $79 billion was held in ETFs. As Poterba et al (2002) also discuss, they represent a vastly growing financial innovation that has been labeled as the future of the equity fund industry, and have come to represent a new form of competition for index funds. ETFs are currently not permitted in 401(k) retirement plans, therefor becoming of particular interesting in financial research because of their potential to replace index funds, and perhaps form an integral part of public and personal finance to average citizens.

As these various equity funds compete, much research has been done on the performance of these funds in US equity markets. As passively managed funds continue to perform ever more competitively in US equity markets, the theory of near market efficiency ostensibly diminishing the difference between active and passive management fund returns has widely been propagated through various empirical studies, but still remains controversial.

One issue has been the methodology in ranking market efficiency, especially with regards to the comparative efficiency of different countries. Cajueiro and Tabak (2004) conduct an empirical approach[12] to ranking the efficiency of emerging markets, and find that emerging markets achieve 20-25% worse rankings in efficiency compared to US and Japanese equity markets.

[11] According to the Standard & Poors data (table 1), US markets currently have approximately 155.88 Billion dollars invested in emerging market ETFs, with 122.6 Billion dollars invested in emerging market mutual funds.
[12] Using Hurst exponents, as well as R/S and modified R/S statistics, Cajueiro and Tabak (2004), assess emerging market efficiency relative to the US and Japan.

Given this differential, and the debate over the interaction between market efficiency and active vs. passive net returns, this paper looks to test whether, within the framework of less efficient emerging markets, active management is positively correlated with superior returns. Emerging markets provide a unique opportunity to explore this interaction, which, as modeled by Stiglitz and Grossman (1980), suggests that the more inefficient markets are, the greater the difference in returns between those who expend resources to gain advantageous information and those who don't (the informed vs. the uninformed). This paper attempts to empirically test the theoretical outcomes of this model, contributing to the current literature on passive vs. active management because, as opposed to the investigation taking place in a highly efficient market like the US, this approach uses markets known to be less efficient, adding a converse perspective to the debate. The paper specifically looks at mutual funds as representative of active management, and ETFs as representative of passive management. ETFs provide a diverse, more comprehensive sample of passively managed funds, as opposed to using the only two available emerging market index funds, providing more robust statistical analysis when compared to the extremely diverse universe of emerging market mutual funds (180+ funds). ETFs also provide the opportunity to evaluate and integrate the performance of a relatively new financial instrument, with specific interest on post-tax performance: an aspect of ETFs widely marketed by fund wholesalers. The paper will then investigate what areas of stock selection and fund characteristics seem to explain superior active fund performance in emerging markets.

The paper proceeds by discussing relevant prior literature and the theoretical models that underpin the discussion of market efficiency and equity returns. Then, the

empirical approach is presented, followed by a discussion of relevant results and finally a conclusion. All regression tables and extraneous graphs and statistics are included in the data appendix.

Prior Literature: Models and Findings

Stiglitz-Grossman Model:

The seminal model providing the framework for this paper's analysis is that of Stiglitz and Grossman (1980). In this groundbreaking paper, Stiglitz and Grossman argued that the equity markets exist in an "equilibrium of disequilibrium" of sorts. They argued that the market reaches a state of utility equilibrium between informed investors and uninformed investors (asymmetric information accounting for their idea of "disequilibrium"), and the implications of their model regarding the relationship between returns, asymmetric information and market efficiency provide the basis for this paper's hypothesis.

The authors constructed a model in which informed investors must pay a cost to attain information that uniformed investors don't have. They are then compensated for this cost by being able to adopt superior positions in equity markets and earn above-the-market returns or "alpha". The market is in equilibrium because the utility functions of investors- a function of returns and cost- result in equal utility for the informed and uninformed. Stiglitz, a Nobel Prize winner for his contributions to asymmetric information, mathematically proved that this equilibrium exists because markets are not perfectly efficient (prices don't convey all the information there is about a security, otherwise no one would pay the cost to obtain information) and that pricing information is made imperfect

by statistical "noise". The critical idea here is that the more noise in the market, the more inefficient the market and, importantly, the greater the cost of attaining advantageous information; then, the greater this cost is, the greater the difference in returns between informed and uninformed investors.

Taking informed investors to be represented by mutual funds, and uninformed investors to be represented by index funds and ETFs, the model predicts that in less efficient markets, like emerging markets, that there should be greater compensation for active management. This paper seeks to test whether there is evidence of this disparity in emerging markets, and interestingly, to see if this holds net of fees, indicating that management fees are ostensibly less than the gains resulting from attaining advantageous information. The logic of the Stiglitz-Grossman argument can be mathematically expressed as follows:

1. The utility from investing in actively managed funds is:

$$U_{At}(R_{Pt}, R_{At}, c_{Pt}) = R_{Pt} + \delta(R_{At} - R_{Pt}) - c_{At} \qquad (1)$$

where the aggregate average utility U of an actively managed fund (A) investor in period t is a function of:

- R_{Pt} = the aggregate return of a passively managed fund P in period t. This can also be thought of as the market return as it is often referred to in financial literature.
- R_{At} = the aggregate return of an actively managed fund A in period t.
- Thus R_{At} - R_{Pt} represents the return of an aggregate actively managed fund over an aggregate passively managed fund in the same market.
- δ = the measure of market inefficiency and $\delta > 1$ if markets are not perfectly efficient (and $\delta = 1$ if markets are perfectly efficient). The more inefficient the market, the greater the value of δ. This coefficient merely expresses the Stiglitz-Grossman idea that the greater the market inefficiency, the greater the returns of active management over passive management. Note that δ is not present in the utility function of passively managed fund investors given by (2) below.
- c_{At} = the cost of active management in period t.

2. Similarly, the utility *U* of an aggregate passively managed fund (*P*) investor in period *t* can be expressed as:

$$U_{Pt}(R_{Pt}, c_{Pt}) = R_{Pt} - c_{Pt} \qquad (2)$$

3. According to the Stiglitz-Grossman model:

$$U_{At}(R_{Pt}, R_{At}, c_{At}) = U_{Pt}(R_{Pt}, c_{Pt}) \qquad (3)$$

and thus if (3) is true and markets are not efficient[13] and

$$\delta > 1 \text{ and } R_{At} - R_{Pt} > 0,$$

then

$$c_{At} > c_{Pt}$$

This simplified model above illustrates the basic logic of the Stiglitz-Grossman model: in equity markets there is no perfect efficiency, and so those who incur higher costs through active fund management c_{At} in order to obtain advantageous information (essentially the skills of a fund manager), on average, will be rewarded with higher excess returns. If they weren't rewarded, then investors would not want to incur the cost of active management if it didn't present opportunities for excess returns, and there would be no actively managed funds.

Performance of Mutual Funds

The literature on whether active management has empirically outperformed passive management in equity markets has in general been mixed in its conclusions. Malkiel (2003) asserts that the evidence strongly supports passive investment strategies in all markets. Malkiel (2003) argues that near market efficiency in global equities means that transaction costs, or the cost of getting advantageous information, are too high to exploit

[13] As a thought experiment: in a hypothetical perfectly efficient market δ=1 and thus for the same model to hold true $R_{At} = R_{Pt}$. This would indicate a perfectly efficient market with no arbitrage exists and thus there are no excess returns to active management over passive management, which essentially aims at capturing the market return.

anomalies or hidden information that can lead to excess returns above the market. French (2008) also asserts that the costs of active investing are large and that it is becoming increasingly important to think about passively managed investment strategies. Sorenson et al (1997) support this conclusion by stating that, in 1997 of example, only 11% of mutual funds outperformed the S&P 500. These analyses, however, only pay particular attention to developed markets in the US, Europe and Asia and doesn't specifically differentiate between the developed world and emerging markets.

Passive Management and Tax Efficiencies

When comparing the returns of actively managed mutual funds and passively managed funds, however, an important consideration is the tax advantages of passive funds. As discussed in the introduction, actively managed funds pass realized capital gains from trading onto their shareholders (Poterba et al (2002)). The high trading volumes of mutual funds mean that this tax burden is much more significant for their shareholders than for passive funds' shareholders. Poterba et al find that when adjusted for tax, that returns between mutual funds and passively managed ETFs in US equities yielded comparable returns, despite have lower fees. Gardner et al (2005) confirm this result, emphasizing the tax advantages of ETFs over mutual funds. Thus, this paper importantly seeks to integrate the post-tax performance of ETFs and mutual funds, adjusting for the tax burden resulting from high stock trading activity.

Decomposing Fund Returns:

In addition to the comparison of actively managed mutual funds vs. passively managed funds, other studies such as Wermers (2000), Gruber (1996) and Carhart (1997) also examine whether mutual fund turnover is correlated with higher returns. The

percentage of turnover[14], or the percentage of stocks bought and sold annually as a percentage of the total fund, is used as a proxy for the degree to which the fund is actively managed. Gruber (1996) ultimately finds that mutual funds, on average, underperform passive market indexes by up to 65 basis points[15] over a nine-year period. Wermers (2000) attempts to decompose mutual fund returns in order to identify which fund characteristics are correlated with higher returns and finds that very high-turnover funds –those that rank in the top decile by turnover in the US mutual fund universe- outperform the Vanguard 500 Index[16], while Carhart (1997) finds that mutual fund net returns are negatively correlated with mutual fund manager trading activity. In addition to turnover, Carhart (1997) also finds that expense ratios[17] are negatively correlated with fund returns. This may perhaps come across as counterintuitive, as one would assume that more talented managers would receive higher compensation, in return earning higher returns for the fund, at least according to the Stiglitz -Grossman model.

Given the inconclusive nature of this debate, this paper will also explore the correlation between management fees, expense ratios and net returns, again framing the hypothesis within the logic of the Stiglitz-Grossman model, which suggests that higher fees should lead to higher gross returns in market equilibrium, although these higher returns may be disguised by fees, since returns are given as net of fees. If however, the returns are superior *even net of fees*, then the conclusion will be without ambiguity. The empirical analysis will also explore whether, as proposed by Wermers (2000), higher

[14] Portfolio turnover, which measures transactional activity, is measured by dividing the total amount of new securities bough over a given period (usually annually) and dividing it by the total net asset value of the fund.
[15] Gruber (1996) examines the performance of US mutual funds over the period 1985-1994.
[16] The Vanguard 500 Index fund is the largest US index fund, and is used as a benchmark for Index Fund performance. The fund mirrors the stock composition of the S&P 500.
[17] The expense ratio of a fund is the cost of management fees per unit asset under management. It is used as a proxy for how relatively expensive a certain fund's management is.

turnover funds are correlated with higher net returns. In addition to these fund characteristics, the paper will look at fund allocations by industry and geography (in addition to fundamental fund characteristics) to identify differences in active and passive management explained by these allocations.

Wermers (2000) also pays attention to the ability of price to book and price to equity ratios to predict fund returns. Fama French (1992,1996), Jegadeesh and Titman (1993) and Chan, and Jegadeesh and Lakonishok (1996) have shown that the ratio of the book value of equity to the market value of equity is predictive of cross-sectional patterns in common stock returns. Fama French (1992) show that stocks with high book-market ratios (low stock price relative to book value) tend to have lower returns on equity, and that these returns persist for five years before and after the ratio is measured (known as the "book to market effect"). Fama French (1993) also state that, even though price to equity and price to book ratios have had no great importance in asset pricing theory, their findings show that P/E and P/B both are strong explanatory variables of cross sectional returns. Tseng (1988) and Basu (1977) both find that stocks with low P/E ratios outperformed those with high P/E ratios. As such, this paper looks to closely examine the role of P/E and P/B ratios in their power to explain potential differences in returns for mutual funds and ETFs. Worth noting is that this paper's measure of P/B is the inverse of book-market and so the "opposite" inference[18] should be made.

In addition to the role of the book-market ratio, the Fama French Three Factor Model (1992) also asserts that equities of firms with small capitalization are correlated with higher stock returns: a relationship known as the "Small Firm Effect". Thus, the paper

[18] High P/E ratio (essentially market-book ratio) would correspond to a low book-market ratio, and thus if high P/E's are correlated with higher returns, then this result would correspond to that of Fama-French (1992).

will also investigate the role of capitalization size of companies in determining the returns of active and passive management in emerging markets.

As a new way of approaching this topic then, this paper looks to investigate these mechanisms in the less efficient emerging markets and to focus on a new, burgeoning financial innovation: ETFs. The paper seeks to add a different dimension to the current literature and in so doing, investigate whether there is empirical evidence that emerging equity markets behave similarly to developed equity markets, or if -according to the Stiglitz-Grossman model -market inefficiency does in practice affect the differential returns between informed investors and uninformed investors, i.e. by rewarding more active managers with higher returns in more inefficient markets.

Empirical Methodology

General Approach & Data Construction

The primary purpose of the empirical approach is to evaluate the causal impact of active management in emerging markets on post and pre-tax fund returns (net of fees). To evaluate this causality, this paper utilizes OLS regression, analyzing data on emerging market mutual funds and ETFs available to the US equity market over the previous 3 years. The 3 year time horizon was chosen because it provided a reasonable sample size of ETFs with widely available 3 year data, while incorporating a period of return that was long enough to try and dilute as many abnormal short-term market conditions as possible. This time frame was necessary as the US market for emerging market ETFs is relatively new compared to the emerging markets mutual fund industry, with the vast majority of

ETFs being younger than 5 years. Thus, a sample of ETFs with returns over a period greater than 3 years would have been extremely limited.

At this point, it is also worth noting the unusually high returns of emerging market ETFs and mutual funds over this period[19] (see table 1 in data appendix for mean figures). As a reference point, the historic return of the S&P 500 has been 11%, so these returns are abnormally high in the equity industry. This is due to the timing of the 3-year returns, which take the mean of annual returns between the years 2009 and 2011. The period immediately following the worst of the financial collapse of 2007/2008 saw very large recoveries in global equities, sometimes in the region of 40%-%50 in 2009. The S&P 500[20], between March 2009 and Dec 2009 for example, went from a value of 683.38 to 1144.98, a staggering gain of 67%. These dramatic recoveries after the large losses in 2008 and the beginning of 2009 led to the high 3-year average returns from 2009 to 2011, but since emerging market ETFs and mutual funds are essentially both invested in the same pool of equities, their relative comparison should not be skewed once other fundamental factors such as risk (standard deviation and beta) are controlled for. A more stable period of global financial markets, however, would ostensibly lead to a more controlled comparison that would make the results more applicable to general market trends (avoiding selection bias).

The data was extracted using the Standard & Poors NetAdvantage[21] database and the TD Ameritrade online database[22] of ETFs. Utilizing the S&P Net Advantage fund screener to search the US mutual fund universe, all mutual funds classified by Standard &

[19] ETFs had a 3 year average return of about 20% and mutual funds of about 24%.
[20] http://www.google.com/finance?q=INDEXSP%3A.INX
[21] The Standard & Poors Net Advantage database was accessed through the UC Berkeley Haas School of Business electronic database.
[22] http://research.tdameritrade.com/public/markets/overview/overview.asp

Poors as "emerging markets" by being part of the emerging markets fund peer group were extracted with their basic data: fund size, standard deviation, turnover percentage, expense ratio[23], net 3 year average returns (pre- and post-tax returns after fees), price to book ratio, price to earnings ratio, 3 year alpha, Sharpe ratio, net asset value (NAV), management tenure and number of holdings (all three year averages).

Following these fundamental variables, addition data relating to stock selection were extracted, merging regional allocation data from the Standard and Poors database with industry and company capitalization data from the TD Ameritrade database. The motivation behind the data collection (variable selection) was that the driving factor behind the success of active management (controlling for fundamental fund differences in size etc.) is the stock selection of managers, which incorporates the selection of different types of industries, regions, under/overvalued companies (proxied by the price-book ratio) and the different sizes of the companies managers invest in. Manager tenure is also introduced on the premise that managers with more experience perform better than those with less experience.

The fund regional allocation data provides information as to whether potential differences in the returns between actively managed mutual funds and passively managed ETFs can be explained simply by the geographical differences in their investments. The reason for doing so is clear. If, for example, ETFs systematically invested more in Asian emerging markets than mutual funds over the period, perhaps during a time when there was a natural disaster or some unforeseen macroeconomic shock, then the differences in returns would not be due to value added by active management skill, but exogenous

[23] The expense ratio is defined as the fund's operating expenses divided by the average dollar value of its assets under management.

factors. It may also, however, simply be the case that active managers systematically identify more profitable emerging market regions than those invested in by passive funds. Regional allocation serves a dual purpose then: to control for localized macroeconomic shocks, which may be represented to a different extent in the ETF and mutual fund samples, and to potentially suggest a systematic difference in the regional allocation. The allocation data is comprised of the percentage of each fund that was invested in the following Standard & Poors classified emerging market regions: Asia-Pacific, Middle East & Africa, Latin America and Emerging Europe. In addition to these emerging market regions, most funds also invest a small portion in developed markets, usually in US, European or developed Asia regions such as Hong Kong or Japan. To the extent to which the distribution of investment in developed regions also may play a role, this allocation percentage was also controlled for in the regressions.

Industry allocation data was extracted using the TD Ameritrade online research database. Each mutual fund ticker was manually entered into the database, and the subsequent information regarding industry allocation was extracted from the mutual fund prospectus. The industry classifications included energy, consumer staples, telecommunications, materials, consumer discretionary, financial services, industrials, healthcare, fixed income, technology, utilities and real estate. Each specific industry would perform differently depending on the state of the local and global economy, and so much of the returns achieved by funds are derived from the specific sectors in which they choose to invest in. During times of economic downturn, for example, one would expect consumer staples (consisting of necessity goods) to continue to do well, as opposed to a sector such as consumer discretionary (composed more of luxury goods). Thus the inclusion of

industry allocations by percentage for each fund may be a valuable indication of systematic differences between mutual funds and ETFs. A particularly important inclusion is that of fixed income. Wermers (2000) concludes that much of the difference in the performance between index funds and mutual funds in US equities has been driven by the underperformance of the fixed income holdings of funds. Thus, the inclusion of fixed income allocation controls for this effect. Wermers (2002) also, however, states that the mutual fund industry is moving towards becoming more fully invested in common stocks, as opposed to bonds or cash. This is confirmed by the data: out of the 230 emerging market mutual funds and ETFs, only 29 had any fixed income allocation, and out of those 29, the mean fixed income allocation was only about 1.11% (see table 1).

Company capitalization data was then also extracted from the TD Ameritrade database. Companies are classified by their market capitalization as either micro-cap, small cap, medium cap, large cap or giant cap[24]. Companies of different sizes have very different risk/return profiles and so much of the returns generated by funds are correlated with the selection of the size of companies in which they are investing. Large, multinational companies would, for example, perform more strongly than a local company during a localized, adverse economic shock, which would have full exposure to that risk. A small startup however, may yield more profit through aggressive growth when the local economy is performing positively, and so much of the explanatory power regarding the returns of funds may be imbedded in this selection. This essentially also serves to control and investigate the role of the Fama French "Small Firm Effect" discussed previously.

[24] Micro-cap companies have market capitalization below $250million; Small-cap: $250 million-&1 billion; Medium-cap: $1billion-$5billion; Large-cap: $5billion-$200billion; Mega-cap: over $200billion.

Book to market ratios were then included in the data collection because of their capacity to be highly correlated with equity returns as discussed. Book-market ratios proxy for how over/undervalued companies are relative to the market and are sometimes interpreted as how good of an investment a security is. We include book-market ratios in our stock selection analysis to examine whether active and passive funds systematically investment in stocks with different book-market values.

Individual funds themselves were represented in the initial data set multiple times according to share types: either A, B, C, I or some non-conventional, firm specific share type. These simply imply different fee structures (different "loads"): A shares and I shares usually require paying higher upfront fees (front end load) and then paying lower annual fees, while C shares imply paying higher annual fees (and less upfront fees) in order to have more investor flexibility. To simplify the analysis and not have particular funds overrepresented simply because of having more share types, this paper excludes B, C and firm specific shares *if* the fund already offers A shares or I shares, thus leaving each fund represented by only one or at most two entries in the data set. A and I shares[25] represent the vast majority of investment in emerging market mutual funds (and the mutual fund industry in general), and their net returns before tax vary negligibly over the 3 year period with other share types: approximately one fifth of a percent to half a percent.

Including many additional share types adds no new information to the analysis as every other aspect of the fund is identical to the A shares and I shares (they are after all the identical funds, invested in identical securities, only varying slightly by fees). Also, the fee discrepancy is embedded in the different expense ratios over the given period, which is

[25] I shares are institutional shares which represent investment in mutual funds by institutional investors such as pension funds and 401k plan administrators etc.

controlled for in the regression analysis. If this was not done, then a single fund with many share types (and its corresponding equity basket) would have been overrepresented in the sample and so, through the approach above, this paper seeks to minimize this effect (although it is not perfect since some firms have A and I shares represented), while capturing the majority of investment in the emerging market mutual funds. This reflects an inherent tradeoff between overrepresentation (and bias) and capturing as much of the investment activity in the market as possible. After filtering out irrelevant share classes, a sample size of 184 emerging market mutual funds remained.

The ETF data was also extracted from the Standard and Poor's NetAdvantage and TD Ameritrade databases, although the process was more cumbersome. With no ETF screener as such, the list of all ETFs was manually filtered from a list of all ETFs available to US investors in order to obtain those themed as emerging markets, or invested in any country classified as an emerging market[26]. This manual process included extracting ETFs with "Emerging Market" in the title of the fund, or if the title of the fund suggested that it was invested in a particular emerging market country e.g. Market Vectors Russia ETF.

A final sample of 45 ETFs was extracted and used in the regression analysis. As Standard & Poors Net Advantage did not contain post tax returns for ETFs, pre- and post-tax returns for both ETFs and mutual funds were extracted from the TD Ameritrade database (the dependent variable in the regressions) and merged with the data from S&P in order to maintain as much data consistency as possible. A more ideal data set would be one that uses data from one source as opposed to a merger of two data sources. In total there were also 4 ETFs that did not have industry and capitalization allocations available.

[26] According to the World Bank definition used in much legislation, an emerging market is essentially a market economy country with, among other conditions, an annual per capita income of less than $12,195.

Econometric Approach:

The basic regression outlining the approach discussed is as follows (see regression (1) in table 3) [27]:

$$Y_i = \alpha_0 + \beta_1(D_1) + \varepsilon$$

where the dependent variable Y_i is the 3-year net average returns before tax of the fund, α_0 is the intercept (mean returns of passive funds), and D_i is the dummy for actively managed (where D_i =1 if actively managed). This regression represents the basic idea of trying to establish the causal effect of active management or in simpler terms, the earnings difference between mutual funds and ETFs explained by active management. This basic regression obviously suffers from omitted variable bias and so variables controlling for fund characteristics were then introduced as follows:

$$Y_i = \alpha_0 + \beta_i(D_i) + \delta_{1,i}(X_{1,i}) + \cdots + \delta_{7,i}(X_{7,i}) + \varepsilon$$

where $X_1 ... X_7$ represent fund size, expense ratio, turnover percentage, number of holdings, net asset value (NAV[28]), 3 year betas and standard deviation for fund *i* (see regressions 2-4 (table 3) for regressions with different combinations of variable introduction).

Standard deviation[29] and betas are a critical in order to adjust for risk in regressions 3-4. This is an important control because volatility (as measured by either standard deviation or beta) and excess returns are highly correlated, and so to assess whether active management yields superior performance, it is important to control for risk. If, for

[27] **For all regression references see tables 3-6 in the data appendix.**

[28] Net Asset Value is the price per share of the fund calculated by dividing the total value of all the securities in its portfolio, less any liabilities, by the number of fund shares outstanding.

[29] Standard deviation is the most commonly used measure of risk in financial literature.

example, active management leads to higher returns, but is associated with larger variance, then the risk adjusted return or *Sharpe Ratio*[30], which is commonly considered as the measure of a good investment, is not superior to that of a passive fund which perhaps may have a lower return but much less variance. On the basis of establishing the investment skill of active management then, it is essential to introduce standard deviation into the analysis. Betas are introduced as an additional control for volatility (risk). The Capital Asset Pricing Model (CAPM[31]) relates betas with a security's return and so we include beta in the regression in order to control for systematic differences in the value of betas between ETFs and Mutual Funds, and, as with the logic behind using standard deviation, provides a way of establishing the quality of an investment by adjusting returns for risk.

Special attention will also be given to turnover in order to investigate whether turnover is positively correlated with fund returns. Mutual funds have much higher turnover than passive funds because of regular trading, and provide a proxy for the degree of active management. We also investigate the Wermers (2000) assertion that returns differ by decile of turnover, especially with regards to the top decile, which Wermers (2000) shows as earning higher returns in comparison to passive funds. We carry out regression 4 and 8 again, but only include mutual funds with turnovers in the top decile of mutual fund turnovers (regression 9 & 10). This yields a sample of only 61 total observations and so results should be interpreted with caution.

Once the basic regressions for analyzing the magnitude of the active management dummy variable were run, controlling for fundamental characteristics, variables

[30] The Sharpe Ratio, also know as the reward to volatility ratio, is calculated as the risk premium (Fund return- risk free return (usually T-Bill return)) divided by the variance of the security or portfolio.

[31] CAPM: $R_i = R_f + \beta_i(R_M - R_f)$, where R_i = return of security *i*, R_f= risk free rate, R_m=market return as usually measured by the S&P500, and β_i= correlation between the security's returns with that of the market.

corresponding to stock selection were incrementally added to the regression framework. Regional allocations were introduced (table 3), firm capitalization (table 3**)** and industry allocations (table 4 and table 5). Regressions were run with each individual set of stock selection controls (regional, industry and firm capitalization percentages), with different combinations of the three sets of variables and, of course, all of them together. Regional controls consisted of the allocation to Middle East/Africa, Emerging Europe, Latin America, Asia Pacific and Developed regions (in percentage terms[32]) respectively. Industry and capitalization allocation variables similarly included the percentage of each fund invested in the respective industries and capitalization categories discussed above.

3 Year P/E ratios and P/B ratios were then also introduced (regressions 20-31 in table 4 and regressions 28-30 in table 4) to control for any systematically different ways in which funds might be investing in stocks with varying book-to-market ratios and price-to-earnings ratios. As stated before, P/B and P/E ratios are strongly correlated with equity returns and so we examine whether the same holds true for emerging market investment funds and whether this helps explain differences in active and passive management returns. The general consensus among investors is that book-market ratios (or Tobin's Q) are an indicator of a good investment and positive returns (book to market effect). Based on prior literature, we expect P/B ratios to be positively correlated with returns and P/E ratios to be negatively correlated with returns. P/E provides a way of examining the extent to which the cost of a fund's stock relates to its earnings as a ratio: a parameter often quoted by fund companies and prospectuses.

The strategy of introducing these controls in different combinations (as well as individually) is aimed at investigating the point at which the coefficient of the dummy for

[32] For example, if 80% of the fund is invested in the Middle East/Africa region, then X_1= 80

active management is potentially affected, or rendered insignificant. If the dummy coefficient proves to be significant and positive in the basic regressions in table 1, in which only fundamental characteristics are controlled for**,** but then insignificant and negligible after introducing industry controls, for example (and perhaps unaffected by regional and capitalization controls), then it would suggest that the value added by active management is determined by the ability of mutual fund managers to pick profitable industries as opposed to picking certain sized firms, firms in distinctive geographical regions or those that are under or overvalued etc.

Bertrand and Hallock (2001) employ a similar econometric strategy, investigating gender discrimination among corporate executives. Regressing earnings on a gender dummy, Bertrand and Hallock find a significant initial earnings gap of 45%, but this falls to less than 5% (and insignificant) when experience, age, and the size of the companies under their management were introduced to the regression. The same logic is used in this empirical approach to find out what specific aspects of stock selection, whether region, industry etc., explain the difference between active and passive management in emerging markets.

The final step in the empirical approach is to repeat the aforementioned regressions with the post-tax returns (see tables on post and pre-tax regressions)[33]. These post–tax returns are returns adjusted for taxes on distributions, essentially the capital gains taxes passed on by trading. Standard & Poors rates the tax burden of ETFs as "very low", but also issue the important caveat that those ETFs tracking esoteric or new indexes may experience tax burdens as firms are frequently removed and added to these indexes,

[33] Tables 3 & 4 show both pre- and post-tax regression with identical controls. Table 5 presents only pre-tax regressions, while table 6 presents those exact same regressions (as table 5), but with post-tax returns as the dependent variable.

resulting in tax on distributions like those experienced by mutual funds. This can be ascribed to developing countries' stock indices reflecting the rapid evolution of their economies (a problem not faced with developed market indices) e.g. shifting from an industrial based economy to more of a services orientated one like in western developed economies.

The ultimate goal of this empirical approach is to firstly determine whether the coefficient on the active management dummy, β_1 is positive and statistically significant for both pre-tax and post-tax net returns in the basic regressions (table 1), before the active management controls (stock selection and management specific variables) are introduced. This would confirm the hypothesis consistent with the Stiglitz-Grossman model: that active management adds value in inefficient emerging markets. Secondly, the goal is also to determine which aspect of stock selection explains the possible value added by mutual funds over ETFs in emerging markets. By introducing the discussed variables related to active management and stock selection, this paper hopes to identify which variables provide the greatest power in explaining emerging market fund returns.

Avenues for future improvements:

The primary improvement, which can be made to the basic empirical approach, is to have a larger sample of passive funds over a longer period. 46 ETFs over 3 years was sufficient for statistical testing (such as t-tests and OLS analysis), but a more robust argument could be made with a larger ETF sample. The variables were also presented as 3-year averages and so the total econometric analysis is limited to 230 data support points for the outcome variable. A major improvement to this problem would be to construct an annual dataset of fixed funds over a reasonably long period, essentially in a panel data

structure. Thus each fund would have variables for each year in the dataset, as opposed to having 3-year averages. A longer period of panel data would control more effectively for endogeneity problems and would have far greater points of support, providing more accurate statistical analysis. Using averages may also obscure some of the short-term trends, which may be important in differentiating ETF and mutual fund return trends (even though standard deviation is an implied control for this in the case of the outcome variable: returns).

In addition to data structure and quantity, improvements can also be made to the regression analysis by including more detailed variables and by analyzing dynamic aspects of active management beyond the simple "static" stock selection variables included in this study. Timing, for example, is an important aspect of active management that is not included in this analysis. This includes momentum-trading strategies: a factor discussed by Wermers (2000)[34]. Kiminsky, Lyons and Schmukler (2003) also discuss mutual fund momentum trading, as well as contagion trading strategies in emerging markets, finding significant correlations between these strategies and fund returns. By including these factors, a subtler, dynamic approach to management characteristics can be added, providing a more in-depth explanation for excess fund returns.

Another plausible set of important explanatory variables includes the fund specific strategy. Funds that, for instance, invest primarily in growth stocks have very different risk/return profiles to those investing in primarily value stocks[35]. These strategies are designed to offer targeted exposure for investors seeking particular diversification options.

[34] Wermers creates a novel "Characteristic Timing Measure". This component of performance measures a fund manager's success at optimally "buying low and selling high".

[35] Growth stocks tend to be more volatile, and include companies that experience rapid growth (e.g. a new technology company), whereas value stocks are those companies that do not experience much growth, but have very stable, reliable income and performance (e.g. an oil company like Exxon Mobile).

Varying fund strategies have specific risk/return characteristics that can possibly explain a significant portion of fund returns, regardless of whether it is actively or passively managed. To the extent that risk solely influences returns, variance has been controlled for, but ideally, controls for strategy allocation may improve omitted variable bias.

Results

After implementing the above empirical strategy, the primary pre-tax regression, including all the fundamental controls (regression 4 in table 3), yielded a coefficient of 2.87 on the dummy variable for active management. This result was significant at the 5% level and suggests that, after controlling for fundamental fund characteristics and risk, that actively managed funds investing in emerging markets produced net *before tax returns* that were, on average, 2.87% higher than their passively managed counterparts over the given period. Considering that the mean pre-tax return for all funds[36] over the period was 23.74%, this result is highly significant and large in economic magnitude (adding more than a 10% *increase* in returns relative to ETFs). This evidence supports the Stiglitz-Grossman model to the point where the excess returns are so large that, even net of fees (which are higher for mutual funds[37]), returns due to active management are superior to ETFs. Interestingly, however, the expense ratio coefficient is negative (-1.38), although only statistically significant at approximately the 13% level, and so inconclusive in its meaning. The negative coefficient would, however, agree with the result of Carhart (1997) and suggests that more expensive fund management teams have not been correlated with

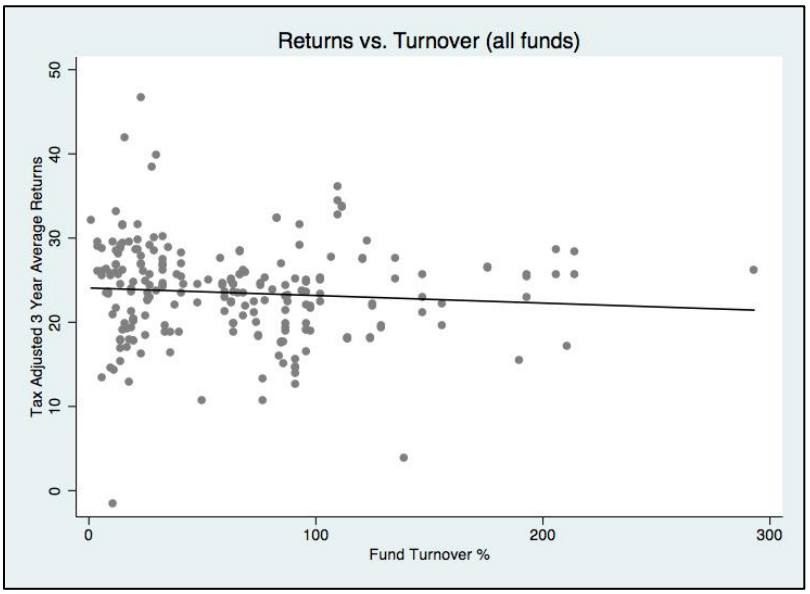
[36] See table 1 & 2 (data appendix) for all summary statistics, presented for all funds together, and ETFs and mutual funds individually.

[37] Table 2 shows that the mean expense ratios for mutual funds were almost double that of ETFs.

superior returns over the last three years. This is a counterintuitive result according to the Stiglitz-Grossman model, although again, the low significance level should be taken into account.

Empirical results regarding the relationship between turnover and net returns in the regression involving fundamental controls (table 1) were week and statistically insignificant in the pre-tax regression analysis (coefficient of around 0), implying no correlation between the degree of active management and fund returns. The post-tax result, however, was statistically significant at the 10% level, but the economic magnitude of the coefficient was extremely small (figure 1 below shows the linear fit of turnover% on post-tax returns, resulting in an even slightly negative trend).

Figure 1



Data from S&P Net Advantage Database and TD Ameritrade Research

Testing the result of Wermers (2000) that mutual funds with turnover in the top decile outperform passive funds (regression 8 & 9), we find a very large coefficient of 9.13 (at the 10% significance level) on the dummy for active management when pre-tax returns are

regressed on, which would provide positive evidence in favor of this result. Causally however, the role of turnover is unclear, since the coefficient remains around 0 and insignificant, suggesting that there are perhaps other heterogeneous characteristics of these mutual funds that explain the difference.

The introduction of regional allocations proved to be statistically insignificant, thus providing no explanatory power for the difference resulting from active management. Capitalization controls *alone* were similarly insignificant in their ability to reduce the positive coefficient of the dummy for active management. When capitalization controls were singularly introduced the value of the dummy coefficient even increased. The coefficient on the percentage allocated to firms with small capitalization was positive and significant at the 5% level, which would agree with the Fama French (1992) "Small Firm Effect", but it doesn't explain the difference between mutual fund and ETF average returns as the dummy remains large and significant.

When introduced together in the pre-tax regressions, controls for regions and capitalization still resulted in yielding a large positive coefficient on the active management dummy (both pre- and post-tax), although the significance level did decrease somewhat from the 5% level to the 10% level, suggesting that they play a small role in their ability to explain the gains of active management.

Turning to the introduction of industry controls in table 4 and 5, their addition to capitalization controls immediately yields a smaller coefficient of only 0.809 on the dummy (pre-tax) that is now highly insignificant (regression 18). This would suggest that industry selection provides a sizable explanation for the difference between mutual fund and ETF returns, once capitalization is controlled for. Industry selection alone, however,

doesn't decrease the magnitude or significance of the dummy on active management, suggesting that, as a single factor, it doesn't provide large explanatory power. This would perhaps suggest a strong correlation between industries and the capitalization of the firms within them, and their combined ability to predict returns. Once industry, regions and capitalization are controlled for, the dummy's magnitude is further reduced to 0.49 and rendered statistically insignificant.

Turning to book to market and P/E ratios, the introduction of P/B and P/E ratios in table 4 and 5 prove to be very significant. Simply the introduction of P/B alone, in addition to fundamentals in regression 21, immediately results in the decrease of the active management dummy's coefficient to 1.82 (pre-tax regression 21) and, importantly, renders it statistically insignificant. No other single variable affects the active dummy to such a large extent. The significance of book-market ratios is predicted by the Fama French Model, which states that low book-market ratios (or high market-book (P/B) ratios) are correlated with higher returns. This result provides strong evidence in favor of the Fama French finding and is statistically significant at the 1% level. The high magnitude of the coefficient on P/B in regression 21, 23 &23 (and 28, 30 & 31 for post-tax regressions) reaffirms this result that high P/B ratios are correlated with high fund returns. With all possible controls in the dataset, the coefficient of P/B is at its largest (3.214 for pre-tax returns) and at a significance level of less than 1% (almost 0). With P/B ratios ranging from approximately 1 to 8 for all funds, this would mean that the difference in returns between two funds with P/B ratios of 4 and 6 respectively (all other factors controlled for) would be almost 6.4%! This large economic value and very high level of statistical significance suggests that no other single factor is as powerful in explaining the difference

between mutual fund and ETF returns. The inference of this result would be that a large portion of the excess returns (with respect to EFTs) generated by mutual fund managers is explained by their ability to identify and invest in securities that have (or are going to have) high P/B ratios, which on average are correlated with higher returns.

When introduced with P/B, the statistically negative coefficient on P/E in regressions 23, 24, 30 and 31 agrees with the finding of previous literature: that P/E ratios are negatively correlated with equity returns. Although the magnitude of the coefficient is not as large as that of P/B, the range of P/E values for all funds is from about 3.5 to 16, and so the coefficient of -0.41 on the post-tax regression is economically large and statistically significant at the 5% level. When P/E is individually introduced (regression 22 and 29) to the fundamental regression, however, it does not decrease the magnitude or significance of the active management dummy variable. The dummy remains highly significant and large in economic magnitude. Thus P/E does not have significant power in individually explaining the difference in active and passive management, even though it is negatively correlated with returns (once other factors are controlled for).

Interestingly, the introduction of manager tenure yields a negative coefficient (significant at the 10% level), suggesting that experience is negatively correlation with returns. This seems counterintuitive and should be further investigated as conventional wisdom would suggest that managers with greater experience would perform better than less experienced managers.

Controlling for all stock selection variables (regions, capitalization and industry), as well as P/B, P/E and manager tenure, the final regressions (24 & 31) yield a highly insignificant negative coefficient on the active management dummy variable, suggesting

that the initial difference in returns between mutual funds and ETFs was sufficiently explained by the combined explanatory power of the introduced variables. This indicates that the choice of variables in the context of the econometric strategy were successful i.e. finding stock selection related variables that rendered the coefficient on the active management dummy insignificant (and even negative).

Finally, we turn to the issue of before and after tax differences. In every tax adjusted regression (which were symmetrically run to every pre-tax regression) except for regression number 10[38], the coefficient for the active management dummy decreases in the range of about 0.1 to 0.5 when post-tax returns are regressed on instead of pre-tax returns. This confirms the findings of previous literature that the tax advantages of ETFs reduce the net returns of active management relative to ETFs, but it is not enough to render the advantage of active management economically negligible i.e. there is no case where using post-tax returns instead of pre-tax returns renders the dummy negligible in magnitude or statistically insignificant. Only in regression 14 does the use of post-tax returns render the coefficient on the dummy statistically insignificant, but this simply moved the coefficient from just above the 10% significance level to just below and so has no major implication.

Conclusion: Summary, limitations and avenues for further research

The empirical findings suggest that there is a strong relationship between active management and superior risk adjusted, net of fees returns relative to passive management in emerging markets. This is in agreement with the Stiglitz Grossman model and indeed

[38] Regression 10 only uses 18 Mutual Fund observations to test the hypothesis that mutual funds with the highest decile of turnover outperform ETFs, and so statistical inference should be made with caution.

generalizes to the idea that when markets are more efficient, as in the US, arbitrage is more difficult and so fewer funds outperform indexes and ETFs[39]. Conversely, in less efficient markets, such as emerging markets, information is less perfect and thus, for those who attain information unknown to most investors (like active managers), abnormal excess returns are higher.

Following the established returns difference, the empirical approach attempted to analyze stock selection variables that explain this difference. Based on the results, industry selection and capitalization together do, to a large degree, explain the higher returns of active management, although the largest single variable, which explains a large portion of the difference, is the price-book ratio (inverse of book-market ratio). Indeed, the results suggest that a large portion of mutual funds' superior performance in emerging markets lies in the ability of managers to select stocks with higher P/B ratios. An ideal avenue for additional work would be to conduct a full time series Fama French 3 Factor analysis on emerging market equities to examine this relationship more comprehensively with the variables precisely defined by the Fama French 3 Factor model (e.g. using the difference of High and low book to market ratios instead of simple P/B ratios etc.).

It is important to point out, however, that the results of this paper are specifically related to ETFs as a representative of passive management, and so generalizing the conclusions to index funds generally does present the possibility of selection bias. ETFs are a particular sub-sample of passively managed funds but are assumed to be good proxies for passive fund performance in general (especially when using pre-tax returns as they only differ slightly to Index Funds in their post-tax performance), since they are both passively

[39] We assume ETFs to be close proxies (especially in their pre-tax behavior) for Index funds since they are both passively managed, except without as many tax benefits.

managed and in many cases track the same securities (such as in the US), but this assumption warrants more rigorous investigation and empirical work.

The results also leave some questions unanswered, such as exactly why higher expense ratios are correlated with lower net returns. This intuitively contradicts the Stiglitz Grossman model, although this may be due to fact that expense fees have offset returns to such an extent that the net returns are not as competitive as those of cheaper managers more generally, despite higher gross returns (prior to fees). An ideal improvement would be to compile data of both before and after fees returns to answer this question.

Finally, this paper finds that the tax advantages of ETFs do offset some of the superior returns of active management in emerging markets, although not on an economically significant level. Thus, the difference in returns between ETFs and mutual funds in emerging markets is large enough that mutual funds remain superior in their performance, despite their larger tax burden, and thus should be considered the better investment.

Ultimately, emerging markets will continue to play an increasingly significant role in the world economy. Many emerging markets are rapidly becoming more financially sophisticated and their equity markets ever more efficient and so investigating the nature of these markets and how they behave in comparison to established, developed equity markets will become an increasingly important question, both for investors and financial researchers alike. The rise of ETFs as an important financial instrument and possible alternative to traditional Index Funds will also continue to be a topic of great interest and research. If ETFs are allowed to be used in retirement account portfolios in the future, then their application will become of great relevance to the average citizen.

Data Appendix

Table 1	Summary Statistics: All Funds				
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
Pre-tax Returns (3yr annualized)%	230	23.74483	8.512941	-54.57	46.69
Post-tax Returns (3yr annualized)%	230	22.92539	8.442648	-54.57	46.61
Fund Size ($m)	230	1210.788	4172.192	0.1	45437
Expense Ratio	230	1.405391	0.5744985	0.22	3.59
Turnover%	230	64.21548	51.43169	1	293
No. of holdings	229	260.9086	459.4361	19.07	3350
Standard Deviation (3year)	230	27.22478	4.458169	7.71	53.59
Beta (3year)	230	1.138522	0.3347781	-2.48	2
Alpha (3year)	230	0.5237391	1.42455	-14.04	9.53
Sharpe Ratio (3year)	230	0.7973478	0.2924186	-1.15	1.97
R-Squared	230	2.086348	9.42103	0.46	73.02
Net Asset Value	226	19.62321	12.27822	1	59.71
Price to Earnings Ratio	229	16.38753	3.444878	8.79	26.98
Price to Book Ratio	229	3.361558	1.242858	1.24	8.57
Emerging Europe%	230	13.65939	18.41901	0	100
Middle East/Africa%	230	9.423304	16.32198	0	100
Asia Pacific%	230	32.59674	19.36277	0	100
Latin America%	230	20.56387	16.92182	0	100
Developed%	230	23.2583	12.25339	0	59.47
Energy%	228	13.87026	8.218588	0	44.82
Consumer Staples%	228	8.794342	6.416123	0	36.93
Telecommunications%	228	8.52057	4.975594	0	37.55
Materials%	228	13.13382	8.041974	0	100
Consumer Discretionary%	228	9.466711	4.895555	0	25.71
Financial Services%	228	19.9464	8.082164	0	59.46
Industrials%	228	7.302325	4.823433	0	40.67
HealthCare%	228	1.501447	2.326453	0	21.33
Fixed Income%	229	1.114629	9.362252	0	100
Technology%	226	11.37425	6.044151	0	26.52
Utilities%	226	3.057434	2.805474	0	22.82
RealEstate%	226	2.760885	7.329848	0	87.53
Market Cap Giant%	224	39.8542	16.49317	0	93.32
Market Cap Large%	224	34.73464	10.35175	0	66.5
Market Cap Medium%	224	20.1783	12.02465	0	100
Market Cap Small%	224	4.198348	6.530958	0	54.9
Market Cap Micro%	223	0.7192377	1.715718	0	11.98

Summary Statistics										
Table 2	**Mutual Funds**					**Exchange Traded Funds**				
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
Pre-tax Returns (3yr annualized)%	184	24.65891	5.259548	10.77	46.69	46	20.08848	15.46656	-54.57	42.42
Post-tax Returns (3yr annualized)%	184	23.8138	5.273295	10.63	46.61	46	19.37174	15.28092	-54.57	41.93
Fund Size ($m)	184	847.169	2083.09	0.1	14326.4	46	2665.262	8260.373	2	45437
Expense Ratio	184	1.565761	0.4968452	0.37	3.59	46	0.763913	0.3871748	0.22	2.53
Turnover%	184	73.79891	51.82587	1	293	46	25.88174	25.70634	4	139
No. of holdings	184	278.0652	496.7582	37	3350	45	190.7571	247.3641	19.07	907
Standard Deviation (3year)	184	27.12321	3.39794	18.71	41.92	46	27.63109	7.346997	7.71	53.59
Beta (3year)	184	0.512337	0.3236008	-0.76	1.87	46	0.9784783	0.6770523	-2.48	2
Alpha (3year)	184	0.827663	0.1506869	0.16	1.38	46	0.5693478	3.146203	-14.04	9.53
Sharpe Ratio (3year)	184	0.7253261	0.0513203	0.55	0.8	46	0.676087	0.5692236	-1.15	1.97
Net Asset Value	184	16.92598	9.057492	2.31	48.05	42	31.45579	16.88395	1	59.71
R-Squared	184	0.7253261	0.0513203	0.55	0.8	46	7.530435	20.34175	0.46	73.02
Price to Earnings Ratio	184	16.74897	3.360634	10.98	26.98	45	14.90963	3.426556	8.79	23.45
Price to Book Ratio	184	3.516957	1.283646	1.43	8.57	45	2.72615	0.7983155	1.24	4.8
Emerging Europe%	184	14.49228	16.84107	0	94.59	46	10.32783	23.6406	0	100
Middle East/Africa%	184	7.897283	8.778057	0	60.28	46	15.52739	31.5397	0	100
Asia Pacific%	184	31.37582	10.84283	0	46.31	46	37.48043	37.40761	0	100
Latin America%	184	19.2563	7.245926	0	33.44	46	25.79413	34.76671	0	100
Developed%	184	26.97832	9.682854	4.16	59.47	46	8.378261	9.993626	0	30.1
Energy%	184	14.18043	7.456161	0	44.82	44	12.57318	10.85557	0	40.78
Consumer Staples%	184	9.233424	6.09598	0	36.93	44	6.958182	7.409216	0	31.89
Telecommunications%	184	8.135435	3.907195	0	19.1	44	10.13114	7.901424	0	37.55
Materials%	184	12.94353	7.723658	2.38	100	44	13.92955	9.313008	0	49.96
Consumer Discretionary%	184	10.21342	4.395785	0	25.71	44	6.344091	5.64999	0	20.54
Financial Services%	184	19.55603	5.957462	0	33.48	44	21.57886	13.799	0	59.46
Industrials%	184	6.858859	3.377739	0	23.57	44	9.156818	8.360889	0	40.67
HealthCare%	184	1.597717	2.480449	0	21.33	44	1.098864	1.477298	0	5.28
Fixed Income%	184	0.3002717	1.174689	0	11.96	45	4.444444	20.84091	0	100
Technology%	184	12.50668	5.073741	0	23	42	6.413095	7.38983	0	26.52
Utilities%	184	2.941576	2.397396	0	10.32	42	3.565	4.149109	0	22.82
RealEstate%	184	2.363478	4.934337	0	46.93	42	4.501905	13.50385	0	87.53
Market Cap Giant%	184	41.03685	12.24446	0	66.87	40	34.414	28.54763	0	93.32
Market Cap Large%	184	34.19734	8.810859	0	58.43	40	37.20625	15.51872	1.15	66.5
Market Cap Medium%	184	19.81043	10.75682	2.51	100	40	21.8705	16.74072	0	60.69
Market Cap Small%	184	3.885435	5.982922	0	54.9	40	5.63775	8.563891	0	39.91
Market Cap Micro%	183	0.6861202	1.680759	0	11.98	40	0.87075	1.882707	0	10.36

Table 3 **OLS Regression Table: All Funds** **All ETFs and MFs in top decile Turnover**

Dependent Variable	**Pre-tax 3yr Returns**					**Post-tax 3yr Returns**			**Pre-tax 3 yr Returns**	**Post-tax 3 yr Returns**
Regressor	(1)	(2)	(3)	(4)	**(5)**	**(6)**	**(7)**	**(8)**	(9)	**(10)**
Dummy Active	4.57***	5.61***	3.06**	2.87**	**4.44*** **	**5.41*** **	**2.96** **	**2.75** **	9.13*	**9.68***
	(1.37)	(1.68)	(1.37)	(1.44)	**(1.36)**	**(1.67)**	**(1.36)**	**(1.41)**	(5.19)	**(5.06)**
Fund Size		0	0	0		**0**	**0**	**0**	0.00	**0.00**
		0.00	0.00	0.00		**0.00**	**0.00**	**0.00**	(0.00)	**(0.00)**
No. of holdings		0	0	0		**0**	**0**	**0**	-0.01	**-0.01**
		0	0	0		**0**	**0**	**0**	(0.01)	**(0.01)**
Expense Ratio		-1.76	-1.60*	-1.38		**-1.36**	**-1.26**	**-1.01**	-6.51***	**-6.32*** **
		(1.16)	(0 .60)	(0 .93)		**(1.16)**	**(0.93)**	**(0.92)**	(2.12)	**(2.07)**
Turnover		0	-0.01	-0.01		**-0.01**	**-0.02***	**-0.02***	0.01	**0.00**
		(0.01)	(0.01)	(0.01)		**(0.01)**	**(0.010)**	**(0.010)**	(0.03)	**(0.03)**
3yr SD			-0.12	-0.19*			**-0.08**	**-0.16***	-0.42**	**-0.38** **
			(0.09)	(0.10)			**(0.09)**	**(0.10)**	(0.18)	**(0.17)**
3yr Beta			16.34***	16.89***			**16.32*** **	**16.95*** **	14.64***	**14.81*** **
			(1.39)	(1.39)			**(1.38)**	**(1.37)**	(2.02)	**(1.97)**
NAV				0.06*				**0.069***	0.24***	**0.23*** **
				(0.03)				**(0.037)**	(0.07)	**(0.07)**
Intercept	20.09***	22.39***	8.99***	8.82**	**19.37*** **	**21.46** **	**7.25** **	**7.28***	16.95**	**15.14** **
	(0.80)	(1.60)	(2.95)	(3.57)	**(1.22)**	**(1.51)**	**(2.93)**	**(3.54)**	(6.95)	**(6.74)**
R-squared	0.0463	0.0571	0.4181	0.4417	**0.0445**	**0.0541**	**0.4176**	**0.4429**	0.7306	**0.7374**
Adj R-squared	0.0421	0.0361	0.3992	0.4212	**0.0403**	**0.0329**	**0.3991**	**0.4224**	0.6892	**0.6970**
No. Observations	230	230	230	230	**230**	**230**	**230**	**230**	61	**61**

Note: * Indicates statistical significance at the 10% level
** Indicates statistical significance at the 5% level
***Indicates statistical significance at the 1% level

Table 4 **OLS Regression Table: All Funds**

Dependent Variable	**Pre-tax 3yr Returns**			**Post-tax 3yr Returns**		
Regressor	(11)	(12)	(13)	**(14)**	**(15)**	**(16)**
Dummy Active	3.13*	4.20***	3.23**	**2.57**	**4.12****	**2.77***
	(1.87)	(1.29)	(1.57)	**(1.86)**	**(1.30)**	**(1.59)**
Fundumentals	X	X	X	**X**	**X**	**X**
Middle E/Africa	0.22		0.02	**0.23**		**0.03**
	(0.23)		(0.19)	**(0.23)**		**(0.20)**
Emerging Europe	0.32		0.16	**0.34**		**0.16**
	(0.24)		(0.20)	**(0.23)**		**(0.20)**
Asia Pacific	0.29		0.13	**0.31**		**0.13**
	(0.23)		(0.20)	**(0.23)**		**(0.20)**
Latin America	0.25		0.16	**0.27**		**0.17**
	(0,23)		-0.19	**-0.23**		**-0.2**
Developed	0.18		0.09	**0.22**		**0.11**
	(0.23)		(0.19)	**(0.24)**		**(0.20)**
Giant Cap		-0.23	-0.06		**(0.40)**	**-0.80**
		(0.11)	(0.10)		**(0.10)**	**(0.10)**
Large Cap		0.09	0.09		**0.07**	**0.06**
		(0.10)	(0.10)		**(0.11)**	**(0.11)**
Medium Cap		-0.04	-0.01		**(0.05)**	**-0.03**
		(0.11)	(0.11)		**(0.11)**	**(0.11)**
Small Cap		0.34**	0.31**		**0.32****	**0.28****
		(0.13)	(0.13)		**(0.13)**	**(0.13)**
Micro Cap		-0.54*	-0.64**		**-0.51****	**-0.63****
		(0.28)	(0.29)		**(0.28)**	**(0.29)**
Intercept	-9.76	6.89*	2.01	**-12.82**	**7.43**	**2.49**
	(22.81)	(11.29)	(22.22)	**(22.64)**	**(11.36)**	**(22.40)**
R-squared	0.4762	0.2812	0.3655	**0.4752**	**0.2735**	**0.3561**
Adj R-squared	0.4441	0.2363	0.3092	**0.4431**	**0.2281**	**0.2991**
No. Observations	230	230	230	**230**	**230**	**230**

Note: * Indicates statistical significance at the 10% level
** Indicates statistical significance at the 5% level
***Indicates statistical significance at the 1% level

Table 5 **OLS Regression Table: All Funds**

Dependent Variable	**Pre-tax 3yr Returns**							
Regressor	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Dummy Active	2.68**	0.809	2.53	0.49	1.82	5.44***	1.59	-0.47
	(1.38)	(1.34)	(1.75)	(1.62)	(1.39)	(1.33)	(1.46)	(1.52)
Fundumentals	X	X	X	X	X	X	X	X
Capitalization Controls		X		X				X
Region Controls			X	X				X
Energy	0.24***	0.19*	0.15	0.23*				0.31***
	(0.09)	(0.11)	(0.09)	(0.11)				(0.11)
Consumer Staples	0.172*	0.19*	0.09	0.14				-0.11
	(0.09)	(0.11)	(0.10)	(0.11)				(0.11)
Telecommunications	-0.29***	-0.27**	-0.32*	-0.2				-0.06
	(0.09)	(0.12)	(0.11)	(0.13)				(0.12)
Materials	0.08	0.03	0.06	0.03				0.08
	(0.09)	(0.11)	(0.09)	(0.11)				(0.09)
Consumer Discretionary	0.34***	0.34***	0.30***	0.3**				0.3***
	(0.11)	(0.13)	(0.11)	(0.12)				(0.11)
Financial Services	0.06	0.06	0.05	0.09				0.08
	(0.08)	(0.10)	(0.08)	(0.10)				(0.09)
Industrials	0.17	-0.19	0.25	-0.06				0.03
	(0.13)	(0.15)	(0.14)	(0.15)				(0.14)
Healthcare	-0.3*	-0.24	-0.03	-0.22				-0.15
	(0.17)	(0.16)	(0.17)	(0.16)				(0.14)
Technology	0.09	0.05	0.15	0.08				0.08
	(0.09)	(0.11)	(0.10)	(0.11)				(0.10)
Utilities	-0.03	-0.18	-0.22	-0.44***				-0.29*
	(0.14)	(0.15)	(0.16)	(0.16)				(0.15)
Realestate	0.00	-0.07	0.00	-0.06				0.01
	(0.06)	(0.10)	(0.07)	(0.10)				(0.09)
Fixed Income	-0.23	-0.20	-0.23	0.00				-0.20
	(0.32)	(0.29)	(0.34)	(0.30)				(0.28)
PB Ratio					1.64***		3.06***	3.21***
					(0.34)		(5.14)	(0.55)
PE Ratio						0.14	-0.61***	-0.37**
						(0.11)	(0.20)	(0.18)
Manager Tenure							-0.08	-0.12*
							(0.08)	(0.06)
Intercept	9.9	25.92	41.31*	27.57	-0.46	7.45	3.71	-8.91
	(8.29)	(25.54)	(21.59)	(31.66)	(3.95)	(3.90)	(4.12)	(29.94)
R-squared	0.3680	0.4535	0.3975	0.5013	0.4932	0.1992	0.5100	0.5951
Adj R-squared	0.3069	0.3838	0.3218	0.4230	0.4722	0.1657	0.4890	0.5241
No. Observations	230	230	230	230	230	230	230	230

Note: * Indicates statistical significance at the 10% level
** Indicates statistical significance at the 5% level
***Indicates statistical significance at the 1% level
X Denotes the introduction of relevent controls

Table 6 **OLS Regression Table: All Funds**

Dependent Va	**Post-tax 3yr Returns**							
Regressor	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)
Dummy Active	2.50*	0.72	1.95	0.4	1.68	5.24***	1.54	-0.92
	(1.37)	(1.36)	(1.75)	(1.65)	(1.37)	(1.32)	(1.44)	(1.55)
Fundumentals	X	X	X	X	X	X	X	X
Capitalization Controls		X		X				X
Region Controls			X	X				X
Energy	0.25***	0.2*	0.17*	0.23*				0.3***
	(0.09)	(0.11)	(0.09)	(0.12)				(0.11)
Consumer Stap	0.19**	0.21*	0.11	0.15				-0.11
	(0.09)	(0.11)	(0.10)	(0.11)				(0.11)
Telecommunic	-0.27***	-0.26**	-0.30***	-0.20*				-0.07
	(0.10)	(0.13)	(0.11)	(0.13)				(0.12)
Materials	0.08	0.03	0.06	0.02				0.07
	(0.08)	(0.11)	(0.08)	(0.11)				(0.10)
Consumer Disc	0.36***	0.35***	0.31	0.30**				0.30***
	(0.11)	(0.13)	(0.11)	(0.13)				(0.11)
Financial Servi	0.07	0.05	0.05	0.09				0.20
	(0.08)	(0.10)	(0.08)	(0.11)				(0.10)
Industrials	0.18	-0.16	0.25*	-0.05				0.04
	(0.13)	(0.15)	(0.14)	(0.15)				(0.14)
Healthcare	-0.26	-0.22	-0.28	-0.21				-0.14
	(0.17)	(0.16)	(0.17)	(0.16)				(0.15)
Technology	0.09	0.06	0.16	0.08				0.08
	(0.09)	(0.11)	(0.10)	(0.11)				(0.10)
Utilities	0.01	-0.13	-0.17	-0.39**				-0.23
	(0.14)	(0.15)	(0.16)	(0.16)				(0.15)
Realestate	0.01	-0.06	0.01	-0.05				0.01
	(0.06)	(0.11)	(0.07)	(0.10)				(0.10)
Fixed Income	-0.17	-0.03	-0.20	0.01				-0.2
	(0.32)	(0.30)	(0.34)	(0.30)				(0.30)
PB Ratio					1.68***		3.01***	3.3***
					(0.35)		(0.59)	(0.56)
PE Ratio						0.17	-0.59***	-0.41**
						(0.11)	(0.2)	(0.18)
Manager Tenure							-0.94	-0.14**
							(0.09)	(0.07)
Intercept	6.86	16.61	35.12	25.45	-2.25	5.43	1.88	-10.11
	(8.25)	(9.40)	(21.49)	(32.18)	(3.90)	(3.86)	(4.06)	(30.41)
R-squared	0.3672	0.3924	0.3952	0.485	0.4981	0.1994	0.5192	0.5826
Adj R-squared	0.3051	0.3195	0.3192	0.4042	0.4771	0.1658	0.4944	0.5093
No. Observatic	230	230	230	230	230	230	230	230

Note: * Indicates statistical significance at the 10% level
** Indicates statistical significance at the 5% level
***Indicates statistical significance at the 1% level
X Denotes the introduction of relevent controls

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