

Fact and Fantasy in Index Investing

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Preface

Index-based investing is gaining ever-wider acceptance among professional fund managers. For individual investors however, indexing is a relatively new concept. While they may have heard of indexing, or read about it in the business press, individual investors may not always realize just how compelling and broadly-based the case for indexing is.

The purpose of this paper is to go some way towards closing this knowledge gap between the “pros” and the individual investor. I propose to do so by taking the reader on a guided tour of the extensive and fascinating work in financial theory and research that has been done over the last several decades which supports indexing as an investment strategy.

My audience for this paper is the individual who may have no formal training in finance or economics, but who wishes to gain a deeper understanding of the theoretical and empirical underpinnings of indexing.

As is the case with any voyage of discovery, it helps to speak some of the local language. Before we begin then, the reader may want to review some key terms which will come up during the tour.

Key Terms

Basis Point: Points out of 1%. For example a management expense ratio of 90 basis points means 90/100 of 1%.

Bull Market: A rising stock market. Historically markets have been rising about 70% of the time.

Bear Market: A falling stock market.

Dynamic Asset Allocation: Deciding when and how to rebalance a portfolio which has grown to deviate from the target mix you established with your original strategic asset allocation.

Efficient Markets Theory: A belief that security prices fully reflect all available information and that analysis of information is not expected to yield above average security returns.

Hurdle Rate: The additional return an active manager must realize to cover the additional trading and research costs associated with active over passive management.

Investment Policy: The plan to allocate your assets in order to achieve your goals.

Investment Strategy: The methods you expect to use in making actual security selections and timing the market.

Management Expense Ratio: The percentage, normally expressed as a percentage of assets, charged by the fund manager for portfolio advisory and management services, together with other fund expenses.

Return or Risk Premium: The typical excess return of common shares over bonds or T-bills. The premium of common shares over T-bills and bonds has averaged 5.9% per annum and 4.8% respectively. Return premium typically refers to past excess returns, and risk premium typically refers to anticipated future excess returns.

Strategic Asset Allocation: Determining an appropriate target mix for your investments among the various classes of safety, income and growth, using both domestic and global securities.

Tactical Asset Allocation: Deciding whether you should alter your portfolio's target mix to reflect the changing economic outlook – and, if so, how.

Tracking Error: The difference between the return on an index investment and the return of its target index. For example, if the Toronto 300 Index produces a one-year return of 18.76%, but a mutual fund designed to emulate that index returns only 17.98%, then the tracking error would be 0.78%.

PART ONE: THEORETICAL AND PRACTICAL UNDERPINNINGS

1. Introduction: The Two Basic Investment Finance Decisions

You've worked hard and diligently saved – or you've gotten lucky, receiving a modest inheritance or beating the odds on the lottery. Whatever the source, you have a sum of capital and you're ready to invest it. So, what do you do?

Like all investors – from other individuals such as yourself to the managers of huge institutional funds – you face two basic decisions, both involving the fundamental principles of investment finance. You must determine:

- A. Your **Investment Policy**, or how you plan to allocate your assets in order to achieve your goals; and,
- B. Your **Investment Strategy**, or the methods you expect to use in making actual security selections and timing the market.

Defining your investment policy should include three steps – the first, and most important, of which is determining your “strategic asset allocation.”

Strategic asset allocation simply means deciding how large a percentage of your capital you want to devote to each of the primary investment classes – i.e. those offering “safety” (securities such as Treasury Bills), “income” (bonds and high-dividend stocks) and “growth” (common shares). This involves reviewing your financial goals, the time you have available to achieve them, your present life-cycle stage and your tolerance for risk.

A typical asset allocation for a person in their middle years might put 10% in the safety class (for example, in money market funds); 40% in the income sector (say, in bond funds); and 50% in growth issues (e.g. in equity funds). By contrast, if you're a younger investor, you might want a more aggressive mix – say, 5% safety, 30% income and 65% growth. Or, if you're older, you might opt for a more conservative allocation – perhaps 15% safety, 45% income and 40% growth. Unless your situation is highly unusual, however, your target portfolio mix should always lie somewhere between 30%/70% and 70%/30% on the debt-to-equity scale (with “debt” being the combined safety and income components and “equity” representing the growth class).

Once you've determined an initial portfolio mix and put your money to work accordingly, a funny thing happens. Your investments perform at differing rates, and your asset allocation fairly quickly gets “out of balance.” This triggers the second phase of your investment-policy determination – setting guidelines for what is called “dynamic asset allocation.” These guidelines define when and how you should make changes in your individual investment holdings in order to restore your overall portfolio mix back to its original target.

For example, assume your original portfolio mix was 10% safety, 40% income and 50% growth, and you wanted to restrict variations to no more than 5% from class to class. If your actual mix drifted to 10% safety, 35% income and 55% growth, it would trigger a “dynamic” re-allocation in which you would sell enough stocks and buy enough bonds to restore the target mix.

The final step in your investment policy determination involves deciding whether to engage in what is known as “tactical asset allocation.” Tactical allocation is the practice of adjusting your target portfolio mix in an attempt to increase returns by anticipating changes in economic conditions. Although fairly widely used, tactical allocation – or “market timing” as it is more commonly known – is controversial, and its success remains a matter of debate too substantial for this manuscript.

Now let's turn to the determination of your investment strategy, which is the real focus of the remainder of this document. Investment strategy is simply the process by which you select the individual securities needed to build a portfolio that reflects your desired strategic asset allocation mix. And, as you will learn in the pages that follow, you have two broad choices of methodology – “passive investment” versus “active selection.”

The relative merits of each of these two approaches to security selection have been the focus of much research – and much debate. For example, a well-known study conducted by Gary P. Brinson and several associates, analyzed the performance of 91 large American pension funds from 1974 through 1983. It concluded that investment policy (or asset allocation), not investment strategy, was the key determinant of pension fund performance.¹ The study's authors reported that the return attributable to passive portfolio management explained an average of 93.6% of the variance in a portfolio's performance. In other words, only slightly more than 6% of the variation in returns is attributable to active security selection.

An oft-cited conclusion of the Brinson study is that the asset-allocation decision – rather than the security-selection and market-timing decisions – has the greatest impact on both the total portfolio return (pre-cost) and the degree of annual variability from that return. This contention is at the heart of the debate over passive versus active investment selection.

¹ Brinson, Gary P., L. Randolph Hood and Gilbert L. Beebower, “Determinants of Portfolio Performance,” Financial Analysts Journal, July/August 1986. pp. 39-44.

2. Passive versus Active Investment: The Basics

Whether to adopt a passive or an active style will be among the most important decisions of your investing career. Making it will require you to examine the very essence of stock-selection philosophy and delve into the varying beliefs about the pricing, trading patterns and informational structure of equities. However, you must exercise caution in your considerations because this is one of the most contentious issues in finance, stirring up a host of both factual and fictitious arguments. In fact, some of the most ill-conceived and illogical rhetoric flows from the active-versus-passive debate. For example the argument often put forward that active management protects investors against stock market downturns (because the fund manager often holds cash positions) is based on the illogical notion that investors are incapable of achieving a change in their asset mix on their own.

A Look at Passive Investing

If you decide to take a passive approach to investing, your strategy will be to match the returns on one of several broad market indexes. Your objective will be to do so with as small a tracking error as possible.²

Passive investors believe the analysis of security and market information will not yield anything more than the normal returns one would get by randomly selecting a portfolio, say by throwing darts at a list of stocks. Adherents of this style pursue a pure “indexing” strategy. Rather than choosing individual stocks, they buy securities such as index participation units which track an underlying index³; index mutual funds that track specific domestic or global indexes; and/or index-linked notes which are pegged to market indexes. This eliminates considerable research and transaction expense, allowing them to construct and maintain an investment portfolio in a highly cost-efficient manner.

² This means keeping the difference between your actual returns and your target index returns to a minimum.

³ For example the i60s units which track the S&P/TSE 60 Index.

The first index portfolio is attributed to the Samsonite pension fund, which created it in 1971. The Wells Fargo Bank is credited with the first large index fund, introduced in 1973. Since then, indexing has gained relatively rapid acceptance among institutional investors in the United States and the United Kingdom. One estimate is that 23% of US equity mandates and 20% of UK mandates are indexed.⁴

Canada's first index fund was National Trust's TSE 300 Index Fund, introduced in 1978. However, the growth and development of indexing in Canada has been much slower than in the US and the UK. This slow growth reflects a number of factors, including a general lack of understanding of passive investing by individual investors, fear on the part of investors that they may be missing out on high returns earned by "star" fund managers, and poor promotion of index products by brokers and financial advisors. The latter circumstance may reflect the fact that index products pay lower commissions and trailer fees than active products.

A 1996 article by John Ilkiw reported that about 10% to 15% of Canadian pension assets are passively managed.⁵ On the retail side however, indexing is still virtually ignored. Olma and Kelash estimate that only about 3% of individual US equity holdings are in indexed securities.⁶ Overall, when combined with institutional practices, perhaps 10% of US equity holdings are indexed.

Most individual investors do not seem to be aware of an essential statistic you must consider when making your active-versus-passive decision: in recent years, active equity investors in Canada, the US and the UK have, on average, under-performed the major market indexes – typically by as much as 1% to 3% per annum.

⁴ Olma, Andrew and Paul Kelash, "The Case for Indexing," Indexes, The Journal of Index Issues in Investment, Issue 1, Spring 1999, Page 17.

⁵ Ilkiw, John, "Passive or Active Management A Never Ending Debate," Russell Canada Monograph, No/14. July 1996.

⁶ op. cit. footnote 4.

The Art of Active Investing

If you choose to challenge that statistic and adopt an active approach as your investment strategy, your goal will be to earn returns in excess of a benchmark target by employing different investment techniques – most typically fundamental or technical analysis. As an active investor, you'll be among those who believe that stocks can deviate substantially from their intrinsic values – and that you can use various analytical techniques to find and profit from those that the market undervalues. Your ability to earn a return in excess of the expected return, according to an appropriate valuation model, is called “value-added” investing.

You face many more decisions and far more research as an active investor. That's because there are numerous analytical measures of what constitutes a “mis-priced” security, as well as a host of different investment theories regarding where best to look for them. Value investing,⁷ growth investing,⁸ cap investing,⁹ sector rotation¹⁰ and momentum trading¹¹ are just a few of the “styles” within the active investment framework.

Depending on your personal preferences and abilities, you can rely on fundamental analysis, technical analysis or, in some cases, both. Fundamental analysis presupposes that the data contained in financial statements, economic forecasts and other publicly available information, provide useful clues in assessing the intrinsic value of a security. In making your fundamental analysis, you derive estimates of a firm's earnings, dividend progress and growth prospects, and then look to see if your estimates differ from the market consensus or aren't currently incorporated in the market price of the security.

⁷ Value style practitioners typically concentrate on finding undervalued shares trading at low price-earnings (P/E) multiples or low price to book value shares; value investing is associated with fundamental analysts such as Benjamin Graham and Sir John Templeton.

⁸ Growth style practitioners search for companies with strong growth potential; they generally concentrate on high P/E multiple stocks with strong earnings prospects.

⁹ Micro cap investors focus on companies with values of \$25,000,000 or less, small-cap investors generally are in the \$250,000,000 to \$400,000,000 range, mid-cap investors concentrate on medium-sized companies while large-cap investors concentrate on very large companies, typically those with market capitalizations of \$1,000,000,000 or more.

¹⁰ Sector rotators shift their portfolio weights with the changing sector outlook; this style is based on a belief that industry cycles can be predicted.

¹¹ Momentum traders believe that trends, once begun, tend to persist. They focus their attention on momentum-based short-term trading strategies. At the extreme, momentum traders are quick execution intra-day traders.

The key to fundamental analysis is recognizing that what you are looking for is the security's intrinsic value relative to what it's presently selling for. An appropriate valuation model, which will incorporate traditional dividend or earnings-growth measures, is normally used to estimate intrinsic value. Valuation models range from the simple – such as a one-year forecast of earnings, accompanied by a one-year forecast of the price-earnings multiple – to complex multi-stage growth models.

With technical analysis, you look to the facts of the past rather than the estimates of the future. Your assumption is that analysis of past prices, trading volume and other such data, will prove valuable in forecasting future price directions and levels. As such, you attempt to predict future price movements and make timing decisions on the purchase and sale of specific stocks or market indexes based on various technical indicators. These indicators derive from analysis of patterns and configurations in stock charts, from relative-strength charts, and from review of sentiment, confidence, momentum and contrarian indexes. These indicators, as reflected in current price and volume patterns, presumably tell you when stocks or indexes are undervalued and should be purchased or when they are overpriced and should be sold.

Obviously, you also have various options regarding the intensity of your devotion to technical analysis. The pure technician believes all relevant fundamental information about the market or a company is already incorporated in the index level or share price. As such, he is in agreement with proponents of the Efficient Markets Hypothesis, which holds that no amount of fundamental evaluation can result in superior stock selection. In his mind, it is the analysis of the ebb and flow of the market and the volume accompanying it that reveals the momentum of an index or stock, and thus the likely direction of the next move. Where the technician differs from the efficient markets proponent is in the interpretation of trends. Technical analysts believe that trends, once begun, tend to persist, while efficient-markets types believe trends are identifiable only when they have ended. Deciding how much credence to give to either side will thus be one of the choices you need to make if you decide on an active investment strategy.

3. Theoretical Underpinnings of Passive Investing

Passive investing has solid roots in investment finance. Four models or paradigms provide the theoretical justification for indexing. These are Modern Portfolio Theory, Mean Reversion, Efficient Markets Theory and the Gambler's Ruin Principle.

3.1. Modern Portfolio Theory: Principles of Asset Allocation

Harry Markowitz is the founder of modern asset allocation principles. His work on Portfolio Theory – motivated in the 1940s and first published in 1952 – set out the mathematics of diversification and demonstrated, both intuitively and analytically, that investors who diversify achieve better long-term investment performance results than those who don't.

Markowitz argued that investors should be concerned with only two elements of their portfolio – its expected return, as measured by the mean rate of return, and its risk, as measured by the standard deviation or variance of the mean rate of return. His model, which is now called Modern Portfolio Theory (MPT), and which would eventually win him a Nobel Prize, provided new insight into why and how diversification works. This, in turn, led to a new understanding of how stocks are priced individually, as well as how they are priced relative to a market portfolio.

Two generations of analysts, finance professors, finance students, security advisors, financial planners and financial marketers, have learned and applied the fundamental principle of diversification into modern asset-allocation techniques – and you need to do the same if you are to be a successful investor. Every asset allocation pie chart turned out by financial institutions and by financial planners today owes its origin to MPT.

At about the same time Markowitz was polishing his portfolio diversification work (1949), Alfred Jones was writing about the opposite side of the coin – namely, how to isolate market exposure. Although he didn't use the same terminology, Jones described how to isolate unique risk and eliminate market risk by buying stocks and shorting the market in a specific proportion. In Jones' model:

$$\text{market exposure} = \frac{(\text{long exposure} - \text{short exposure})}{\text{capital}}$$

In other words, Jones pointed out that one should buy an undervalued stock and sell short the market. His approach provided the basic principle for creation of hedge funds, which is to isolate the analytic talent of the advisor from the vagaries of the market. The combination of Markowitz's Nobel Prize-winning work and Jones' lesser-known contributions clearly delineates the partitioning of risk into two classes:

- Systematic or economy-wide risk; and,
- Unsystematic risk, or that unique to the individual security.

These two developments represent the asset allocation and security selection foundations of modern portfolio management.

William Sharpe, John Lintner and Jan Mossin extended Markowitz's work into a theory, called the Capital Asset Pricing Model (CAPM),¹² which provides a methodology regarding how risky assets are priced. The CAPM provides a theory for measuring the relationship between security and portfolio rates of return and those of a representative market index. A resulting single measure, called "beta," estimates the asset's or the portfolio's return relative to the return on a market index.¹³

¹² See Sharpe, W.F. "A Simplified Model for Portfolio Analysis," Management Science 9, January, 1963, pp. 277-293, Lintner, J. "Security Prices, Risk and Maximum Gains from Diversification," Journal of Finance, December, 1965, pp.587-615; Mossin, J. "Optimal Multi-Period Portfolio Policies", Journal of Business, April 1968, pp. 215-229.

¹³ In the original form of the CAPM, the market index is supposed to be the market portfolio, which contains all of the world's risky assets, both financial and real. However, in both empirical testing and application, a representative index such as the Standard and Poor's 500 Composite Index is employed.

A security or portfolio that moves proportionately and in lock-step with the market has a beta of one. If, for example, the rate of return on the market portfolio is 15%, then a portfolio with a beta of one will also return 15%. High beta securities and portfolios (betas greater than one) are more volatile than the market and are expected to provide higher returns than the market when the market rises, and lower returns than the market when it falls. These are deemed aggressive securities or portfolios. Low beta securities and portfolios (betas less than one) are less volatile than the market and are expected to provide smaller rates of returns than the market when the market rises and larger rates of return than the market when the market drops. These are called defensive securities.

Betas are calculated using past security and portfolio data and are hence simply estimates of future relationships. In fact, betas for individual securities are quite unstable over time, although portfolio betas do display reasonable consistency.

The primary purpose of diversifying a stock portfolio is to eliminate the unique risk associated with each individual security, leaving the overall portfolio subject only to the “systematic risk” associated with the market itself. In other words, given a properly diversified portfolio and a stable market, the risk of a loss due to weakness in one individual security should be offset by the potential for gains by other portfolio holdings. Only when the entire market declines should the systemic risk become apparent in the portfolio’s performance. How well a portfolio performs relative to a target index – i.e. its incremental return – depends on how much each individual asset’s risk gets reduced through diversification.

You will find an understanding of both diversification and betas essential in determining your investment policy. That’s because asset-allocation strategies embody the theories underlying both. Diversification eliminates the unique risk associated with individual securities, while asset mix reduces exposure to interest-rate, exchange-rate and inflation risks. Thus, truly efficient asset allocation means creating a diversified portfolio of securities that both reacts differently to various market and economic events and does so to varying degrees.

Implications of MPT

If you adhere to MPT, you should focus your efforts on getting the right strategic asset-allocation mix rather than concentrating on the security-selection and market-timing decisions. Your asset-allocation decisions will have a far greater impact on your total portfolio return and also help reduce the variability of your portfolio relative to your target index.

3.2. Mean Reversion or Asset Class Returns

Mean reversion, or regression to the mean, is a well documented phenomenon. The theory, first expounded in the 19th century, demonstrates a tendency for many variables to fluctuate widely, but to eventually return to a central value, or “mean.” The phenomenon has been associated with numerous subject areas, not all of which involve pure math. These include mean reverting tendencies in the heights of family members, patterns of economic growth, employment levels – and even Major League Baseball batting averages!

Mean reversion is also a key phenomenon in investment finance. Returns on common shares fluctuate substantially from year to year, but have had a long-run tendency to regress to 10% to 11% per annum. Typically, T-bills and bonds yield about 4% and 6% respectively, which means the anticipated performance on a balanced portfolio is about 8% per annum.

Implications of Mean Reversion

What mean reversion means to you is this: The stock market, like the mailman, always delivers – but you have to give it a chance. And, you can’t try to outguess it.

In any given year, it may go down. However, over the past 50 years, common shares have produced exceptional returns – and they’ve been a great hedge against loss of purchasing power, with after-inflation returns averaging about 5.5% per annum. In fact, every ten-year period since the Depression has yielded healthy inflation-adjusted returns. As a result, regardless of the investment strategy you choose, you should plan on making equities a significant component of your investment portfolio. The appropriate amount, or allocation, will, of course, vary depending on your taste for risk, your stage in life and your financial plans. However, as noted earlier, the suggested range of equity inclusion is normally 30% to 70%.

3.3. Efficient Markets Theory

The cumulative result of hypothesizing about and testing equity performance from the turn of the century to the early 1960s, was the development of a new theory of how securities are priced. Labeled the Efficient Markets Theory (EMT), it embodied the general thrust of a large number of studies, which provided strong evidence that current stock prices reflect both past and currently available public information. (A modified form of the theory is that security prices reflect all information after a set of active investors expends resources to ensure this result.)

The EMT contends that you cannot expect to earn excess profits by employing conventional analytical techniques using information available to all. For example, an EMT proponent would say you shouldn’t expect financial statements to provide “news” – only “confirmation” information.

Prior to the 1950s, it was generally believed that security analysis would lead to fruitful results. Although there were some early studies^{14 15} on the subject, these had been generally ignored by academics and practitioners. However, a number of papers published in the 1950s and 1960s documented a seemingly random character to common share price changes, reporting that stock price patterns may not be distinguishable from randomly generated patterns, or what is called a “random walk.”¹⁶

The major impetus came from the work of Osborne, Roberts, Alexander, Fama and other researchers.¹⁷ The initial studies focused on stock price movements themselves. They reported that security prices seemed to behave in a manner similar to a (fair) roulette wheel – i.e. that the past had no influence on the future and therefore could not be used to predict upcoming price movements. (If a roulette wheel is fair, then knowledge of recent outcomes – notwithstanding the cries of the “system players” – will not be of any value in predicting the results of the next spin of the wheel.)

It’s also important to note that, unlike many other scientific developments, the results predated the theory. Empirical tests were conducted and some interesting findings were obtained. Eventually, these findings formed the foundation for the EMT as it relates to information, the extent to which security prices reflect information and whether possession of certain information by an investor can be used to generate excess investment returns.

¹⁴ Louis Bachelier conducted the first random walk type study in 1900. Bachelier concluded that commodity speculation in France was a “fair game” – on average long and short speculators had an expectation of breaking even.

¹⁵ See for example: Bachelier, L., “Theçorie de la Speçculation,” Ann. Sci. Ecole Norm. Sup., vol. 3, no.1018, Paris, Gauthier-Villars, 1900; Working, H., “A Theory of Anticipatory Prices,” American Economic Review, May 1958, pp.188-199.

¹⁶ The term “random walk” is believed to have first appeared in an article in Nature magazine in 1905.

¹⁷ See Roberts, Harry V., “Stock Market Patterns, and Financial Analysis: Methodological Suggestions,” Journal of Finance, 14, March 1959, pp. 1-10; Osborne, M.E.M., “Brownian Motions in the Stock Market,” Operations Research 7, March-April 1959, pp.145-173; Alexander, S.A. “Price Movements in Speculative Markets: Trends or Random Walks,” Industrial Management Review, 2, May, 1961, pp.7-26 and “Price Movements in Speculative Markets: Trends or Random Walks, No.2,” Industrial Management Review, 5, Spring, 1964, pp. 25-46; Fama, E. F., “The Behaviour Of Stock Market Prices,” Journal of Business, 38, January, 1965, pp. 34-105.

The question is, based on all available information, does the market price of a security represent its true investment (or “intrinsic”) value? If you believe the market is efficient, then you must accept the EMT’s implication that it does – i.e. that securities are properly priced and therefore do not have positive, expected risk-adjusted excess returns. An efficient market implies that securities are properly priced. This means that you cannot expect to earn higher returns than that appropriate for the riskiness of the security. Of course you may well realize high (or low) returns after the fact. But the theory states that this will be due strictly to unexpected and unpredictable events, not to security analysis

For example, an investor might analyze the shares of Canadian Pacific Limited and conclude that they are undervalued at the current \$25.00 level. Efficient market theorists would argue that the investor’s expected return on Canadian Pacific is no different from its long-run expected average of say, 11% per annum. If in fact, the investor realizes a return of say 20% over the next year, it would be attributed to sheer serendipity and not to stock selection.

Of course, the concept of market efficiency isn’t quite that simple. In fact, the EMT hypothesis comes in three forms – weak, semi-strong and strong.

The weak form examines whether security prices fully reflect past information (such as historical security price movements and trading volume). It has been tested in numerous ways, ranging from simple filter tests to more complex statistical studies, and researchers consistently found that:

- Past price changes in securities provided no clues as to future movements.
- The size and direction of future stock price changes could not be predicted from the size and direction of past movements.

Stated another way, weak-form studies repeatedly found that analysis of the past cannot provide a profitable trading strategy.

The semi-strong form deals with publicly available information (such as financial statements and economic forecasts) and whether security prices fully reflect this information. If you accept the semi-strong form, you believe that it does, and that superior security returns cannot be achieved through fundamental analysis. In other words, the semi-strong form is incompatible with the concept of fundamental analysis.

The strong form states that security prices reflect all information, including monopolistically controlled and specialized data. In other words, the strong form is incompatible with both insider-trading profits and excess returns earned by active fund managers.

Tests of the EMT have generally supported the weak and semi-strong forms, as well as the strong form with respect to mutual fund managers, but not with respect to insiders. Eugene Fama, in 1991, replicated the EMT studies of the 1970s and came to similar conclusions.

However there is some contradictory evidence. In 1981, Yale Economist Robert J. Shiller published a startling paper. In an exhaustive examination of security prices and dividend payments spanning the period 1871 through 1979, he found a strong divergence between the market price of the S&P and DJIA Index and the present value of the future dividends of the two indexes. Since the price of a security is supposed to equal the discounted present value of future dividends, he concluded that stock prices did not fully reflect information.¹⁸ Proponents of the EMT have countered that Shiller's findings may be no more than a reflection of longer-term mean reversion.

¹⁸ Shiller, Robert J., "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?" American Economic Review, June 1981, vol. 71, pp. 421-436.

Less easily countered are a number of anomalies which have recently surfaced. These oddities provide both negative implications for the EMT and positive encouragement for investors who prefer to seek out active trading opportunities. One of the most important anomalies is the “Low P/E Multiple Effect,”¹⁹ a finding that securities with low price-to-earnings (P/E) multiples tend to yield higher returns than expected. A similar anomaly is the “Small-Firm Effect,”²⁰ which is based on findings that securities of smaller companies have higher returns than those of their larger counterparts. One mammoth study, spanning returns over nearly 60 years, found that small stocks outperformed the S&P 500 Index by about 5.79% per annum. Based on that study, the “Small-Firm Effect” is probably permanent, thus violating the notion of an efficient market.

The “Small-Firm Effect” is probably also related to the so-called “Neglected-Stock Effect,” which demonstrates higher than expected returns on stocks that lack popularity with large institutions or are not widely followed by investors. (Some institutional managers are not allowed to invest in smaller-cap stocks.) Part of this phenomenon is explained by risk – i.e. smaller firms are more volatile than their larger counterparts, and are thereby also capable of producing higher returns. However, volatility alone is not enough to explain a difference of this magnitude. One study pointed out something of great importance – that stocks of small companies may contain more unique, or unsystematic, risk than those of large companies. This implies that small stock portfolios must be more broadly diversified in order to offset the extra volatility and eliminate the additional unsystematic effects.

Another anomaly, the “Day of the Week Effect,” indicates that stock returns – and prices on average – are lowest on Mondays and highest on Fridays.²¹

¹⁹ Basu, S., “The Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of The Efficient Markets Hypothesis,” Journal of Finance, June 1977, vol. 32, No.3, pp. 663-682.

²⁰ Banz, Rolf, W., “The Relationship Between Return and Market Value of Common Stocks,” Journal of Financial Economics, Vol. 9, March, pp.13-18, 1981; Keim, Donald, “Size Related Anomalies and Stock Return Seasonality: Further Empirical Evidence,” Journal of Financial Economics, June 1983, vol. 12. pp. 13-32.

²¹ French, Kenneth, R. “Stock Returns and the Weekend Effect,” Journal of Financial Economics, March 1980. This Day of the Week Effect has been traced as far back as 1928, and has also been identified for other markets including Canadian, Japanese, British and Australian.

Researchers have also uncovered an “End of the Year Effect” – an apparent tendency for securities, particularly those of small firms do, on average, yield lower returns in December and higher returns in January.²² The seasonal pattern has been linked to tax-loss selling and to “window dressing” by fund managers, who may be shedding small-cap stocks in December and buying them back in January. Small firms also outperform large firms in January, and the “End of Year Effect” may be a “Small Firm Effect” extension.

Some 45 of these trading and pricing anomalies have now been documented. These seeming exceptions to the EMT provide grist for the view that superior investment analysis and investigation can yield positive returns. However, even though these peculiarities are well supported, the associated abnormal returns are not typically high enough to allow you to develop a profitable trading strategy after factoring in commissions and other trading costs.

An important observation that puts support for efficient markets theory in perspective, is that of selection bias. What would you do if you perfected a foolproof method of picking stocks? Would you publish it – or keep it to yourself? Unless you’re looking for a Nobel Prize in finance, you’d probably keep it a secret. And, if most other people behave in the same way, it probably means the best stock-selection methods are not published. This, in turn, implies that studies that examine analytical performance may be focusing on inferior stock-selection models – i.e. that researchers are not granted access to the methods used by really superior stock pickers. This so-called selection bias may account, at least in part, for how surprisingly strong support for the random walk theory is.

²² Reinganum, Marc, R., “The Anomalous Stock Market Behavior of Small Firms in January, Empirical Tests For Tax-Loss Selling Effect,” *Journal of Financial Economics*, 1983, Vol.12, No.1; Roll, Richard, “Vas ist Das?” *Journal of Portfolio Management*, Winter, 1983.

Implications of EMT

You've now seen the various arguments for efficient markets, as well as some proven exceptions to the theory. If you believe the markets are indeed efficient, then your only acceptable investment-strategy choice is to adopt a passive approach. However, if you doubt the validity of the EMT, you may prefer to opt for an active strategy. Be aware however, that failure to accept the EMT is not, in itself, sufficient cause to abandon a passive strategy. Even if you can select a superior stock based on active research, it still takes a lot of work – and you must be able to repeat the process over and over – in order to build a complete and effectively diversified portfolio that will consistently outperform your target index. Very few individuals are capable of this.

3.4. The Gambler's Ruin Principle

One reason so few individuals succeed in active portfolio management is the “Gambler's Ruin Principle,” which refers to the problem of selecting the right idea, but utilizing the wrong implementation strategy for that time period. For example, the Tokyo Stock Exchange gained more than 30% during the first ten months of 1999. An investor who bought a well-diversified Japanese mutual fund or index product, such as a Japan Worldwide Equity Benchmark Share (or WEBS) would have earned +30%. However, an investor who selected weaker individual Japanese stocks or poorly performing mutual funds, could have recorded a gain well below that on the index. Thus, even though you might have anticipated the Tokyo rally, you would have under-performed someone using a passive approach because you chose the wrong investment vehicles or selected the wrong mix of stocks (perhaps overweighting in weak sectors).

Implications of Gambler's Ruin

The principle of Gambler's Ruin demonstrates the necessity that you identify and clearly focus on a particular strategy. If you want to invest in Japan because you have formulated positive views on Japan's economic outlook, then you should buy a Japanese index product. However, if you want to invest in undervalued Japanese securities because you believe that will give you a comparative performance advantage, then you should focus on a strategy of selecting individual Japanese stocks.

3.5. Conclusion

In summary then, if you are drawn to the idea of passive investing, you should remember the four paradigms just discussed. To wit, you should:

- Concentrate on setting the right strategic asset-allocation mix for your personal situation (Markowitz Portfolio theory and diversification principles).
- Make sure that, unless you have really unusual circumstances, you include a significant equity component in your portfolio (Mean Reversion).
- Take assurance that passive investing is supported by extensive studies that led to formulation of a major finance hypothesis (the EMT).
- Always focus on a specific implementation strategy (to avoid Gambler's Ruin).

4. Conceptual and Practical Underpinnings: Why Should Indexing Work?

If you are like most individual investors, your adoption of a passive investment strategy will rely heavily on indexing – i.e. the purchase of products designed to emulate a target market index, such as the S&P 500 or the S&P/TSE 60. It's easy, it's efficient and, in addition to support from numerous theoretical models, there are a plethora of conceptual and practical reasons why indexing should work. This section details these reasons.

4.1. Enhanced Transparency

Indexing strategies are transparent and unambiguous. Typically, active equity fund managers maintain cash reserves of 5% to 10%. These cash reserves transform the allocation to something other than a 100% equity portfolio. For example, a fund with cash reserves of 10% is actually a 10% safety/90% equity portfolio.

Cash reserves make it more difficult for you to determine a fund's true asset allocation and may act as a drag on the fund's returns. Furthermore, you are paying active management fees on the cash component of the portfolio. In contrast, a typical index fund has a very small or negligible cash reserve. For example, I examined the data for 17 Canadian index mutual funds and found that, as of September 1999, the average cash balance was just 0.81%.

4.2. Lower Acquisition Costs

If you want to index your personal portfolio, you have three choices. You can buy all the securities of the target index in their appropriate weights; acquire a subset of securities designed to replicate the index, or simply buy an index-linked product. A good example of an index-linked product is the i60 index participation units based on the S&P/TSE 60 Index, or Standard & Poor's Depository Receipts (SPDRs) based on the S&P 500 Index (see the "Key Terms" to Part Two below for a description of these products). With each method, you avoid having to spend time and money searching for individual stocks, meaning your acquisition costs are lower than for an actively selected portfolio.

4.3. Lower Trading Costs

With an indexed portfolio, you make trades only when there is a change in the underlying index. As such, if you are managing your own indexed portfolio, you pay fewer commissions and incur fewer incremental tax liabilities than you would if you were using an active approach. (Note: Taxes on security gains are deferred until the security is actually sold. Thus, an indexed portfolio may go several years without a taxable sale, whereas an actively managed portfolio will probably incur tax liabilities every year.)

You get the same benefits if you purchase index funds or other index products. The fund manager will be making fewer trades and therefore incurring lower costs for commissions, bid/ask spreads, and taxes. In addition, because no research or decision-making is required, you will be charged far lower management fees than would be the case with an active manager.

Active management incurs higher commissions, taxes, management fees and higher bid/ask spread costs. One estimate is that the trading costs for active portfolios are about six times greater than for passive investing. Another researcher, Larry Martin, has estimated the “hurdle rate” (or additional return an active manager has to realize just to cover the additional trading costs) for active management over passive management is somewhere in the order of 1.2675%.²³ Martin’s findings are shown in Table 2 (below):

Table 2

Estimated Trading Costs in Basis Points			
Item	Passive	Active	Difference
Management fees	20.00	50.00	30.00
Brokerage commissions	1.00	12.50	11.50
Incremental taxes	1.25	22.50	21.25
Bid/ask spread costs absorbed	3.50	67.50	64.00
TOTAL	25.75	152.50	126.75

4.4. Lower Management Costs

As just noted, fees paid for passive management are much lower than those paid for active management. Index fund managers do not need the large staff of research analysts and portfolio managers required by active funds. Furthermore, there are monitoring and search costs for active fund managers. The contracts between active fund managers and their stakeholders may be complex and expensive since active managers may be granted substantial discretion. On the other hand, index managers do not need close supervision or daily monitoring, and are rarely fired. Accordingly, you should expect to see far lower management fees and expense ratios with index funds and products.

²³ Martin, Larry “The Evolution of Passive Versus Active Equity Management,” The Journal of Investing, Spring 1993, pp. 17-20

4.5. Lower Market Impact Costs

The goal of an index fund manager is simply to complete a portfolio that will emulate the target index. Thus, his or her trades are considered to be “information-less” and, as a result, the market impact costs are likely to be lower than those associated with active managers, who are assumed by other traders, to be trading based on some research findings or on special information.

4.6. The Overall Cost Impact

Based on costs, Martin estimated the probability of active management outperforming an index fund under three scenarios; one involving a single active manager and two others involving three and five managers, respectively. His results are shown in Tables 3 and 4 (below).²⁴

Table 3

Probability of Active Management Outperforming an Index
(Assuming One Manager of a Fund)

Number Of Years	Probability
1	41%
5	29%
10	22%
20	14%

²⁴ Martin, Larry “The Evolution of Passive Versus Active Equity Management,” The Journal of Investing, Spring 1993, pp. 17-20

Table 4

Probability of Active Management Outperforming an Index
(Assuming Multiple Managers of a Fund)

Number Of Years	3 Managers Probability	5 Managers Probability
1	33%	29%
5	17%	11%
10	9%	4%
20	3%	1%

Note: These estimates are similar to those achieved by Canadian fund managers in the 1989-1998 decade, which will be shown in Section 6.

4.8. The Passive/Active Arithmetic Conundrum

Nobel Prize winner William Sharpe argues that if indexers own a portion of the market, then active managers must own the remaining portion. Collectively, the two represent an index fund since they equal the entire market. Indexers pursue a buy-and-hold²⁵ strategy, while active managers trade among themselves, thereby producing both losers and winners, which tends to lower the cumulative performance of active funds. Thus, Sharpe says, the average indexed dollar can't help but outperform the average actively managed dollar after costs.²⁶ Of course, on the basis of one-to-one comparisons, the possibility of an active fund manager who consistently outperforms an index still exists. It is however, difficult to find one in advance.

²⁵ Subject only to revisions as the index exchanges.

²⁶ A market efficiency assumption is not required to support this.

4.9. The Cost of Information Paradox

The most elegant argument of all in support of indexing is based on the Grossman-Stiglitz Information Paradox.²⁷ Grossman-Stiglitz describe a world in which initially, investors are uninformed about the likely returns and variances for a security. For example, assume investors know nothing about Acme Screw and Gear, a publicly traded company. Investor A may become informed about Acme by carrying out research himself or by paying someone to do it. The informed Investor A is likely to outperform the uninformed Investor B, since A possesses a superior ability to value Acme. However, if A's research is seen to be profitable, this will prompt other investors to engage in research as well. This in turn, will reduce the competitive pricing advantage that A has, and may also increase the cost of doing research. Grossman-Stiglitz argue such competition will tend to equalize the performance of informed and uninformed investors after taking the costs of research into consideration.

If this is indeed the case, then active investment analysis quickly becomes a self-defeating process, leaving indexing, or passive investing, as your optimum strategy choice.

5. Arguments Against Passive Investing

Naturally, there are many critics, including a number of active mutual fund managers, who present arguments against passive investing. However, most of these arguments are spurious.

²⁷ Grossman, S.J. and J.E. Stiglitz, "On the Impossibility of Informationally Efficient Markets," American Economic Review," Volume 70, No.3, 1980.

5.1. Research Deterioration

A key argument of many critics of passive investing is that the level and quality of research declines as indexing increases. However, theory would suggest that this is not the case because “research arbitrage” will develop. In other words, if the use of indexing increases, active managers should intensify their research efforts in order to beat the market indexes and increase the return on active management. Thus, research quality should increase as the level of indexing grows. In any event, indexing at this time, represents a small portion of the overall market.

5.2. Negative Market Effects

Critics also contend that indexing causes price distortions for small-cap companies. Their argument is that indexing reduces the pool of funds available for investment in smaller companies since they are generally not included in indexes. There may be some validity to this argument, based on the anomalies evidenced in the “Small Firm Effect” we noted above.²⁸ However, to date, the empirical evidence to support the notion that a company’s performance improves after it is included in an index is mixed. Furthermore, many indexes exist which include small cap companies and for which investors can purchase index funds.

5.3. Indexing Could Cause Markets to Collapse

Perhaps the most troublesome argument the critics raise is that increased indexing could eventually lead to a market collapse. If the entire market is indexed, does this create a situation where a market collapse could threaten? No one can say for certain since, given investor egos and devout analytical beliefs, it is unlikely that indexing could grow to that extent. A more likely scenario would see the rise in indexing create new incentives for active managers to search more diligently for private information, in an attempt to increase the returns on active management – which just might happen. The issue is really hypothetical, since as indicated earlier, probably less than 10% of the market is indexed.

²⁸ Particularly the “Neglected Stock” version.

5.4. Bear Market Protection

The classic argument against indexing is that active management outperforms passive investment in a bear market. The reasoning is that, since passive portfolios are generally fully invested, they don't provide downside protection. In contrast, some fully managed equity mutual funds hold cash in tactical trading strategies, increasing the component in a bear market and thus cushioning the blow.

Frankly, this logic makes little sense. For starters, if you believe that you (or your fund manager) can accurately determine when a bear market is about to start, then the correct strategy would be to sell all your equities and wait for the bear to end. However, there are even problems with this approach, particularly relative to funds.

First, the fund manager first has to be right in assessing when a bear market has begun in order to know when to increase the cash component. The empirical evidence to support fund managers' ability to do this is mixed. For example, in the 1990 and 1992 down markets, actively managed mutual funds outperformed the TSE 300 by 3.4% and 5.6%, respectively. However, in the 1998 down market, the average mutual fund underperformed the TSE by 2.2%.

Second, even if you realistically believe you (or your fund manager) can correctly determine when a bear market is about to start, why would you pursue a strategy that's likely to work only about 30% of the time, since the ratio of bull to bear markets is about 70/30?

You also must consider that by increasing the cash component in anticipation of a bear market, you are changing your strategic asset allocation – or, in the case of funds, having it changed for you. Assume, for example, that you are holding a simple 20/30/50 portfolio, made up of a money market fund, an income fund and an equity fund. If the fund manager increases the cash component of the equity fund by 10%, then your portfolio mix would shift to 25/30/45. Presumably, if you wanted to change your allocation by that much, you would do so yourself!

This last point is worth stressing. As an investor, it is important to know what you are buying. A mutual fund with unclear or changing objectives may be undesirable since it is difficult to know where it fits within your asset allocation. On the other hand an index participation unit such as an i60 or a SPDR is totally transparent – you know exactly what you are getting, namely a pure index investment.

6. The Passive/Active Record

So much for theories, research studies and arguments pro and con. Before you make your own decision regarding passive versus active investing and the validity of indexing, you probably want to see some real performance numbers and comparisons – so that’s what we’ll look at next.

6.1. Fund Returns

Studies of US markets show that actively managed equity funds are fairly consistent in under-performing target indexes. For example, large-cap active portfolios under-performed the Standard & Poor’s 500 Index by an average of 1.2% per year in seven out of eleven recent years. Before you say, “That’s not much,” keep one thing in mind. If anything, the mutual fund results are biased upwards since funds that merge or otherwise disappear do not appear in the sample. Typically, such funds are very weak performers. This so-called “survivorship bias” has been estimated at about 50 basis points per year. Adjusted for costs and survivorship bias, the under-performance number increases to 2.3% per annum.²⁹

²⁹ Olma, Andrew and Paul Kelash, “The Case for Indexing,” Indexes, the Journal of Index Issues in Investment, Issue 1, Spring 1999. Page 18.

John Ilkiw replicated the Brinson study cited in Section 1 by examining the performance of 19 Canadian pension funds over the period 1976 through 1985. He found that, on average, 87% of the variation in total returns was explained by investment policy. The results were similar to Brinson. What this means is that, if there is a significant change in a pension fund's annual return, the key reason for this is a market change in asset-class returns, rather than decisions made in active management. Ilkiw also found that individual managers added as much as 1.97% per annum to long-term policy returns – or subtracted as much as 1.33% per annum!³⁰

In 1986, Vijay Jog also evaluated the performance of a representative sample of Canadian pension funds. He found that, for the equity component of the portfolio, pension fund managers have not shown any significant ability to achieve superior returns relative to four benchmark portfolios. He also found that pension fund managers have not shown superior market-timing ability. Jog concluded: “The results shown here indicate that, on average, a fund sponsor of any sample pension fund would have achieved a superior risk/return trade-off by judicious use of index funds to suit his asset mix.”³¹

Among individual investors and the mutual funds they typically buy, recent results strongly favour passive investing. Over the period 1994 through 1998, Canadian market indexes outperformed the average and median Canadian equity fund every year by an average of about 3.0%. That differential is due in part to management expenses (the average management expense ratio for equity funds is 2.27%), but almost a full percentage point represents under-performance. Allowance for survivorship bias would increase the under-performance.

³⁰ Ilkiw, John, “Passive Payoffs,” Benefits Canada, April 1987, pp. 39-44.

³¹ Jog, Vijay, “Investment Performance of Pension Funds-A Canadian study” Canadian Journal of Administrative Science, “ Vol. 3, No. 1, June 1986.

And finding exceptions wasn't easy – only 25.6% of the 86 broadly diversified Canadian equity funds with five-year track records outperformed the TSE 300 Composite Index. In the Canadian large-cap category, only 6 out of 48 funds (or 12.5%) beat the Toronto 35 Index.³²

Over the period 1989 through 1998, the record for active investing is slightly better. The average Canadian equity mutual fund under-performed the TSE 300 by a rate of only about 0.70% per year. That means the average fund actually beat the index, but the cost of doing so ate up the profits – and more. Only 37% of the 59 funds in the sample beat the index. And the large-cap funds didn't do even that well. Only 19% of those funds were able to surpass the 10.5% per annum compounded return of the Toronto 35 Index.

The record for Canadian-domiciled US funds is equally poor. Over the 1994-1998 period, the average US fund missed the S&P 500 benchmark by more than 6% per annum. Admittedly, the S&P's 25.6% annual compounded rate of return was a tough target, but a mere 5 out of 55 funds managed to beat it. Over the 1989-1998 period, the differential narrows to 3% per annum, with 20% of the funds beating the benchmark.

6.2. Market Timing

“Market timing” was a major buzzword of the late '80s and early '90s, but – despite the aid of numerous gurus, market letters and advisory services – few individual investors were able to overcome the increased trading costs and achieve superior returns. And studies have found that fund managers rarely do any better.

³²Meanwhile index participation units such as TIPS 35 have almost perfectly matched their underlying index.

In a 1996 report, John Ilkiw summarized the findings of three US and three Canadian studies of pension funds. They found that asset-mix timing decisions subtracted, on average, about 40 basis points per year from returns.³³ Ilkiw stated: “This result corresponds with the conventional wisdom that investment strategies based on forecasting market trends and turning points are unlikely to consistently add value.” He went on to say that, to be successful, one must consistently call market moves with about 70% accuracy.

Tactical asset-allocation or total-return funds are fully managed funds in which the fund manager is given complete (or at least considerable) latitude to switch asset classes or styles based on his or her analysis of the changing economic times. For example, a manager who thought the stock market was overvalued would reduce the fund’s equity allocation and switch to T-bills.

Because of their promise of higher returns, these funds are interesting – but they pose a tricky problem for portfolio-diversification and investment-planning purposes: it’s difficult to decide where they fit into your portfolio because you don’t know what their particular safety, income and growth orientation is at any given time. Furthermore, despite their promise, studies have yet to uncover fund managers who can successfully time market cycles.

There is little evidence of success in Canada. For example, over the past five and ten years (to July 31, 1999) the average Canadian tactical asset-allocation equity mutual fund recorded returns of 10.3% and 8.5% per annum respectively. Each of these averages was below the returns on both Canadian stocks and mid- and long-term Canadian bonds. Furthermore, portfolios of Canadian stocks and mid- and long-term bonds in classic safety/income/growth proportions of 10/40/50 to 5/25/70 had returns of 10.7% to 12.7%, respectively. Five out of 33 tactical funds managed to beat a 10/30/60 mix, but they were all from the same fund family.

³³Ilkiw, John, “Passive or Active Management, A Never Ending Debate,” Russell Canada Monograph, No/14. July 1996.

6.3. Persistency and Foresight: Do Winners Repeat?

The “Hot-Hand Theory”

The Brinson study cited in Section 1 concluded that, among US funds, the return attributable to a passively managed portfolio explained an average of 93.6% of the portfolio’s performance. However, it’s possible to misinterpret these findings because an important subtlety is lost in the averages reported in the Brinson study. The authors found that individual plans added as much as 3.69% per annum to long-term policy returns, or subtracted as much as 4.17% per annum! In other words, some individual managers did much better – or much worse – than the averages.

This indicates that, although the average active fund manager cannot outperform the market, there are some active managers in any given year that can and do outperform the averages. The real question of importance to potential buyers of fund shares however, is whether there is evidence of fund managers who can consistently outperform the market. Are there actually “hot” fund managers who earn excessive profits for prolonged consecutive periods?

In fact, there is some evidence that there are. Hendricks, Patel and Zeckhauser, in an article published in the Journal of Finance in 1993, reported that a strategy of selecting the top-performing mutual funds (i.e. those in the top octile in the prior four quarters) could significantly improve returns over simply investing in the average mutual fund.

Unfortunately, their findings on the “dark side” were even more dramatic. Managers who had an “icy hand” – i.e. those who under-performed the market averages – had a much more pervasive tendency to repeat their performance than did their counterparts with a “hot hand.”

However, should you decide to pursue the hot-handed fund managers, you may face numerous obstacles in finding them. For one thing, apparent star performers may not actually be superior analysts. Their high recent returns may simply reflect a strong period for the market sector on which the fund concentrates³⁴ excess gains as a result of accepting excess risks or even sheer serendipity over a given period. Furthermore, some apparent out-performers may simply be “window dressers” who change the composition of their portfolio at reporting time to obscure the risky nature of their true holdings.

Assuming you can find a few fund managers who have consistently added value and beaten the market indexes, can you predict which ones are likely to continue? Economic theory says that, regardless of their current level of success, the returns of out-performing managers will ultimately be driven down to the average rates of return as a result of competitive pressures. Finally, will the cost of finding an out-performer be worth it? If the actual excess return they’ve produced is marginal, it may not cover your research costs in finding the star performers – even if they are able to repeat their success.

6.4. Conclusion

The studies and performance samples just cited should be enough to convince you that a passive investment approach gives you the best chance of growing your capital, and doing so in the most efficient manner. Thus, unless you simply relish the challenge involved in structuring and actively managing your portfolio, you should be ready to designate indexing as your primary investment strategy. However, before you make the final decision, you need to know a bit more about the available indexing products, most of which are described in Part Two.

³⁴ The period studied may have been a good one for the particular style of the fund – e.g. a sector fund.

PART TWO: PASSIVE INVESTING PRODUCTS

Key Terms:

Cash drag: The effect that a cash holding has on the performance of a portfolio. If a fund manager holds 5% of a portfolio in cash and earns 4% on the cash holding while the remainder of the portfolio earns 15%, the cash holdings will drag down the overall portfolio return.

Index participation unit or IPU: These are exchange-traded units of a fund that holds a basket of stocks, which in turn mirrors the composition of a specific underlying market index. IPUs trade just like stocks and trade on a bid/ask basis.

iUnits S&P/TSE 60 (or “i60s”): IPUs based on the S&P/TSE 60 Index

Morgan Stanley’s World Equity Benchmark Shares (or WEBS): IPUs based on individual Morgan Stanley Capital International indexes.

Segregated Investment Funds or Protected Mutual Funds: Funds for which all or part of the principal invested is guaranteed over a specific period.

Standard & Poor’s Depository Receipts (or SPDRs): An IPU based on the Standard & Poor’s 500 Composite Index

Toronto Index Participation Shares (or TIPS 35 and TIPS 100): IPUs based on the Toronto 35 Index (TIPS 35) and The TSE 100 Index (TIPS 100).

7. Introduction

If the first part of our tour has convinced you that stocks are, in general, properly priced (i.e. that the market is efficient) and you feel you will be satisfied earning the average equity return, then a passive investment approach is right for you. The easiest way to accomplish this is with an index-linked product designed to replicate the performance of a bellwether market index such as the S&P/TSE 60 or the Standard & Poor's 500. The sections that follow will provide details on the most useful of these instruments.

7.1. Index Participation Units (IPUs)

One of the most efficient investment products for passive investors is the so-called "index participation unit," or IPU. IPUs are exchange-traded units of a fund that holds a basket of stocks, which in turn mirrors the composition of a specific underlying market index. IPUs trade just like stocks, on a bid/ask basis.

Financial innovators worked for years to develop a tradable basket product that would accurately represent a market index. In the 1980s, Cash Index Participation Units (CIPs), Value of Index Participation Certificates (VIPs) and Index Trust SuperUnits were introduced in the US, and almost as quickly dropped, victims of either poor design or jurisdictional disputes among regulators, exchanges and institutions.

In Canada, the legal securities structure was more accommodating to financial innovation, and the Toronto Stock Exchange debuted its first index products, called Toronto Index Participation Shares (or TIPS), in March 1990. Based on the Toronto 35 Index, which comprises some of Canada's largest public corporations, the TIPS met with early success and led to the introduction of another IPU, this time based on the TSE 100 Index and dubbed HIPS. (The products were subsequently renamed TIPS 35 and TIPS 100). The TIPS structure also served as the prototype for several other IPUs, including SPDRs (based on the Standard & Poor's 500 Composite) and WEBS (based on individual Morgan Stanley Capital International indexes).

TIPS 35 trade just like common shares, but the price of each unit is specified as “1/10th the value of the Toronto 35 Index.” There is a small deviation between the TIPS price and the Index value, due primarily to accumulated dividends, but the TIPS have tracked the index very closely since their inception. (A TSE Index committee is responsible for ensuring that both TIPS 35 and TIPS 100 continuously track their underlying indexes, even as the composition of the indexes changes. As a result, the average annual tracking error has only been about 3 basis points.

A new Canadian IPU debuted in September 1999. Based on the S&P/TSE 60 Index, these new IPUs, called iUnits S&P/TSE 60 (or “i60s”), trade on the Toronto Stock Exchange under the trading symbol XIU. The i60s are managed by Barclays Global Investors Canada Limited (“Barclays”) who also manage other IPUs including Morgan Stanley Worldwide Equity Benchmark Shares or WEBS.

The S&P/TSE 60 Index, introduced December 31, 1998, is a capitalization-weighted index comprising 60 of Canada’s largest companies, including the big five Canadian banks, major mining and resource companies (such as Barrick Gold, Imperial Oil, Inco and Noranda), and other major Canadian companies. The S&P/TSE 60 Index is scheduled to replace the Toronto 35 and TSE 100 indexes at some point in the future. (Earlier in 1999 two specialized indexes – the S&P/TSE Canadian Mid-Cap Index and the S&P Canadian Small-Cap Index – were also introduced, but no IPUs are yet based on these market indicators.)

The i60s have a similar structure to TIPS 35. They are priced at approximately 1/10th the value of the S&P/TSE 60 Index – meaning, for example, that if the S&P/TSE 60 Index is quoted at 404.19, the IPU will trade at about \$40.42. Any tracking error (or deviation of the IPU price from 1/10th the index) will reflect rounding effects due to index adjustments, accrued dividends, accrued management expenses and impending takeovers. The i60 Trust collects dividends on the underlying companies as paid, but pays only quarterly dividends to unit holders. The management expense ratio (MER) is 15 to 17 basis points, so there will be a small tracking error. However, 17 basis points is a competitive MER and well below the 80-point plus MERs of typical Canadian index mutual funds.

Although i60s are almost identical to TIPS, there is an interesting difference. TIPS 35 and TIPS 100 are both based on primarily passively managed indexes – i.e. inclusion in the index is subject to a set of specific inclusionary ranking rules that are not subject to interpretation.³⁵ By contrast, eligibility for the S&P/TSE 60 Index is determined by an S&P selection committee, which picks stocks for inclusion based on both quantitative criteria – size (assets and market capitalization), liquidity and sector leadership – and on qualitative criteria, such as financial viability and stability. This approach will eventually be used for all TSE indexes, including new and transitional ones to be calculated and maintained by S&P. The i60s are available to both individual and institutional investors for use in passive strategies.³⁶

Dividend and Capital Gains Treatment For Canadian IPUs

As noted above, i60s will make quarterly distributions to unit holders, each consisting of up to three different components. These components are:

- (i) Dividend distributions based on the actual dividends paid by the 60 companies in the index, as well as interest earned on cash reserves and on securities loaned out for the purposes of short selling. These distributions are subject to the gross-up and dividend tax-credit treatments applicable for Canadian residents.

³⁵ There is some discretion, based on liquidity factors, regarding the inclusion of securities in the Toronto 35 Index.

³⁶ The i60s are expected to be popular with institutional investors because the index features the stocks institutions most want to invest in, and the liquidity is expected to be sufficient to allow hedging of even the largest fund portfolios.

- (ii) Net realized capital gain distributions. These are gains that may result from the sale of shares by the trust at a price over cost. Such sales may occur, for example, when there is a successful takeover of an i60-included company, or when the composition of the index is changed. Such events will cause a disposition within the i60 basket (deemed or real), which could trigger a capital gain. What actually happens is that the gain is immediately reinvested in the fund on behalf of the unit holders, and the number of i60 units is consolidated (reduced) to leave the number of outstanding units unchanged. The net result is that the unit holder has a capital gain for tax purposes, although no actual gain is received. The capital gain is subject to the 75% inclusion rule. The capital gain received is added to the unit holder's adjusted cost base, thus reducing the gain (or increasing the loss) that would otherwise be recorded when the units are eventually sold.

- (iii) Return of capital (at year end). These disbursements (normally fairly small) represent payments made to the i60 Trust on the issuance of new i60 units to account for distributions accrued prior to the issue date. These payments are treated as a return of capital and, as such, are not taxable when you receive them. However, they reduce the adjusted cost base of your units by the exact amount of the distribution.

i60s unitholders can redeem i60 units at a price equal to 90% of the closing price on the TSE. I don't expect investors to exercise the feature by selling at a 10% discount, although the feature does provide additional tracking support. Large redemptions can occur without any discount, providing further tracking support.

US IPUs

As noted above, TIPS served as the model for the first successful US index participation product. The first US IPU was the Standard and Poor's Depositary Receipts or SPDRs. SPDRs are tied to the Standard and Poor's 500 Composite Index. Many more IPUs have since been introduced – too many to discuss here. However, if you'd like more information about these US products, brief descriptions are featured in the Appendix.

Global IPUs

TIPS also served to inspire numerous products designed to emulate various global equity indexes such as those mentioned earlier for the Tokyo Stock Exchange. Among the most interesting and potentially versatile of these are Morgan Stanley's "World Equity Benchmark Shares," or WEBS. These securities were launched in May 1996 and, like TIPS and SPDRs, represent baskets of shares in weightings designed to replicate the total return performance of a specific market index. There are 17 different WEBS series, each tied to a specific Morgan Stanley Capital International (MSCI) index. (The MSCI World Composite Index, established in 1969, is the most widely recognized and quoted index of world equity performance.)

Although WEBS can be highly useful in adding a global equity component to your asset-allocation mix, it is essential to recognize that tracking errors on WEBS are much higher than on the Canadian and US IPU's. The increased tracking error is caused by the following factors:

1. Cash drag: WEBS hold a small portion of their portfolio in cash.
2. Management Fees: At present, the advisory fee is running at a rate of about 1.10 to about 1.70 per WEBS portfolio.
3. Portfolio sampling: Although WEBS are designed to replicate the specific underlying MSCI index, the approach used by the investment advisor – Barclays Global Fund Advisors – is to hold a basket of securities that closely matches the index. The portfolio is allocated to a subset of the market, and results may therefore vary positively or negatively from the index.
4. Regulatory constraints: Under the US Single Issuer Rule, which is applicable to WEBS, no issuer in a portfolio can represent more than 25% of the portfolio. For example, the Mexico WEBS is affected by this rule. Telefonos de Mexico, which has two issues in the MSCI Mexico index of over 30% in aggregate, must be under-weighted in the WEBS portfolio to meet the Rule. Accordingly, the Mexico WEBS portfolio is under-weighted in the telecommunications sector.

5. Revenue differential: All WEBS record dividends on the ex-dividend dates, whereas the MSCI index estimates monthly dividends as 1/12th of the previous 12 months' dividend. Thus, the tracking error can vary substantially from month to month.

If you'd like more information about these global products, see the Appendix.

Table 6 summarizes the leading North American IPU's trading in October 1999.

Table 6

IPUs Traded as of October 1999				
IPU	Country	Exchange	Underlying Index	IPU/Index Ratio
TIPS-35	Canada	TSE	Toronto 35	1/10
TIPS-100	Canada	TSE	Toronto 100	1/10
i60s	Canada	TSE	S&P/TSE 60	1/10
SPDRs	United States	AMEX	S & P 500	1/10
NASDAQ-100	United States	AMEX	NASDAQ-100	1/20
Mid-cap SPDR	United States	AMEX	S&P 400	1/5
Sector SPDRs	United States	AMEX	Various S&P 500 sectors	1/10
DIAMONDS	United States	AMEX	Dow Jones Industrial Avg.	1/100
Internet HLDRS	United States	AMEX	20 Internet Companies	N/A
WEBS	Various	AMEX	Various MSCI Country Indexes	1/10

7.2. Index Mutual Funds

Index mutual funds are an alternative to IPUs.

Index mutual funds, like other equity mutual funds, invest in portfolios of common shares. However, as with an IPU, the objective of an index fund is to track – as closely as possible – an underlying market index. No time or effort is devoted to stock selection – the objective is simply to track the index while keeping the security acquisition and maintenance costs as low as possible. An attractive assortment of such funds is available to Canadians – and their performance has been quite respectable.

For example, TSE-targeted Canadian index funds have under-performed the TSE Total Return Index (which measures both capital appreciation and dividends) by about 1% per annum over the past five years – pretty well reflecting management expense ratios. The combination of management expenses (0.80%) and cash drag causes the tracking error. Although IPUs generally out-perform the index funds, the funds do have one important advantage in that the dividends can be easily reinvested.

Canadian-based index mutual funds that track US and global equity indexes are also available, as are RRSP-eligible versions (using T-bills and derivatives).

Canadian Index Funds

There are 17 index mutual funds focusing on the Canadian market as of October 1999. Eight are conventional, open-ended funds; one, the Royal Premium Index Fund, is a low MER, high minimum investment fund (minimum investment is \$250,000); and the others are segregated or protected funds. The eight conventional funds are listed in Table 7 (below).

Table 7

Conventional Canadian Index Funds			
Index Fund	Assets Index \$ millions	Tracked	MER
Altamira Precision Cdn. Index	14.22	S&P/TSE60	0.60%
Canada Trust Canadian Index	48.43	TSE 300	0.75%
CIBC Canadian Index	421.25	TSE 300	0.90%
First Canadian Equity Index	330.64	TSE 300	1.25%
Green Line Canadian Index	364.73	TSE 300	0.80%
National Bank Canadian Index	7.72	S&P/TSE 60	0.60%
Royal Canadian Index	65.30	TSE 300	0.50%
Scotia Canadian Stock Index	117.54	TSE 300	0.88%
AVERAGE	171.23		0.77%

The average tracking error for the funds relative to the underlying index was 1.39% for the latest 12-month period (to September 30, 1999); 0.87% per annum for the past three years; and 0.66% per annum for the past five years. The sample is small, but the relationship between the tracking error and the MER is nevertheless very strong. Cash drag (the average cash position of the funds is 1.12%) has had only a small impact on returns. Similar data for the nine other funds (Royal Premium, plus the eight segregated Canadian funds) is shown in Table 8 below.

Isn't it better to deal with Royal Premium on its own, and calculate average MER and tracking error for the segregated funds as a homogeneous group? It would drive the cost of guarantee estimate higher, appropriately so.

Table 8

Canadian Special & Segregated Index Funds			
Index Fund	Assets Index \$ millions	Tracked	MER
CIBC Protected Canadian Index	72.00	TSE 300	2.84%
Commercial Union Canada	14.50	Toronto 35	2.63%
GWL Equity Index (G)	24.69	TSE 300	2.17%
GWL Equity Index (G) NL	55.17	TSE 300	2.40%
ING Life Canadian 35 Index	78.73	Toronto 35	2.55%
Generations Index Canadian Equity	0.58	TSE 300	2.05%
CDA TSE 35 Index (Sun Life)	1.45	Toronto 35	0.67%
Zurich Cdn Equity Index	0.94	TSE 300	2.54%
AVERAGE	31.01		2.23%

The average tracking error for the segregated funds relative to their underlying indexes was 2.97% for the latest 12-month period (to September 30, 1999), the only period for which there is a history. This represents a tracking error 1.58% higher than that of the conventional funds. The segregated funds, on average, also have a MER 1.46% higher than the average conventional fund. It appears the actual performance of both sets of funds is similar. Thus, the 1.58% number is a good estimate of the cost of the guarantee associated with the protection option offered by the segregated funds.

Canadian Funds Tracking US and Foreign Indexes

There are a number of conventional Canadian index funds that track US and foreign indexes. The details on these funds are available in the Appendix.

7.3. Index-Linked Notes and GICs

Even though we have focused primarily on the equity side of passive investing, you can also employ index products for the income component of your portfolio, or apply assets to both income and growth sectors through the use of a single specialized security. The vehicles involved are index-linked notes and/or GICs (Guaranteed Interest Certificates).

Index-linked notes (or index-keyed term deposits) vary considerably from product to product. However, there is one unifying feature – each pays a guaranteed floor interest rate, plus an increment (if any) that is tied to the performance of a single market index or a portfolio of market indexes. For example, the CIBC introduced three-year and five-year GICs that come in four versions, each representing a mix of GIC, bond and equity. The GIC payoff is tied to the GIC yield, the income component to the CIBC Wood Gundy Bond Index and the equity yield to the aggregate performance of a Toronto, a US, a Japanese and a pan-European market index.

The underlying indexes used for index-linked GICs range from the Toronto 35 to the Eurotop 100 Index. Some of the payoffs at maturity are based on the closing level of the underlying index. Some base the payoff on the average monthly level of the underlying index. With some products, you get the entire increase in the index, while in others you receive only a percentage of any increase. Some payouts are also capped, thus subjecting you to a maximum potential profit.

An index-linked GIC is actually a term deposit plus a call option on the underlying market. However, most can be difficult to unravel and even more difficult to value. For example, one bank-issued GIC is linked to the markets of the G7 countries. This three-year product pays a floor rate of interest, plus an increment that is pegged to an aggregate index of G7 markets, subject to a 65% participation rate in any market increase over the product's three-year lifespan.

In order to value the call option component of the product, you must use some type of option valuation model, such as those devised by Myron Scholes and Robert Merton, both of whom won Nobel Prizes for their work on option pricing models. The most widely utilized formula, which is known as the Black-Scholes option pricing model, uses the heat exchange equation from physics to value options. Given this complexity, you will likely need advice from a professional with experience in valuing such securities if you hope to use them in structuring your own passive investment strategy.

8. Conclusion

As you've now seen clearly illustrated, performance results in recent years have favoured passive investing. Passive portfolios have closely tracked the target indexes, minus minimal expense adjustments, while active equity investors in Canada, the US have, on average, under-performed market indexes – typically by as much as 3% per annum.

Given that, it's hard to understand why so many Canadians continue to choose active over passive investment management styles, particularly with the ease with which passive strategies can now be implemented thanks to new indexing products. However, Peter Bernstein provides one plausible explanation, which he calls “lottery risk.” This is the behavioral tendency of investors to fear that they will miss out on big returns provided by select individual issues. Passive investors, by the very nature of their strategy, pass up the opportunity to score such big returns. Bernstein says many image conscious investors also take the active route because of a strong desire to have their portfolios directed by a star-performing manager.

Even so, the arguments against active investment are highly persuasive and pervasive. High transaction costs, high management fees and difficulty in developing and consistently applying winning stock-selection strategies are the primary observations.

APPENDIX

US IPU_s

The first US index participation unit version was the Standard and Poor's Depository Receipts or SPDRs. SPDRs are tied to the Standard and Poor's 500 Composite Index. The units are traded in minimum increments of 64ths of a dollar, or \$.016625. Like TIPs, SPDRs are quoted and traded in 1/10 the value of the S&P 500. The dividends and other distributions of the 500 companies of the S&P 500 are collected and invested by the trust and then distributed on a quarterly basis to the unitholders.

A number of new IPU_s have debuted since the successful introduction of SPDRs including:

- The Mid-Cap SPDRs (Ticker: MDY). Introduced in May 4, 1995 Mid-Cap SPDRs are based on the S&P 400 Mid-Cap Index, comprised of mid-cap US companies. The expense ratio is about 0.25%.
- The NASDAQ-100 shares (Ticker: QQQ) introduced in 1999, are based on the NASDAQ-100 Index of 100 mid- and large-cap companies traded on the National Association of Securities Dealers stock exchange. The index has a heavy high tech and Internet emphasis.
- Select sector SPDRs, introduced on December 22, 1998, are specific sector index products that are subsets of the S&P 500 Composite Index. As such, they allow investors to unbundle the S&P 500. In the aggregate, the nine sectors comprise all of the companies of the S&P 500. There are nine different IPU_s based on each of the following: basic industries (Ticker: XLB), consumer services (XLV), consumer staples (XLP), cyclicals/transportation (XLY), energy (XLE), financial (XLF), industrial (XLI), technology (XLK), and utilities (XLU). The expense ratio for each of the sector SPDRs IPU_s is about 0.65%.
- DIAMONDS (ticker: DIA), the first financial product based on the Dow, were introduced January 20, 1998. The Dow Jones Industrial Average is a large cap index of 30 blue chip companies traded on the New York Stock Exchange. The expense ratio is about 0.18%.

- Internet HOLDRs Depositary Receipts (AMEX: Ticker: HHH) are based on the aggregate value of 20 specified companies involved in the Internet sector. These companies are America Online; Yahoo; Amazon.com Inc., eBay Inc., At Home Corp, Priceline.Com Inc., CMGI Inc., Inktomi Corporation, RealNetworks Inc., Exodus Communications Inc., E*Trade Group Inc., DoubleClick Inc., Ameritrade Holding Corp., Lycos Inc., CNET Inc., PSInet Inc., Network Associates Inc., Earthlink Network Inc., MindSpring Enterprises Inc., and Go2Net Inc.

US IPU's are qualified investments for RRSPs, Registered Retirement Income Funds (RRIFs) and Deferred Profit Sharing Plans (DPSPs) as RRSP-eligible as foreign content.

Global IPU

WEBS are currently available for Australia, Austria, Belgium, Canada, France, Germany, Hong Kong, Italy, Japan, Malaysia, Mexico, the Netherlands, Singapore, Spain, Sweden, Switzerland and the United Kingdom.

Table 10 (below) lists the various WEBS currently available, along with their trading symbols.

Table 10

WEBS Traded As of October 1999

WEBS Country	Ticker	Index
Australia	EWA	MSCI
Austria	EWO	MSCI
Belgium	EWK	MSCI
Canada	EWC	MSCI
France	EWQ	MSCI
Germany	EWG	MSCI
Hong Kong	EWH	MSCI
Italy	EWI	MSCI
Japan	EWJ	MSCI
Malaysia	EWM	MSCI
Mexico	EWV	MSCI (free)
Netherlands	EWN	MSCI
Singapore	EWS	MSCI
Spain	EWP	MSCI
Sweden	EWD	MSCI
Switzerland	EWL	MSCI
United Kingdom	EWU	MSCI

Canadian Funds Tracking US Indexes

There are 16 conventional Canadian index funds that track US indexes, as listed in Table 11 (below). MERs were consistent with the conventional Canadian Index Funds, but there was insufficient history to draw any conclusions regarding tracking error.

Table 11

Canadian Index Funds Tracking US Equity Indexes			
Index Fund	Assets Index \$ millions	Tracked	MER
Altamira Precision Dow 30 Index	1.93	DJIA	0.45%
Green Line Dow Jones Avg. Index	39.46	DJIA	0.80%
Altamira Precision US RSP Index	56.77	S&P 500	0.50%
Canada Trust US Equity Index-Inv	54.87	S&P 500	1.30%
Royal US Index	38.63	S&P 500	0.50%
CIBC US Index RRSP	496.69	TSE 300	2.05%
CDA TSE 35 Index (Sun Life)	1.45	S&P 500	0.90%
Scotia American Stock Index	83.32	S&P 500	0.89%
Royal US RSP Index	172.14	S&P 500	0.50%
First Canadian US Equity Index	348.05	S&P 500	1.23%
1st Canadian US Equity Index (US\$)	9.54	S&P 500	0.89%
Green Line US RSP Index	297.62	S&P 500	0.80%
Green Line US Index (US\$)	185.69	S&P 500	0.63%
Green Line US Index	190.00	S&P 500	0.66%
Atlas American RSP Index	215.03	Various	1.54%
Altamira Precision US MidCap	2.32	S&P400	0.50%
CIBC US Equity Index	449.25	Wlshr 5000	0.90%
AVERAGE	165.08		0.81%

There are four Canadian index funds that track leading European indexes, as detailed in Table 12 (below).

Table 12

Canadian Index Funds Tracking European Equity Indexes			
Index Fund	Assets Index \$ millions	Tracked	MER
Green Line European Index	77.11	MSCI Europe	0.90%
Altamira Precision Euro RSP	3.01	Eurotop 300	0.45%
CIBC European	24.85	MSCI Europe	0.90%
CIBC European Index RRSP	11.25	MSCI Europe	0.90%
AVERAGE	29.06		0.79%

There are nine conventional Canadian index funds tracking international indexes. They are listed in Table 13 (below). The average tracking error for the nine international index funds was 1.78% for a one-year period, well above the 0.92% average MER.

Table 13

Canadian Index Funds Tracking International Equity Indexes			
Index Fund	Assets Index \$ millions	Tracked	MER
Atlas International RSP Index	113.29	EAFE	2.05%
CIBC International Index	52.64	EAFE	0.90%
CIBC International Index RRSP	171.75	EAFE	0.90%
Green Line International RSP Index	171.65	EAFE	0.90%
National Bank Int'l. RSP Index	22.82	MSCI WOR	0.70%
Canada Trust Int'l. Equity Index-Inv	29.14	EAFE	1.25%
First Canadian International Index RSP	20.73	EAFE	1.24%
Royal International RSP Index	66.96	EAFE	0.50%
Altamira Precision Int'l. RSP Index	33.89	EAFE	0.50%
AVERAGE	75.87		0.92%

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