The Index Investor

Why Pay More for Less?

Model Portfolio Update

The objective of our first set of model portfolios is to deliver higher returns than their respective benchmarks, while taking on no more risk. The benchmark for the first portfolio in this group is an aggressive mix of 80% domestic equities, and 20% domestic bonds. Through the end of September, this benchmark had returned (10.5%) in Australian dollars, while our model portfolio had returned (20.0%). For the sake of comparison, we have also compared our model portfolios to a set of global benchmarks. In this case, the global benchmark is a mix of 80% global equities, and 20% global bonds. Through the end of September, it had returned (26.4%).

The benchmark for the second portfolio in this group is a mix of 60% domestic equities and 40% domestic bonds. Through the end of last month, it had returned (6.1%), while our model portfolio had returned (12.3%), and the global benchmark had returned (21.7%).

The benchmark for the third portfolio in this group is a conservative mix of 20% domestic equities and 80% domestic bonds. Through the end of last month, it had returned 2.8%, while our model portfolio had returned (4.3%) and the global benchmark (12.2%).

The objective of our second set of model portfolios is to deliver less risk than their respective benchmarks, while delivering at least as much return. The benchmark for the first portfolio in this group is an aggressive mix of 80% domestic equities, and 20% domestic bonds. Through the end of last month, this benchmark had returned (10.5%), while our model portfolio had returned (13.0%). For the sake of comparison, we have

also compared our model portfolios to a set of global benchmarks. In this case, the global benchmark is a mix of 80% global equities, and 20% global bonds. Through the end of June, it had returned (26.4%).

The benchmark for the second portfolio in this group is a mix of 60% domestic equities and 40% domestic bonds. Through the end of last month, it had returned (6.1%), while our model portfolio had returned (3.0%), and the global benchmark had returned (21.7%).

The benchmark for the third portfolio in this group is a conservative mix of 20% domestic equities and 80% domestic bonds. Through the end of last month, it had returned 2.8%, while our model portfolio had returned 1.5% and the global benchmark (12.2%).

The objective of our third set of model portfolios is not to outperform a benchmark index, but rather to deliver a minimum level of compound annual return over a ten-year period. Thus far this year, our 12% target return portfolio has returned (17.5%), our 10% target return portfolio has returned (7.0%) our 8% target return portfolio has returned (3.0%), and our 6% target return portfolio has returned (0.9%).

Five Year Model U.S. Portfolio Performance Review

As our readers know all too well, the performance of many of the world's financial markets in recent years has been extraordinary, to put it mildly. We have seen the growth and bursting of equity market bubbles, sharp falls in inflation and interest rates, a sharp appreciation of the U.S. dollar, and a highly unusual synchronization in the growth rates of the world's major economies. In short, it presents a uniquely challenging set of circumstances in which to test the performance of our model U.S. portfolios!

The analysis results we report below cover the period from September, 1997 to September, 2002. We use pre-tax total returns data, and, following our usual practice, we rebalance our portfolios only once per year, at the beginning of each succeeding

September. The following tables summarize our results, expressed in U.S. dollar terms. The first column in each table shows four portfolios: our domestic benchmark, our global benchmark, and our two model portfolios. The next column shows the annualized average return on the portfolios over the five years ended on 30 September, 2002. The next column shows the annualized standard deviation of the distribution of monthly returns over the past five years, which we use as a proxy for risk. The fourth column shows how much return was earned per unit of risk taken on over the past five years. In most cases, however, the monthly return distributions over the past five years were not normally distributed (i.e., if graphed, they would not look like a perfect "bell curve"). Given this, average annual return and standard deviation are imperfect measures of portfolio performance. Therefore, to provide a better sense of long term performance, the last column shows the value of the portfolio at the end of five years, based on a common starting value of 100 (note: this is just another way of presenting the geometric or compound return over the five year period).

Portfolios Based on 80% Equity and 20% Debt Benchmark

	Average Annual Return	Standard Deviation of Returns	Mean Return/Std. Deviation	Ending Portfolio Value (9/97 = 100)
Domestic Benchmark	1.84%	14.78%	.12	103.7
Global Benchmark	0.00%	13.06%	0.00	95.8
Type 1 Model Portfolio: Goal is to maximize returns while matching domestic benchmark's risk	1.65%	12.29%	.13	104.5
Type 2 Model Portfolio: Goal is to minimize risk while matching domestic benchmark's return	2.65%	11.82%	.22	110.1

Portfolios Based on 60% Equity and 40% Debt Benchmark

	Average Annual Return	Standard Deviation of Returns	Mean Return/Std. Deviation	Ending Portfolio Value (9/97 = 100)
Domestic Benchmark	3.35%	10.97%	.31	114.4
Global Benchmark	0.51 %	10.97%	.05	99.5
Type 1 Model Portfolio: Goal is to maximize returns while matching domestic benchmark's risk	1.02%	12.18%	.08	101.4
Type 2 Model Portfolio: Goal is to minmize risk while matching domestic benchmark's return	2.45%	10.24%	.24	110.0

Portfolios Based on 20% Equity and 80% Debt Benchmark

	Average Annual Return	Standard Deviation of Returns	Mean Return/Std. Deviation	Ending Portfolio Value (9/97 = 100)
Domestic Benchmark	6.03%	4.09%	1.47	133.5
Global Benchmark	2.72%	6.51%	.42	113.2
Type 1 Model Portfolio: Goal is to maximize returns while matching domestic benchmark's risk	5.11%	4.41%	1.16	127.7
Type 2 Model Portfolio: Goal is to minmize risk while matching domestic benchmark's return	5.28%	3.87%	1.36	128.9

We have a number of observations about these results. First, our model portfolios whose objective is to minimize risk while matching their respective benchmarks' returns have performed better (relative to their objective) than those whose goal is to maximize return while matching their benchmarks' risk. As we have written many times before, this is not surprising, given the fact that the relative standard deviations (i.e., riskiness) of different asset classes are more stable over time than their relative returns. In every case, our "risk minimizing" model portfolios have delivered standard deviations that are below both their domestic and their global benchmarks. Moreover, in two cases, the return on these portfolios are less than one percent below their respective benchmarks', while in the third case it is .81% above the benchmark (an unexpectedly good result).

Our second observation is that our model portfolios whose objective is to maximize return while matching their respective benchmarks' risk have not done as well. In part, this reflects the instability of relative returns we have already mentioned. However, it also reflects the period over which we have measured results, which saw, for the first four years, extraordinarily high returns in U.S. debt and equity markets, accompanied by a strong rise in the exchange value of the U.S. dollar versus other currencies. This had a substantial negative impact on our model portfolios' relative performance, because they include allocations to non-U.S. asset classes. This point is reinforced by the poor performance of the global benchmarks relative to the domestic benchmarks. The past year, however, has seen the reversal of this trend, with the U.S. dollar beginning to depreciate against many other currencies. Under these conditions, our model portfolios have outperformed their domestic benchmarks.

In summary, given the extraordinary conditions we have seen over the past five years, we are generally pleased with the risk adjusted performance of our model portfolios relative to their benchmarks. We also believe that their relative performance will further improve as conditions in the global economy return to their historically normal ranges.

Economic Outlook

This past week saw the annual meeting of the International Monetary Fund in Washington, D.C., and the publication of its World Economic Outlook. While the key points in this document (excerpted below) will come as no surprise to our regular readers, they still bear repeating, as they remain very important ones to keep in mind.

"Since late 2001, a global recovery has been underway, led by the United States and underpinned by a pickup in global industrial production and trade. Even allowing for the recent substantial downward revision to GDP growth in 2001 in the United States, the global slowdown in 2000-01 has proved to be more moderate than most previous downturns…Notwithstanding this, however, global financial markets have weakened significantly. Industrial country equity markets have fallen sharply -- and with surprising synchronicity -- since the end of March. This has reflected a combination of factors, including downward revisions of earlier, and always optimistic, corporate profit forecasts; concerns about the sustainability of the economic recovery; and widespread concern about accounting and auditing practices, particularly in the United States…A fall in equity markets affects the real economy through three main channels: it increases borrowing costs for households and corporations as the value of their collateral is eroded; it raises the cost of equity capital for firms, thereby lowering their capital investment spending; and it reduces household wealth and hence consumption….That said, other sources of private wealth can provide an offset. In particular, buoyant housing markets can provide some support to demand, especially as the stock of housing wealth is estimated to be larger than that of equities, and an increase in housing wealth has a larger impact on consumption than a similar increase in equity wealth."

"In the United States, considerable uncertainties remain, particularly with respect to developments in financial markets. Equity markets could fall further, and the impact of such a decline on demand could be exacerbated by the relatively high level of household and corporate debt. Second, the projected recovery in investment spending could be delayed. Finally, the possibility of an abrupt and disruptive adjustment in the U.S. dollar

remains a concern…The fundamental issue in Japan continues to be how to achieve more rapid underlying rates of output growth, and break the decade long pattern of anemic performance interspersed with recession. This cannot be achieved by fiscal and monetary policies alone, but requires decisive action to deal with long standing structural [problems in that nation's economy]. Such action is most important in the banking sector, where a vicious circle needs to be broken in which large unrecognized non-performing loans make banks unwilling to lend, which constrains economic growth, and thereby creates even more non-performing loans…Recovery in the euro area appears to be lagging behind other regions, especially North America and the emerging markets of Asia…The robustness of the euro area's export led growth could come under pressure if external demand declines [e.g., due to a downturn in the U.S.], or the euro continues to strengthen [e.g., due to a sharp decline in the U.S. dollar]…Prospects for industrial production and domestic demand in Germany appear particularly uncertain, and further weakness there would have important [negative] implications for Europe as a whole…[There remains] a broad need to improve the euro area's growth potential, which highlights the need for further structural reforms throughout the region…to promote growth in employment and output."

"The risks to the current outlook are primarily on the downside. The global economic recovery continues to depend heavily on the outlook for the United States…Oil prices could spike sharply if the security situation in the Middle East were to deteriorate further…Equity markets remain very volatile, and could fall further…Risks in emerging markets, in particular, South America and Turkey, have increased…While the fall in the dollar has so far been orderly, the U.S. current account deficit remains very high, and a more abrupt and disruptive adjustment cannot be ruled out."

The full document can be obtained at www.imf.org/external/pubs/ft/weo/2002/02/index.html.

Equity Market Valuation Update

After a brutal September, some key equity markets may have become undervalued. As we have previously noted, our valuation analysis rests on two fundamental assumptions: that over the long term, labor productivity growth in our six major regions will converge at 3.5% per year, and that the long term real equity risk premium is 4.0% per year. Given those assumptions, here is our updated analysis at 30 September, 2002:

Country	Real Risk Free Rate	Equity Risk Premium	Expected Real Rate of Return on Equities	Expected Real Growth Rate*	Current Dividend Yield
Australia	3.24%	4.0%	7.24%	4.3%	3.8%
Canada	3.24%	4.0%	7.24%	4.1%	2.2%
Eurozone	2.72%	4.0%	6.72%	3.5%	3.8%
Japan	2.46%	4.0%	6.46%	3.2%	1.0%
U.K.	2.20%	4.0%	6.20%	3.5%	3.8%
U.S.A.	1.68%	4.0%	5.68%	4.4%	2.0%

*This reflects not only 3.5% productivity growth, but also expected labor force growth.

Country	Implied Index Value	Current Index Value at 9/30	Current/Implied (productivity growth @3.5%	Current/Implied (productivity growth at 2.5%)
Australia	251.50	194.58	77%	104%
Canada	131.23	187.30	143%	188%
Eurozone	117.47	99.54	85%	111%
Japan	24.74	80.65	326%	426%
U.K.	331.47	235.52	71%	97%
U.S.A.	520.55	333.15	64%	114%

This month, we are also including a column showing the valuation impact of reducing our long term real productivity growth assumption from 3.5% to 2.5%. As you can see,

depending on your view of future productivity growth, four of our six key equity markets may have recently moved into undervalued territory.

Should You Invest in "Value" Indexes?

"Value" and "Growth" investing are two of the world's most frequently mentioned, yet poorly understood investment concepts. We extensively discussed our views about growth investing in our December, 2001 issue. This month, we're going to take an equally hard look at value investing.

Let's start with some basics. Generally speaking, people won't buy a stock unless they expect its price to go up. In this sense, all investing could be called "value investing", because nobody rationally buys a stock today if they think it will be less valuable in the future. There are, however, two broad schools of thought about how investors arrive at their expectation that the price of a stock will increase in the future.

The simplest reason a person might reasonably expect the price of a stock to increase is because he or she expects a lot of other people to buy it. The technical term for this is "momentum". As we have previously discussed, historical returns data seems to confirm that momentum investing works, at least over short periods of time (e.g., there is a statistically measurable tendency for a stock price that has risen in one month to also rise in the next one). However, investing one's money solely on the basis of a relationship in the historical data risks confusing correlation with causation, and losing money as a result. You also need a theory that explains what you observe in the historical data. As we have previously written, in the case of momentum investing, two different theories might plausibly explain the momentum effect. First, people may obtain different types of information (e.g., positive and negative information about a stock) at different times (e.g., because one is a small investor instead of a major portfolio manager). Alternatively, people may inefficiently process the new information they receive (e.g., underreacting to information which conflicts with their current opinion about a stock). In our view, these

two theories in combination seem to be a plausible explanation for the short term momentum effects one observes in historical returns data for different asset classes.

The second reason a person might expect the price of a stock to increase is because he or she has conducted a "fundamental analysis" of the issuing company, and as a result believes that the current stock price is below what it is actually worth. Here's a familiar example. The current dividend on the FTSE Australia Index is 7.39. The real risk free interest rate in Australia is 3.24%. We further assume that the "correct" equity risk premium is 4.0% (that is, the additional amount of return above the risk free rate that we require in exchange for taking on the additional risk inherent in investing in equities instead of government bonds). Finally, we also assume that the dividend will grow by 4.3% per year in the future (which reflects expected labor force growth of .8%, and labor productivity growth of 3.5% per year). The formula for calculating the current value of the Index (or any stock for that matter) is Dividend divided by [(Real Risk Free Interest Rate plus Equity Risk Premium) less (Labor Force Growth plus Labor Productivity Growth)]. In numbers, it looks like this: 7.39/[(3.24%+4.00%)-(0.8%+3.5%)]. This reduces to 7.39/2.94%, which equals 251.36. As the current value of the FTSE Australia Index is 194.58, a "fundamental investor" might reasonably conclude that the index is currently undervalued, and that its price will therefore increase in the future.

Of course, this raises another good question: why would an investor rationally believe that he or she had a more accurate fundamental estimate of the true value of a stock than that held by other investors? Broadly speaking, there are three possible reasons for holding such a belief. First, our investor may believe that the information he or she has about the stock in question is superior to that available to most other investors. For example, in our Australian model, we might believe that we have a better estimate than most other investors of either the long term equity risk premium and/or the long term rate of labor productivity growth. Second, we might believe that while all investors basically have access to the same information, the model we are using to make sense of it (that is, our valuation model) is superior to the models used by most other investors (e.g., because

our growth estimate takes into account both labor force growth and labor productivity growth). Third, we may believe that most other investors are subject to behavioral biases, that somehow don't affect us to the same degree (e.g., we may believe that others will systematically react more slowly than we will to news about Australia's future rate of labor productivity growth).

However, unlike the case of momentum, theories about the effectiveness of "fundamental investing" are more difficult to test with historical returns data. While it is easy to see whether or not a stock's price went up or down, there is no way to detect in the publicly available data what a wide range of different investors were originally thinking about its future value when they bought it. This basic fact has caused financial researchers to look for publicly available proxies for investors' private views about the fairness of companies' current market valuations.

Some researchers have tried to estimate future stock returns using economic factors that are widely available and theoretically easy to link to the basic stock valuation model. For example, in "Economic Forces and the Stock Market" (a working paper by Chen, Roll, and Ross), the authors try to link future stock returns to industrial production, the spread between short and long term government bond rates (the "maturity premium"), and the spread between the rates on high and low credit quality corporate bonds (the "default premium"). These variables are thought to be proxies for expected changes in cash flows as well as expected changes in required rates of return (e.g., declining industrial production and an increasing maturity premium signal an oncoming recession and decline in cash flows, while rising maturity and default premiums signal increases in the required rate of return). The results of this straightforward approach unfortunately were mixed at best.

Rather than using economic factors, an alternative approach tried to use historical returns data to predict future stock returns. The earliest and most famous example of this

approach is the "Capital Asset Pricing Model" or CAPM. The theory behind this model is straightforward: since diversification eliminates the significance of company-specific risks (which offset each other in a large portfolio), the only risk factor that matters when forecasting future returns is the extent to which the return on a stock varies with the return on the overall market. This relationship is called the stock's "beta": if it is less than one, the return on a stock varies less than the return on the market, and if it is greater than one, it varies by more than the market. To forecast the future return on a company's stock, you simply estimate the future return on the market (defined as the current risk free government bond rate plus the appropriate equity market risk premium), and then multiply this times the stock's beta.

Unfortunately, the future returns forecast by the CAPM model didn't always turn out to be accurate (and gave rise to many journal articles on "the death of beta"). In their search for explanations for these "anomalies" (which, in economist speak, is anything your repeatedly encounter in reality that doesn't match the predictions of your model), researchers identified a number of systematic (that is, predictable) forecasting errors that occurred when using the CAPM approach. In their seminal papers ("The Cross Section of Expected Stock Returns", "Common Risk Factors in the Returns on Stocks and Bonds", and "Size and Book-to-Market Factors in Earnings and Returns"), Eugene Fama and Kenneth French showed how future returns on a stock could be predicted using not one, but three factors. Like the CAPM, the first of these factors was the expected return on the market as a whole. In addition to this, however, they also used risk premiums that were based on the difference between the return on small capitalization stocks less the return on large capitalization stocks (known as SML), and the difference between stocks with high book/market ratios and low book/market ratios (known as HML).

For better or worse, Fama and French's insights have now become widely used (if not widely understood) by many investors. The ratio of the book value of a company's equity (that is, the value of its assets less the value of its liabilities) to its market value (that is, the price of its stock times the number of shares outstanding) is known by many names,

including (confusingly, of course) "market to book", "book to market", or "price to book". People who buy shares in companies which have high market to book ratios (or low book to market ratios, just to be confusing) have become known as "growth investors", while those that buy shares in companies with low market to book ratios (or high book to market ratios) are called "value investors."

Broadly speaking, in the popular imagination companies with high market/book ratios are assumed to have stock prices that are rising quickly, while those with low market/book ratios are assumed to represent "better value." A couple of moments thought shows that these assumptions can easily be inaccurate. Even if a company's stock price has been rising rapidly, it may still be fundamentally undervalued, depending on the assumptions you use in your valuation model. Nor is a stock with a high market/ book necessarily a momentum stock: a big write off at a company heading toward bankruptcy can temporarily produce a high market/book ratio without any increase in trading volume and price momentum in the company's shares. Similarly, a company with a low market/book might still be overvalued. Alternatively, the announcement of favorable news about the company may trigger increased trading volume and price momentum in its shares.

At this point, careful readers will be saying to themselves, "these growth and value concepts have no relationship to the two basic theories of why someone might buy a stock today in the expectation that its price will increase in the future." Or, perhaps more accurately, "my cousin Charley has no clue what he's talking about!!" Exactly. Enormous confusion has been caused as "growth" has become synonymous (in too many people's minds) with momentum investing, and "value" has become synonymous with fundamental investing.

While this insight alone is no doubt satisfying to many of us, we are still left with the question of what to do when faced with Fama and French's key findings. Based on reported returns data, it is unarguable that over long periods of time, the returns on high

book/market (value) stocks are greater than those on low book/market (growth) stocks. For example, the following table shows the average annual difference between the returns on "value" stocks contained in the Morgan Stanley Capital International Indexes for different countries versus those on "growth" stocks over the twenty five years between 1976 and 2000. While value stocks have higher returns over the long term, the high standard deviations show that this is certainly not the case every year.

Country	Average Annual Difference in Return (Value - Growth) (Standard Deviation)
Australia	5.02% (12.85%)
Canada	2.25% (14.91%)
Eurozone	2.33% (6.55%)
Japan	6.64% (12.86%)
United Kingdom	2.24% (9.66%)
United States	1.53% (9.00%)
Global	3.15% (6.81%)

More importantly, the historical data also suggest that the trade-off between risk and return is better on value stocks than it is on growth stocks. The following table makes this clear, using the same 1976-2000 data:

Country	Average Return on Value Index/Standard Deviation of Value Index Returns	Average Return on Growth Index/Standard Deviation of Value Index Returns	Difference in Amount of Return per Unit of Risk
Australia	.91	.56	.35
Canada	.86	.58	.28
Eurozone	.84	.72	.12
Japan	.62	.25	.37
United Kingdom	.99	.84	.15
United States	1.04	.80	.24

Country	Average Return on Value Index/Standard Deviation of Value Index Returns	Average Return on Growth Index/Standard Deviation of Value Index Returns	Difference in Amount of Return per Unit of Risk
Global	1.06	.78	.28

The key question we have to ask ourselves is whether or not this historical data justifies making a tilt toward investing in value oriented equity indexes instead of broad market equity indexes.

However, before we can answer this question, we have to address two other issues. First, we need to develop a clear understanding of why value stocks have earned better risk adjusted returns than growth stocks in the past. Once we have done this, our second task is to ask ourselves whether or not in light of this theory we can reasonably expect the value premium to continue to exist in the future.

Unfortunately, the theoretical basis for the existence of the value premium is currently one of the most hotly debated issues in academic finance. Broadly speaking, the different views break down into two camps. The "rational economics" camp believes that markets are basically efficient, and that the value premium exists because value stocks are riskier than growth stocks. The "behavioral economics" camp believes that markets are inefficient because many investors are less than perfectly rational. In their view, the value premium is an example of the mispricing this causes. Because this issue is critical, let's take a closer look at some of the key arguments put forth by these two camps.

The key challenge faced by the rationalists is defining the nature of the risk or risks for which the value premium represents compensation. In "The Value Spread" (by Cohen, Polk, and Vuolteenaho), the authors start with the valuation model we have already described, and note that "both the required rate of return and the expected rate of cash

flow growth play a role in determining the market price of a firm's stock, and thus its book/market ratio." They then undertake an analysis to see what percentage of the variation between high and low book/market firms is caused by variation in their expected rates of return, and what percentage is caused by variation in their expected rates of cash flow growth. They find that the former accounts for only 20% to 25% of the variation in book/market ratios, while the latter accounts for 75% to 80%. In other words, at the level of individual stocks, a high book/market ratio (that is, characterization as a value stock) has much more to do with lower expected cash flow growth than it does with a higher required rate of return. On the other hand, they also find that when individual stocks are aggregated together (e.g., into an index), differences in cash flow growth expectations for individual stocks tend to cancel each other out, and most variation in the index level book/market ratio is caused by variation in the required rate of return. This leads them to conclude that "if the cross section of book/market ratios is largely driven by rational differences in cash flow growth expectations, the conclusion that aggregate book/market ratios are exclusively driven by irrational investor sentiment is perhaps premature."

In "An Empirical Investigation of Risk and Return Under Capital Market Imperfections", Hahn and Lee make a similar point. Their research found that bond maturity and default premiums were just about as good as Fama and French's size and value premiums at predicting future asset prices. Like Chen, Roll, and Ross, they see these factors as proxies for changing expectations about future economic growth (which would affect companies' cash flows) and the risks that they face. Specifically, they cite the example of two firms with equal book values and equal amounts of debt. One firm, has a much higher market value than the other one. In effect, this means that the "value" firm (that is, the one with the high book/market ratio) is more highly leveraged than the growth firm (in terms of the ratio of debt to the market value of equity), and therefore faces a greater risk of financial distress (e.g., bankruptcy) if economic growth turns negative.

This point of view is supported by two other research papers. In "News Related to Future GDP Growth as a Risk Factor in Equity Returns", Maria Vassalou found that a factor that captured news about expected future GDP growth, together with an expected market return factor, did as good a job of forecasting future equity returns as Fama and French's three factor model (which, as you recall, uses expected market return, along with size and book/market based risk premiums to estimate future stock returns). In "The Value Premium", Lu Zhang shows how value firms find it harder to reduce their use of capital (and debt) during a downturn relative to growth firms, because value firms tend to use their capital less productively than growth firms. As a result, during an economic downturn value firms find it more difficult than growth firms to sell their assets to raise the funds needed for debt reduction. As a result, value firms are more likely to experience financial problems when the economy is in a recession.

If you accept the rationalists' arguments about the nature of the factors that give rise to the value premium, then it is easy to see why you would expect it to persist in the future: value stocks will continue to be riskier than growth stocks, and will therefore continue to generate higher returns. Unfortunately, the rationalists' arguments aren't quite as convincing as they first appear.

One of the biggest objections to their views is that (as shown above) value stocks appear to offer a better risk/return trade-off than growth stocks. This would not be the case in an efficient market where the higher return on value stocks was simply compensation for a higher level of risk.

Two additional challenges to the rationalists' views are presented in "The Cross Section of Common Stock Returns: A Review of the Evidence and Some New Findings" by Hawawini and Keim. "First, the evidence indicates that the relationship between returns and variables like firm size and the book/market ratio is typically significant only during the month of January. If the premium is compensation for risk, is there reason to believe the market is systematically more risky in January than during the rest of the year?

Second, if the size and book/market premia are compensation for additional risks that are priced in the context of an international asset pricing model under conditions of integrated international capital markets, then the premia should be correlated (that is, move together) across markets, in much the same way that the market risk premium is significantly correlated across markets. Inconsistent with this hypothesis, we find that the premia correlations are insignificant across the 17 international markets in our sample. If these premia are uncorrelated across international markets, is it reasonable to characterize them as compensation for risk?"

Similarly, if the value premium in fact represents compensation for being more exposed to the risk of an economic downturn, then you would expect to see roughly similar correlations across countries between the annual size of the value premium (that is, the difference in the year's return on value stocks less the return on growth stocks) and the correlations across countries in their real rates of GDP growth. In other words, the difference in the size of the value premium between two countries should be closely related to the difference in their respective rates of economic growth. As you can see in the table below, we did this analysis, and found that this generally wasn't the case.

Correlations of GDP Growth Rate and (Value Premium)

1991-2000

	Australia	**Canada**	**USA**	**Japan**	**UK**	**Eurozone**
Australia	1.0					
Canada	.8, (.4)	1.0				
USA	.9, (.7)	.9, (.7)	1.0			
Japan	-.6, (.2)	-.5, (.9)	-.5, (.5)	1.0		
UK	.8, (.3)	.9, (.3)	.8, (.8)	-.4, (.2)	1.0	
Eurozone	0, .7	.3, (.7)	.2, (.7)	.1, (.4)	.2, (.5)	1.0

Only in the case of the anglo-saxon economies (Australia, Canada, the UK, and the USA) does it appear that there is a reasonably high degree of correspondence between changes in the size of the annual return premium on value stocks and changes in the rate of economic growth. And even this conclusion is somewhat questionable, given the differences between some of the correlations involved.

In summary, the rational camp makes a reasonably strong, but not completely convincing case that the value premium simply reflects compensation for additional risk, and therefore should be expected to persist into the future.

The arguments of the behavioral economics camp are grounded in two fundamental assumptions. First, we as human beings face cognitive resource constraints -- when confronting a problem or decision, our attention, memory, and processing power are not unlimited. We naturally employ two strategies to conserve our limited cognitive capacity. First, we use thinking short cuts (also known as heuristics). For example, when making a decision, we will often use information that is readily available, rather than expend cognitive resources trying to identify the information we need, and then going out to find it. Similarly, in order to conserve our cognitive capacity, we tend to resist actively searching for information which contradicts the views we already hold. We also tend to underweight contradictory information if we receive it. As the old saying goes, it takes much more information to change an opinion that it does to form one in the first place.

The second way we conserve our limited cognitive resources is through the use of our emotions. They help us avoid situations that potentially could require heavy use of our limited attention, memory, and processing capacity. For example, we prefer to avoid losses, because they bother us more than gains make us happy. Similarly, we tend to avoid ambiguity because it causes us more anxiety than certainty. However, the use of heuristics and emotions is not without a cost. While they help us to conserve cognitive resources, they also tend to bias our estimates and decisions (that is, they lead to results

that are different from those that one would expect from a "perfectly rational" decisionmaker).

These decision biases wouldn't be much of a problem if we could easily recognize and compensate for them. Unfortunately, the second fundamental assumption of the behavioral economics camp shows why this is much easier said than done: most of us are overconfident in the accuracy of the estimates and decisions we make. A number of writers have theorized that both of these traits -- cognitive resource conservation and overconfidence -- evolved as useful adaptations to the environment faced by primitive human beings (see, for example, "One the Evolution of Overconfidence and Entrepreneurs" by Bernardo and Welch, or "A Model of Overconfidence" by Bruce Weinberg). As such, they are "hard-wired" into our systems, and very difficult for us to change.

The behavioral theories behind the value premium are thoroughly covered in four papers: "A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets" by Hong and Stein; "A Model of Investor Sentiment" by Barberis, Shleifer, and Vishny; "Covariance Risk, Mispricing, and the Cross Section of Equity Returns" by Daniel, Hirshliefer, and Subrahamanyam; and "Prospect Theory and Asset Prices" by Barberis, Huang, and Santos. Distilled into a few sentences, the essence of the behavioral camp's argument is that investors underreact to new information which contradicts the views that they hold about a stock. For example, the price of a stock that people view as having good growth prospects will respond only slowly to the arrival of negative news that undermines this view. As a result, it will tend to overshoot its fundamental value. Similarly, the price of a stock that is viewed as having poor prospects tends to respond slowly to the receipt of good news. As a result, its market price may be well below its fundamental value. This tendency to underreact generates both momentum profits (in the first case) and value profits (in the second case). It also explains why the historical risk/return ratio on value stocks is superior to that on growth stocks. So the behavioral camp's views sound plausible in theory. But is there additional evidence?

In their paper "New Paradigm or Same Old Hype in Equity Investing", Chan, Karceski, and Lakonishok find that behavioral factors were largely responsible for the high returns on large cap growth stocks in the late 1990s. In "Book to Market Equity, Distress Ris, and Stock Returns", Griffin and Lemon demonstrate that distress risk alone can't fully explain the difference in returns between high and low book/market firms. They conclude that evidence of mispricing exists. Similarly, in "Do Stock Prices Deviate From Their Fundamental Values?", Anderson, Darrat, and Zhong find evidence of irrational investor behavior. Finally, in "The Price Impact and Survival of Irrational Traders", Kogan, Ross, Wang, and Westerfield show that it is not always possible for rational investors to exploit the mistakes of irrational investors (that is, to arbitrage away their profits, and drive them from the market). They also show how the presence of just a few irrational traders can have a large impact on stock prices.

At this point, the logic behind the behavioral arguments is almost compelling. But not quite. An important caution is raised by Mark Rubinstein in his paper "Rational Markets: Yes or No? The Affirmative Case". He begins by pointing out that "the existence of temporary predictable patterns in security returns isn't precluded in rational markets… given that saving is just delayed consumption, and given that the growth in aggregate consumption over time isn't random, we should not expect market returns to be random either…Moreover, other factors, such as short sales constraints, liquidity fluctuations, uncertainty about other investors' beliefs, and uncertainty about true values of key valuation model variables can also cause periods of predictability in market returns."

What is precluded in reasonably rational, reasonably efficient markets is the ability to profitably exploit these temporary return predictabilities. "Profitable trading strategies are by their nature self-destructive: they have a tendency to move prices against themselves as they are exploited. Eventually, they are discovered and eliminated from overuse by other investors." As proof of this proposition, he notes "the continuing underperformance over time of actively managed funds versus index funds." Clearly, active fund managers have very strong economic incentives to develop investment strategies based on the

exploitation of return predictabilities . That they haven't demonstrated a consistent ability to do so is further evidence that markets are basically efficient, and that anomalies like the value premium are difficult to profitably exploit.

On balance, it appears to us that both camps' arguments make sense, and neither is wholly right or wrong about the value premium. Based on the evidence we have seen, we conclude that while most of the value premium is probably explained by higher risk, the superior risk/return tradeoff versus growth stocks probably reflects the existence of behavioral factors and market inefficiencies. We further suspect that the wide fluctuations in the annual size of the value premium reflect constant change in the relative weights applied to rational and behavioral factors. Given this, we would only recommend tilting toward broad based value indexes if a person is a long term investor (as the probability of actually realizing the value premium is high only in the long term) with a strong stomach (as the anxiety caused by watching growth indexes outperform value indexes over some periods may be too much for some people to take). If you don't meet these requirements, we believe that the best course of action is to invest in broad based equity indexes, and avoid taking "value" (or "growth"!) tilts.

Model Portfolio Results

These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)					
	Ticker	**YTD 30Sep02**	**Weight**	Weighted Return	.
		In A$		In A$	
High Risk Portfolio					
With suggested US Index Funds					*Suggested Australian Index Funds*
Australia Benchmark					
Australia Equity ETF	EWA	-14.9%	**80%**	**-11.9%**	Vanguard ASX 300
Australia Bond Index	SSB AUS	7.2%	**20%**	**1.4%**	Vanguard Diversified Bond
			100%	**-10.5%**	
Global Benchmark					
US Equity Index (DJTMI ETF)	IYY	-35.4%	**40%**	**-14.2%**	Vanguard International Shares
Vanguard Total International Market	VGTSX	-26.9%	**40%**	**-10.8%**	-- covers world ex Australia
Vanguard Total U.S. Bond Market Index	VBMFX	0.4%	**5%**	**0.0%**	TD Waterhouse Bond Index
TRP International (Non US$) Bond Fund	RPIBX	-10.1%	**15%**	**-1.5%**	None available so far
			100%	**-26.4%**	
Recommended					
Australia Equity ETF	EWA	-14.9%	**30%**	**-4.5%**	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	**30%**	**-10.6%**	TD Waterhouse S&P 500
Vanguard Europe	VEURX	-32.2%	**11%**	**-3.5%**	TD Waterhouse European
Australia Bond Index	SSB AUS	7.2%	**19%**	**1.4%**	Vanguard Diversified Bond
DJ US Energy Sector ETF	IYE	-27.1%	**10%**	**-2.7%**	None available so far
			100%	**-20.0%**	

These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)					
	Ticker	**YTD 30Sep02**	**Weight**	Weighted Return	.
		In A$		In A$	
Medium Risk Portfolio					
With suggested US Index Funds					*Suggested Australian Index Funds*
Australia Benchmark					
Australia Equity ETF	EWA	-14.9%	**60%**	**-8.9%**	Vanguard ASX 300
Australia Bond Index	SSB AUS	7.2%	**40%**	**2.9%**	Vanguard Diversified Bond
			100%	**-6.1%**	
Global Benchmark					
US Equity Index (DJTMI ETF)	IYY	-35.4%	**30%**	**-10.6%**	Vanguard International Shares
Vanguard Total International Market	VGTSX	-26.9%	**30%**	**-8.1%**	-- covers world ex Australia
Vanguard Total U.S. Bond Market Index	VBMFX	0.4%	**10%**	**0.0%**	TD Waterhouse Bond Index
TRP International (Non US$) Bond Fund	RPIBX	-10.1%	**30%**	**-3.0%**	None available so far
			100%	**-21.7%**	
Recommended					
Australia Equity ETF	EWA	-14.9%	**25%**	**-3.7%**	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	**20%**	**-7.1%**	TD Waterhouse S&P 500
Australia Bond Index	SSB AUS	7.2%	**40%**	**2.9%**	Vanguard Diversified Bond
DJ US Energy Sector ETF	IYE	-27.1%	**10%**	**-2.7%**	None available so far
Vanguard Europe	VEURX	-32.2%	**5%**	**-1.6%**	TD Waterhouse European
			100%	**-12.3%**	

These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)					
	Ticker	**YTD 30Sep02**	**Weight**	**Weighted Return**	.
		In A$		In A$	
Low Risk Portfolio					
With suggested US Index Funds					*Suggested Australian Index Funds*
Australia Benchmark					
Australia Equity ETF	EWA	-14.9%	**20%**	**-3.0%**	Vanguard ASX 300
Australia Bond Index	SSB AUS	7.2%	**80%**	**5.7%**	Vanguard Diversified Bond
			100%	**2.8%**	
Global Benchmark					
US Equity Index (DJTMI ETF)	IYY	-35.4%	**10%**	**-3.5%**	Vanguard International Shares
Vanguard Total International Market	VGTSX	-26.9%	**10%**	**-2.7%**	-- covers world ex Australia
Vanguard Total U.S. Bond Market Index	VBMFX	0.4%	**20%**	**0.1%**	TD Waterhouse Bond Index
TRP International (Non US$) Bond Fund	RPIBX	-10.1%	**60%**	**-6.1%**	None available so far
			100%	**-12.2%**	
Recommended					
Australia Equity ETF	EWA	-14.9%	**10%**	**-1.5%**	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	**10%**	**-3.5%**	TD Waterhouse S&P 500
Australia Bond Index	SSB AUS	7.2%	**60%**	**4.3%**	Vanguard Diversified Bond
Global Bond Index	Custom	-1.3%	**8%**	**-0.1%**	None available so far
Vanguard Europe	VEURX	-32.2%	**5%**	**-1.6%**	TD Waterhouse European
DJ US Energy Sector ETF	IYE	-27.1%	**7%**	**-1.9%**	None available so far
			100%	**-4.3%**	
Global Bond Index = 25% US$ plus 75% Non-US$ Bonds					

These portfolios seek to minimize risk while matching their benchmark's returns.					
	Ticker	**YTD 30Sep02**	**Weight**	**Weighted Return**	.
		In A$		In A$	
High Return Portfolio					
With suggested US Index Funds					*Suggested Australian Index Funds*
Australia Benchmark					
Australia Equity ETF	EWA	-14.9%	**80%**	**-11.9%**	Vanguard ASX 300
Australia Bond Index	SSB AUS	7.2%	**20%**	**1.4%**	Vanguard Diversified Bond
			100%	**-10.5%**	
Global Benchmark					
US Equity Index (DJTMI ETF)	IYY	-35.4%	**40%**	**-14.2%**	Vanguard International Shares
Vanguard Total International Market	VGTSX	-26.9%	**40%**	**-10.8%**	-- covers world ex Australia
Vanguard Total U.S. Bond Market Index	VBMFX	0.4%	**5%**	**0.0%**	TD Waterhouse Bond Index
TRP International (Non US$) Bond Fund	RPIBX	-10.1%	**15%**	**-1.5%**	None available so far
			100%	**-26.4%**	
Recommended					
Australia Equity ETF	EWA	-14.9%	**11%**	**-1.6%**	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	**29%**	**-10.3%**	TD Waterhouse S&P 500
Australia Bond Index	SSB AUS	7.2%	**45%**	**3.2%**	Vanguard Diversified Bond
Vanguard Europe	VEURX	-32.2%	**5%**	**-1.6%**	TD Waterhouse European
DJ US Energy Sector ETF	IYE	-27.1%	**10%**	**-2.7%**	None available so far
			100%	**-13.0%**	

These portfolios seek to minimize risk while matching their benchmark's returns.					
	Ticker	**YTD 30Sep02**	**Weight**	**Weighted Return**	.
		In A$		In A$	
Medium Return Portfolio					
With suggested US Index Funds					*Suggested Australian Index Funds*
Australia Benchmark					
Australia Equity ETF	EWA	-14.9%	60.0%	-8.9%	Vanguard ASX 300
Australia Bond Index	SSB AUS	7.2%	40.0%	2.9%	Vanguard Diversified Bond
			100%	-6.1%	
Global Benchmark					
US Equity Index (DJTMI ETF)	IYY	-35.4%	30%	-10.6%	Vanguard International Shares
Vanguard Total International Market	VGTSX	-26.9%	30%	-8.1%	-- covers world ex Australia
Vanguard Total U.S. Bond Market Index	VBMFX	0.4%	10%	0.0%	TD Waterhouse Bond Index
TRP International (Non US$) Bond Fund	RPIBX	-10.1%	30%	-3.0%	None available so far
			100%	-21.7%	
Recommended					
Australia Equity ETF	EWA	-14.9%	10%	-1.5%	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	12%	-4.2%	TD Waterhouse S&P 500
Australia Bond Index	SSB AUS	7.2%	60.0%	4.3%	Vanguard Diversified Bond
Global Bond Index	Custom	-1.3%	13%	-0.2%	None available so far
DJ US Energy Sector ETF	IYE	-27.1%	5%	-1.4%	None available so far
			100%	**-3.0%**	

These portfolios seek to minimize risk while matching their benchmark's returns.					
	Ticker	**YTD 30Sep02**	**Weight**	**Weighted Return**	.
		In A$		In A$	
Low Return Portfolio					
Suggested US Index Funds					*Suggested Australian Index Funds*
Australia Benchmark					
Australia Equity ETF	EWA	-14.9%	20.0%	-3.0%	Vanguard ASX 300
Australia Bond Index	SSB AUS	7.2%	80.0%	5.7%	Vanguard Diversified Bond
			100%	2.8%	
Global Benchmark					
US Equity Index (DJTMI ETF)	IYY	-35.4%	10.0%	-3.5%	Vanguard International Shares
Vanguard Total International Market	VGTSX	-26.9%	10.0%	-2.7%	-- covers world ex Australia
Vanguard Total U.S. Bond Market Index	VBMFX	0.4%	20.0%	0.1%	TD Waterhouse Bond Index
TRP International (Non US$) Bond Fund	RPIBX	-10.1%	60.0%	-6.1%	None available so far
			100%	-12.2%	
Recommended					
Australia Equity ETF	EWA	-14.9%	12.0%	-1.8%	Vanguard ASX 300
Vanguard Emerging Markets	VEIEX	-22.4%	3.0%	-0.7%	None available so far
Australia Bond Index	SSB AUS	7.2%	60.0%	4.3%	Vanguard Diversified Bond
Global Bond Index	Custom	-1.3%	25.0%	-0.3%	None available so far
			100%	**1.5%**	
Global Bond Index = 25% US$ plus 75% Non-US$ Bonds					

These portfolios seek to maximize the probability of achieving at least the target return over ten years, at the lowest possible risk.					
	Ticker	**YTD 30Sep02**	**Weight**	**Weighted Return**	.
		In A$		In A$	
Suggested US Index Funds					*Suggested Australian Index Funds*
12% Target Return					
Recommended					
Australia Equity ETF	EWA	-14.9%	**6%**	**-0.9%**	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	**24%**	**-8.5%**	TD Waterhouse S&P 500
Vanguard Europe	VEURX	-32.2%	**17%**	**-5.5%**	TD Waterhouse European
Australia Bond Index	SSB AUS	7.2%	**12%**	**0.9%**	Vanguard Diversified Bond
DJ US Energy Sector ETF	IYE	-27.1%	**5%**	**-1.4%**	None available so far
Vanguard Emerging Markets	VEIEX	-22.4%	**8%**	**-1.8%**	None available so far
Global Bond Index	Custom	-1.3%	**28%**	**-0.4%**	None available so far
			100%	**-17.5%**	
10% Target Return					
Recommended					
Australia Equity ETF	EWA	-14.9%	**23%**	**-3.4%**	Vanguard ASX 300
Australia Bond Index	SSB AUS	7.2%	**30%**	**2.1%**	Vanguard Diversified Bond
US Equity Index (DJTMI ETF)	IYY	-35.4%	**6%**	**-2.1%**	TD Waterhouse S&P 500
Vanguard Europe	VEURX	-32.2%	**5%**	**-1.6%**	TD Waterhouse European
DJ US Energy Sector ETF	IYE	-27.1%	**6%**	**-1.6%**	None available so far
Global Bond Index	Custom	-1.3%	**30%**	**-0.4%**	None available so far
			100%	**-7.0%**	

These portfolios seek to maximize the probability of achieving at least the target return over ten years, at the lowest possible risk.					
	Ticker	**YTD 30Sep02**	**Weight**	**Weighted Return**	.
		In A$		In A$	
Suggested US Index Funds					*Suggested Australian Index Funds*
8% Target Return					
Recommended					
Australia Equity ETF	EWA	-14.9%	**18%**	**-2.7%**	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	**2%**	**-0.7%**	TD Waterhouse S&P 500
Australia Bond Index	SSB AUS	7.2%	**41%**	**2.9%**	Vanguard Diversified Bond
DJ US Energy Sector ETF	IYE	-27.1%	**4%**	**-1.1%**	None available so far
Vanguard Emerging Markets	VEIEX	-22.4%	**2%**	**-0.4%**	None available so far
Vanguard Europe	VEURX	-32.2%	**1%**	**-0.3%**	TD Waterhouse European
Global Bond Index	Custom	-1.3%	**30%**	**-0.4%**	None available so far
Vanguard Pacific	VPACX	-13.3%	**2%**	**-0.3%**	None available so far
			100%	**-3.0%**	
6% Target Return					
Recommended					
Australia Equity ETF	EWA	-14.9%	**7%**	**-1.0%**	Vanguard ASX 300
US Equity Index (DJTMI ETF)	IYY	-35.4%	**2%**	**-0.7%**	TD Waterhouse S&P 500
Australia Bond Index	SSB AUS	7.2%	**44%**	**3.2%**	Vanguard Diversified Bond
DJ US Energy Sector ETF	IYE	-27.1%	**5%**	**-1.4%**	None available so far
Global Bond Index	Custom	-1.3%	**40%**	**-0.5%**	None available so far
Vanguard Emerging Markets	VEIEX	-22.4%	**2%**	**-0.4%**	None available so far
			100%	**-0.9%**	
Global Bond Index = 25% US$ plus 75% Non-US$ Bonds					