

The Index Investor

Why Pay More for Less?

Global Asset Class Returns

YTD 31Mar04	In USD	In AUD	In CAD	In EURO	In JPY	In GBP
US Bonds	2.70%	1.00%	3.83%	4.89%	-0.18%	-0.54%
US Prop.	11.70%	10.00%	12.83%	13.89%	8.82%	8.46%
US Equity	2.00%	0.30%	3.13%	4.19%	-0.88%	-1.24%
AUS Bonds	3.23%	1.53%	4.36%	5.42%	0.35%	-0.01%
AUS Prop.	9.02%	7.32%	10.15%	11.22%	6.14%	5.79%
AUS Equity	5.30%	3.60%	6.43%	7.49%	2.42%	2.06%
CAN Bonds	1.41%	-0.29%	2.54%	3.60%	-1.47%	-1.83%
CAN Prop.	-0.53%	-2.23%	0.60%	1.66%	-3.41%	-3.77%
CAN Equity	2.40%	0.70%	3.53%	4.59%	-0.48%	-0.84%
Euro Bonds	0.33%	-1.37%	1.46%	2.52%	-2.55%	-2.91%
Euro Prop.	8.81%	7.11%	9.94%	11.01%	5.94%	5.58%
Euro Equity	-0.60%	-2.30%	0.53%	1.59%	-3.48%	-3.84%
Japan Bonds	3.04%	1.34%	4.17%	5.23%	0.16%	-0.20%
Japan Prop.	24.54%	22.84%	25.67%	26.74%	21.66%	21.31%
Japan Equity	12.80%	11.10%	13.93%	14.99%	9.92%	9.56%
UK Bonds	4.38%	2.68%	5.51%	6.57%	1.50%	1.14%
UK Prop.	17.81%	16.11%	18.94%	20.01%	14.93%	14.58%
UK Equity	1.70%	0.00%	2.83%	3.89%	-1.18%	-1.54%
World Bonds	2.05%	0.35%	3.18%	4.24%	-0.83%	-1.19%
World Prop.	12.40%	10.70%	13.53%	14.59%	9.52%	9.16%
World Equity	3.30%	1.60%	4.43%	5.49%	0.42%	0.06%
Commodities	16.60%	14.90%	17.73%	18.79%	13.72%	13.36%
Hedge Funds	1.88%	0.18%	3.01%	4.07%	-1.00%	-1.36%
A\$	-1.70%	0.00%	-2.83%	-3.89%	1.18%	1.54%
C\$	1.13%	2.83%	0.00%	-1.07%	4.01%	4.36%
Euro	2.19%	3.89%	1.07%	0.00%	5.07%	5.43%
Yen	-2.88%	-1.18%	-4.01%	-5.07%	0.00%	0.36%
UK£	-3.24%	-1.54%	-4.36%	-5.43%	-0.36%	0.00%
US\$	0.00%	1.70%	-1.13%	-2.19%	2.88%	3.24%

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 March, this benchmark had returned 2.1%, while our model portfolio had returned 4.8%. 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 last month, it had returned 3.1%.

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 2.3%, while our model portfolio had returned 4.6%, and the global benchmark had returned 2.8%.

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 2.6%, while our model portfolio had returned 4.0% and the global benchmark 2.3%.

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 2.1%, while our model portfolio had returned 4.9%. 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 last month, it had returned 3.1%.

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 2.3%, while our model portfolio had returned 3.8%, and the global benchmark had returned 2.8%.

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 2.6%, while our model portfolio had returned 4.3% and the global benchmark 2.3%.

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 real return over a twenty-year period. Through last month, our 7% target real return portfolio had returned, in nominal terms, 5.8% year-to-date, our 5% target real return portfolio had returned, in nominal terms, 4.9%, and our 3% target real return portfolio had returned, in nominal terms, 5.3%.

Our fourth set of model portfolios pursues the same target real returns; however, they also include the possibility of investing in a hedge fund index. Through last month, our 7% target real return HF portfolio had returned, in nominal terms, 5.3% year-to-date, our 5% target real return HF portfolio had returned, in nominal terms, 4.6%, and our 3% target real return HF portfolio had returned, in nominal terms, 5.5%.

Equity Market Valuation Update

Our equity market valuation analysis rests on two fundamental assumptions. The first is that the long term real equity risk premium is 4.0% per year. The second is the average rate of productivity growth an economy will achieve in the future. As described in our June, 2003 issue, we use both high and a low productivity growth assumptions. . This gives two alternative estimates of a market's relative value. Therefore, when both are showing overvaluation, it is a strong indication that this is the case. Given these assumptions, here is our updated market valuation analysis at the end of last month:

Country	Real Risk Free Rate Plus	Equity Risk Premium Equals	Required Real Return on Equities	Expected Real Growth Rate* plus	Dividend Yield Equals	Expected Real Equity Return**
Australia	3.06%	4.00%	7.06%	4.90%	3.62%	8.52%
Canada	2.35%	4.00%	6.35%	2.10%	1.84%	3.94%
Eurozone	1.18%	4.00%	5.18%	2.50%	2.61%	5.11%
Japan	1.60%	4.00%	5.60%	2.70%	0.86%	3.66%
U.K.	1.78%	4.00%	5.78%	2.50%	3.27%	5.77%
U.S.A.	1.96%	4.00%	5.96%	4.50%	1.64%	6.14%

*High Productivity Growth Scenario. See Asset Class Review, in our June 2003 Issue, for assumptions used in both productivity growth scenarios for each region.

** When required real equity return is greater than expected real equity return, theoretical index value will be less than actual index value – i.e., the market will appear to be overvalued.

Country	Implied Index Value*	Current Index Value	(Under) or Overvaluation in High Growth Scenario	(Under) or Overvaluation in Low Growth Scenario
Australia	167.59	100.00	-68%	-15%
Canada	43.29	100.00	57%	65%
Eurozone	97.39	100.00	3%	38%
Japan	30.71	100.00	69%	77%
U.K.	99.70	100.00	0%	32%
U.S.A.	112.33	100.00	-12%	33%

* High productivity growth scenario.

This Month's Letter to the Editor

Do commodity index funds invest in timber? If not, is it possible for an individual investor to invest in timber?

Unfortunately, neither the Goldman Sachs Commodities Index (tracked by the Oppenheimer Real Assets Fund) nor the Dow Jones - AIG Commodities Index (tracked by the Pimco Commodities Real Return Fund) includes timber in its mix of commodities. This leaves an investor with a number of alternatives. First, he or she could continuously roll over a position in lumber futures contracts. While this would provide a direct exposure to timber, the operational details involved put this approach beyond the practical reach of most investors. Second, he or she could invest in a mutual fund that only invests in the common stocks of companies involved in the forest products industry. An example of a fund like this is the Fidelity Select paper and Forest Products Fund (FSPFX). However, a fund like FSPFX contains exposure not only to timber prices, but also to the overall equity market. As such, during different periods, one or the other factor may dominate in determining the fund's return. Mid-2002 provides a painful case in point. This period saw a significant divergence between the returns on "true" commodity index funds (e.g., PCRDY or QRAAX) and sector equity funds which invested in the shares of natural resource companies. While the former went up, the latter went down (in line with the overall equity market) -- in other words, at the very time when diversification benefits were most needed, they proved to be (much) lower than expected for investors who took the "equity-based" route to investing in commodities. The third alternative for investing in timber would be to purchase one or more of the growing number of timber holdings that have been structured as real estate investment trusts (REITS), and/or master limited partnerships (MLPs). Plum Creek Timber (PCL) is one of the largest of these, with eight million acres of holdings divided between northern and southern forests. Rayonier (RYN) is another, with two million acres in holdings. How has timber performed over time as an asset class? Here are three data points. Since 1989, Plum Creek has delivered more than twice the return of the S&P500, though with about half again as much risk. Over a longer period (1957 to 2003) one index of raw timber prices (maintained by the state of Indiana) has delivered a real compound annual return of 1.2%. On the other hand, the

performance of a similar index in the UK has been quite negative, losing 23% of its value in real terms in 2003. In sum, while owning timber may well make sense as part of a larger commodities portfolio, on balance we prefer to do it via a vehicle whose business it is to turn lumber into cash over time.

This Month's Feature Articles: Key Points

Our first feature article this month is our semi-annual economic review. We cover current and prospective demand and supply conditions in the global real economy, as well as their implications for the real rate of interest, and asset class returns in general. Based on our analysis, we generate two scenarios: the most likely course of events, and the most dangerous one that could occur. The former involves more muddling along at a relatively low rate of growth, and presents no compelling case for changing our model portfolios' long term asset allocation policies. On the other hand, the most dangerous scenario is a widespread deflationary recession, which would clearly warrant a shift out of equities and into a mix of real return and investment grade bonds, and perhaps a tilt toward gold or other hard assets within the commodities asset class. Our second feature article looks at three product and strategy issues: whether the high fees charged on some commodities index funds affects their optimal portfolio weighting, the potential attractiveness of actively managed mutual funds that employ "hedge fund-like" strategies, and the circumstances under which the new China and Gold exchange traded funds might be included in a portfolio.

Economic Review

Twice each year, we here at *The Index Investor* prepare an overview of the world economy for our readers. The first of these typically presents our own views, while the second summarizes the contents of the many similar reviews (e.g., by the IMF) that are released in September. For those of you who are reading this for the first time, let me assure you that our purpose is not to encourage market timing! Rather, we try to take a longer term perspective in order to spot asset class overvaluations substantial enough to warrant a short term departure from our model portfolio weights. In short, our goal is to provide our readers with an early warning

system. As is the case with all early warning systems, the only guarantee we can make in advance is that from time to time, we will fail to achieve our goal. There are, however, steps we can take to help minimize this risk.

Perhaps the most important of these is to make clear to you the models and assumptions that underlie the conclusions we reach. Anybody trying to develop an estimate of what may happen in the future inevitably struggles with five questions: (1) What outcomes am I trying to understand? (2) What variables are important in determining these outcomes? (3) How are these variables related to each other? (4) What are the plausible future values for these variables? And (5), how confident should I be in my answers to questions (2), (3), and (4)?

With respect to outcomes, our focus is on valuation levels for different asset classes. In our framework, the current valuation level for an asset class results from the interaction of the returns that an investor might, given both theory and history, reasonably require, and the returns that the market currently supplies (e.g., the current yield on a government bond). A required return greater than the return supplied results in an overvalued asset class, while a required return less than the supplied return results in an undervalued one.

With respect to the variables that drive the current asset class returns supplied by the market, we try to strike a balance between reality (many variables affect returns) and the limitations of human cognition (psychological research shows that most people can only process, at most, six or seven variables). To be sure, we could try to overcome this by spending a lot of time building a very complex computer model that contains many different variables. However, that approach would inevitably raise questions about how all those variables are related to each other. As we have noted in the past, our strong belief is that the real economy, and the financial markets are a complex adaptive system. As in all such systems, causes and effects may be widely separated in time, not proportional to each other, and varying in their intensity under different conditions. In short, there is an irreducible, and significant level of "model uncertainty" inherent in any attempt to forecast future asset returns, and we do not believe that it is much reduced by additional modeling gymnastics. To put it slightly differently, when it comes to modeling, we are firm believers in the 20/80 rule: 20% of the effort gets you 80% of

the insight. Consequently, the mental model we use to assess the economy is limited to a small number of high level variables, and focused on only a few of the relationships between them.

With respect to plausible future values for these variables, we again opt for simplicity. Rather than a wide range of alternative scenarios, we focus on the most likely one and the most dangerous one, as well as the critical uncertainties that affect which one occurs. While we recognize that there is always a "best case", we don't spend much time on it. In our experience, most people find it much easier to figure that one out as they go along. In contrast, not planning in advance for the downside scenario is often a recipe for disaster. That being said, there is no guarantee that our estimates (or anyone else's) for the future values of key variables will be accurate; in addition to model uncertainty, forecasting complex economic and financial outcomes also involves an irreducible level of "parameter uncertainty."

The level of confidence one should have in an estimate of future outcomes is also an interesting, and too often neglected question. Broadly speaking, I think our case is no different from similar situations we (and you) have undoubtedly encountered in the past, whether in business, the military, or trying to figure out what your teenagers are up to. At the strategic level (what may happen, and why?), our confidence in our forecasts is reasonably high; unfortunately, when it comes to taking action, strategic insights are less useful than operational ones (how will things happen?) and especially tactical ones (who, where and when?). And it is in these latter two areas (where forecasts must become successively more specific to be useful, while the number of possible outcomes grows exponentially) that confidence in them typically (but thankfully not always) declines. While we cannot avoid this problem in making our estimates, we try to mitigate it by providing clear indicators that would raise the probability that the most dangerous scenario is developing. This is in keeping with a basic approach to limiting the risk of information overload: a new piece of data is valuable only when it meets two tests. First, it must have high diagnostic value -- it must cause you to change one or more of your answers to the questions of what variables drive the outcomes you are trying to estimate, how they are related, and what their future values will

be. And second, it must be credible -- that is, it must come from a source you consider to be reliable, and/or be corroborated by another source.

Having reviewed some key forecasting principles, let's move on to the key concepts we use in our economic review. As previously noted, our starting point is an assumption that the real economy and financial markets are a complex adaptive system. While this makes some types of forecasting (e.g., short term) difficult, if not impossible, paradoxically it also makes others easier. A case in point is how the system is likely to change over time. One of the interesting things about complex adaptive systems is that, due to the changing nature of and interactions between their various parts, they can have multiple equilibrium points. In point of fact, this is made clear (though usually only implicitly) to every student who takes an introductory economics course: do you vaguely remember those shifting supply and demand curves, and the changes in prices and quantities that resulted? Voila: multiple equilibria in a complex adaptive system. The more interesting point, however, is the dynamics that give rises to shifts between these equilibrium points. In a complex adaptive system, these changes, when plotted over time, will typically look like a power curve: the great majority of the changes will be small, but a few of them will be very, very large. In fact, there is a growing literature, in an area called "econophysics," which is attempting to apply models of similar phenomena from the physical world (e.g., earthquake prediction, where tectonic plates move only slowly while pressure builds to the breaking point) to the real economy and financial markets. Our concept of the "most dangerous scenario" takes this approach: it reflects a large change that could be brought about suddenly as a result of growing imbalances within the system.

More specifically, we look at the imbalances between demand and supply in the real and monetary economy that give rise to changes in the expected returns on different asset classes. Let's start first with the demand side of the equation. As we have previously described (see our May and September, 2003 issues) our basic framework for analyzing demand is the Economic Balance Equation. Most people are familiar with the concept of double-entry bookkeeping, and a corporate or household balance sheet. The Economic Balance Equation is a similar tool for understanding a nation or region's economy. By definition, three items must all be equal to each other. The first is the domestic balance. This is comprised of savings less

investment. It can be broken down further into the private and the public sector balance. The private sector balance is equal to private savings less investment. Private savings equals total output (i.e., GDP) less private consumption (by households and businesses), while private investment includes business capital spending and inventory changes, as well as household fixed investment (e.g., in new houses). The public sector balance is equal to government spending (both consumption and investment) less taxes. A negative balance, in either the private or public sector, is stimulative for total demand (that is, for economic growth); in contrast, a positive balance is contractive. Negative and positive balances affect the supply of financial assets. A sector with a negative balance (that is, one that is investing more than it saves) issues financial claims (in the form of debt or equity) to raise funds. A sector with a positive balance either pays off its claims or accumulates claims from others.

The domestic balance -- that is, the difference between domestic savings and investment is by definition equal to the external balance on the current account of the country's balance of payments. This reflects the net flow of goods and services exports and imports, as well as cash inflows and outflows related to payments on financial claims. A country with an excess of domestic investment over domestic savings (that is, with a negative domestic balance) will therefore also have a negative current account balance (that is, it will import more than it exports).

The third part of the Economic Balance Equation is the capital account on the country's balance of payments. A country with domestic investment greater than domestic savings will have negative balances on both its current and its capital account. At first this seems non-intuitive; the trick is in the way that the capital account items are arranged. Technically, the balance on the capital account is equal to capital outflows less capital inflows plus any change in foreign exchange reserves. Assuming no change in reserves, a country with a negative current account must import more capital (via the issuance of bonds and equity financial claims to people residing abroad) than it exports. Given the order in which the capital account terms are arranged, this results in a negative balance.

An important point to keep in mind about the Economic Balance Equation is that it measures flows, not stocks. However, the latter are potentially important constraints on the system. Specifically, the ability of the household or corporate or government sector, or the nation as a whole to stimulate demand growth by running a negative balance is predicated on two assumptions. The first is the existence of another sector that remains willing to accumulate its financial claims. The second is the willingness of the sector itself to take on the risks (e.g., through using more credit card borrowing) that issuing such claims entails.

Let's now look at the International Monetary Fund's forecast for how the Economic Balance Equation is expected to turn out in 2004 in various regions of the world.

Country or Region	% of World GDP in 2002 at Purchasing Power Parity	Expected 04 Real GDP Growth	Private Sector Balance (% GDP)	Public Sector Balance (% GDP)	Current Account Balance (% GDP)
Australia	1.2%	3.5%	(5.30%)	0.5%	(4.8%)
Canada	2.0%	3.0%	0.10%	1.5%	1.6%
Eurozone	15.7%	1.9%	3.60%	(2.8%)	0.8%
Japan	7.1%	1.4%	9.40%	(6.5%)	2.9%
U.K.	3.1%	2.4%	1.80%	(2.7%)	(0.9%)
U.S.A.	21.1%	3.9%	0.90%	(5.6%)	(4.7%)
China	12.7%	7.5%	4.90%	(3.1%) '03	1.8% '03
Asian NICs*	3.5%	5.1%	10.80%	(3.5%)	7.3%

*Newly Industrialized Countries = S.Korea, Hong Kong, Singapore, and Taiwan

This table tells quite a few interesting stories. Let's start with the first column. Measured on the basis of purchasing power parity (e.g., long term fair value) exchange rates, the economies of China and the four Asian NICs are now larger than the Eurozone. In fact, when Japan is added, the size of the major Asian economies is now only slightly smaller than that of the "Anglo-Saxon" bloc, with the Eurozone trailing quite far behind. Now let's move on to the second column, which makes clear that the two major growth engines for the world economy today are China and the United States. It also makes clear that two other potential growth

motors -- the Eurozone and Japan -- are still lagging behind. The last three columns make clear what has been driving growth in different regions.

Let's start with Australia: with a substantial private sector deficit, a public sector surplus and a balance of payments deficit, it looks like the United States did in the mid-nineties. The private sector is powering economic growth, while the public sector further strengthens its already strong balance sheet (at only 16% of GDP, government debt is the lowest among the major countries we cover). As a result, Australia is relatively well placed to meet the future needs of an aging population. If there is a danger here it is the growing levels of household debt, which has been used to finance heavy investment in residential property (often with the intention of earning rental income). Since most Australian mortgage debt is at variable interest rates, an economic slowdown (leading to a rise in unemployment) or a sharp rise in interest rates could cause serious problems. Moving on to Canada, we see an economy where strong export demand (to the booming market south of the border) is enabling both the private and the public sector to reduce debt without significantly reducing overall growth.

The data for the Eurozone do not present an attractive picture. The domestic balance is contractionary, and what little growth there is comes from exports and public sector spending that is bumping up against the deficit limits set by the Stability and Growth Pact. Moreover, at 69% of GDP, government debt is already the second highest of the regions we cover, and the Eurozone has not tackled the explosive issue of public pensions reform (which, with a rapidly aging population, will put still more pressure on the public sector balance). With the Asian countries maintaining their currency pegs against the U.S. dollar (see below), the brunt of the U.S. exchange rate adjustment caused by its burgeoning current account deficit has come against the Euro. This puts export demand at risk, and accelerates the restructuring of high cost European industry (e.g., movement of more operations to China). Unfortunately, it also leads to more layoffs, which strengthens popular resistance to the structural reforms that are critical to renewed domestic demand growth (e.g., labor market reforms). In sum, the prospects for Europe becoming a new engine for world growth are not encouraging.

On the positive front, strong growth in China has strongly boosted Japanese capital goods exports. Along with continued strong public sector stimulation, this has generated renewed real growth. As always, it is low private domestic demand that remains a problem in Japan. With a rapidly aging population, and a relatively weak old age pension system, the incentive for a high level of household savings remains as strong as ever. If there is a silver lining here, it is the fact that these high savings are financing the government's deficit. A key question is how much longer the Japanese public will continue to accumulate government bonds; at 193% of GDP, Japan's government debt is the highest of any region we cover. On the corporate front, the continued need for balance sheet strengthening (following the borrowing and investing boom of the 80s bubble economy) still contributes to the positive private sector balance. In sum, apart from investments linked to export growth, it is very hard to see how Japanese domestic demand will be able to grow much in the years ahead.

The UK's economy remains in relatively good shape, though perhaps more dependent on government spending than one would like to see. On the other hand, unlike many other regions, it is relatively well positioned on the public pensions front, with many significant reforms already made under the Thatcher and succeeding governments. If there is a warning sign, it is flashing in the residential property sector, where variable rate mortgages have financed a continued climb in property values that in turn have supported strong consumer spending. Like the Reserve Bank of Australia, the Bank of England has recently begun to raise interest rates to slow this rise. As long as the global economy remains in reasonably good shape, this strategy may succeed in bringing about a soft landing; on the other hand, things will get a lot more interesting, so to speak, if this isn't the case.

The data for the United States paint a stark picture of what has happened over the last year. With the collapse of the technology bubble, the U.S. authorities faced a stark choice: ramp up government fiscal monetary stimulation (which risked the development of new asset bubbles), or allow the economy to go through a painful period of adjustment, with an uncomfortably high risk of slipping into a deflationary recession. They chose the former, and the data in the table show at least part of the result. While the private sector has retrenched, a sharp increase in public sector spending has kept demand growth at an acceptable level, not just in the

United States, but in the rest of the world as well. The obvious question is how much longer this can go on. At 61% of GDP, the U.S. government's debt is not oppressive; on the other hand, the buildup of dollar assets in the hands of foreign investors seems already to be flashing a warning sign. Evidence for this is found in the change in the composition of the capital inflows that finance the United States' current account deficit.

While in the 1990s they included substantial amounts of direct and portfolio equity investment, today they are largely made up of bonds, with substantial amounts being purchased by Asian central banks. Why? Because doing so keeps U.S. interest rates down and their own exchange rates from appreciating against the dollar. As a result, the key customer (the U.S. economy) for their export dependent economies keeps growing. As someone recently wrote, this is sales financing on a scale never before seen in history. There are, however, constraints on this strategy. Their fundamental driver is the growth in the domestic money supply that results from Asian central bank purchases of the U.S. dollars used to pay for Asian exports (which the central banks in turn invest into U.S. government debt). In the short term, this can be avoided by having the central bank sell home country government bonds to domestic buyers to "soak up" the excess money supply creation. But given the scale on which the central bank dollar purchases are occurring (or, in China's case, the lack of a large domestic bond market), at some point the domestic money supply must increase. Eventually, this will trigger some combination of bad outcomes: it could be goods and services inflation (which raises the effective, if not the nominal exchange rate versus the dollar), or it could be asset price bubbles, or it could be a pile of bad loans in the banking system. And when these start to become apparent, Asian central banks will have to slow down their dollar recycling. At that point, U.S. interest rates will rise, and the dollar exchange rate will fall, which will reduce the U.S. current account deficit through both income (slower growth) and price (cheaper exports and more expensive imports) effects.

Before we get to that point, however, U.S. growth may be slowed down by the very people who have kept it so high for so long: the American consumer. On the balance sheet of the American household sector, debt increased from 14% to 18% of assets between 1999 and 2002, and probably still further in 2003 and 2004. A lot of this debt represents fixed rate

mortgage borrowing that has kept residential property returns high, and indirectly supported consumption spending. However, if interest rates rise, or if continuing weakness on the employment front (more below) forces a slowdown in borrowing, the party is going to end.

Which, of course, brings us to the other players at this party, the People's Republic of China, and the other Asian NICs. While we will cover China in much more detail below, the table makes a number of points clear. Like Japan, these countries lack strong public pension systems; as a result, the incentive for household savings is high. Moreover, these countries have also been heavily dependent on exports for their growth, with some additional support from public sector deficit spending. When the Chinese private sector balance is further disaggregated, it becomes clear that over the past year or so, the fundamental growth dynamic in the world economy has been U.S. public sector deficits supporting Chinese exports, that in turn support heavy investment spending by Chinese companies, which leads to high spending on imports from other Asian countries (as well as commodity producing countries). All facilitated by Asian central banks' friendly dollar recycling policies. As we previously noted, there are good reasons to believe that this game can't go on much longer. So the interesting question is what could take its place. We have already seen that increasing domestic demand growth in the Eurozone and Japan faces serious obstacles. And unfortunately, the Australian, Canadian, and U.K. economies, while quite well run, aren't large enough to support the current level of aggregate demand growth. So the big question appears to be whether China will be able to generate more domestic demand to power the world economy. We'll shortly examine that in more depth. But first, let's move on to another part of our economic model.

Up to now, we have only looked at the demand side of the global economy. However, as we noted at the outset, returns on financial assets result from the interaction of demand with supply. So it is to the latter that we now turn. The first problem you confront in this area is the fact that supply side data are harder to observe, are noisy (that is, they are measured less precisely than demand side data) and usually only appear with a lag. For example, while unemployment data are collected, they don't include people who have stopped looking for work. Nor do they explicitly show the percentage of people who could do much more than they are in their current jobs (a condition known as "underemployment"). Finally,

unemployment alone doesn't tell you much about the relative quality of the workers involved - they make no distinction between an unemployed computer programmer and an unemployed ditch digger. Data on the capital side of the supply equation are just as problematic. Capacity utilization data tells you precious little about the unused capacity -- under what conditions would it again be put into use, and how likely are those to occur?

Fortunately, there is a way around these problems: we can directly observe the result of the interaction of real supply with real demand conditions in the form of the real interest rate. Until recently, this was at best a noisy observation, as the real rate itself had to be inferred from current nominal rates and some estimate of future inflation. With the widespread introduction of government real return bonds (Japan issued its first ones on March 4th), we can now directly observe the real rate of interest in a given economy. To be sure, this is still a bit of an uncertain measure. For example, it can be distorted a bit by factors unique to the bond market (e.g., if a real return bond issue is perceived to be somewhat illiquid, it will command a premium over the "true" real rate), or there may be some risk discount applied to government debt versus the "true" real rate for the overall economy. Still, these are relatively minor shortcomings, and the government real return bond yield is still an extremely useful measure that unfortunately isn't as widely followed in the media as it probably should be.

So how should we interpret the current yield on real return bonds? Let's start with the basic concept behind the real rate of interest. It is the basic building block of the financial system, upon which various risk premia are added to obtain expected returns on different asset classes. But what does it represent? It is the additional compensation that an investor should expect to receive in exchange for postponing consumption for one year. And how much should that rate be? Logically, it should represent the additional output that can be produced by investing the saved capital rather than consuming it. And what does this equal? In the absence of any shocks (e.g., an unforeseen sharp rise in energy prices), this additional output is the expected real growth rate of the economy, which we already know is equal to the increase in the labor force times the increase in worker productivity. Why should the real rate on government bonds proxy for this? Because the government can't sell its debt for very long if it is offering substantially lower risk adjusted real returns than those available in the economy as a whole.

Moreover, as labor force and productivity growth rates vary somewhat across countries, so too should real interest rates. Moreover, countries with relatively higher real interest rates should see their currencies appreciate, and consequently should run current account deficits.

However, all of the above statements assume that no unexpected surprises occur, which we know isn't the case. And when these happen, the observed real rate of interest (the yield on real return government bonds) can substantially diverge from its theoretical value (the rate of labor force growth times the rate of productivity growth). For example, a sharp increase in domestic demand could, all else being equal, cause the observed real return to exceed the theoretical one. This would be a clear sign of building inflationary pressures. On the other hand, a supply side shock could cause the opposite to happen. In this case, actual real rates below their theoretical values. In point of fact, this is exactly what seems to have happened over the past few years, due not only to the impact of information and communication technology, but also due to the entry into the world economy of China and India as major players.

So let's take a look at how big these real return gaps are today. The data in the following table are from the IMF, except for the Real Bond Yields, which are as of March 31, 2004.

Country	Forecast Labor Force Growth	Productivity Growth 95-04	Theoretical Real Rate	Real Bond Yld Mar04	Gap
Australia	0.80%	3.00%	3.82%	3.06%	-0.76%
Canada	0.60%	1.10%	1.71%	2.35%	0.64%
Eurozone	0.00%	3.30%	3.30%	1.18%	-2.12%
Japan	-0.30%	2.10%	1.79%	1.11%	-0.68%
UK	0.00%	2.10%	2.10%	1.78%	-0.32%
USA	0.90%	4.10%	5.04%	1.96%	-3.08%

As you can see, with the exception of Canada, inflation-linked government bond markets seem to be sending a clear signal that on balance, the greater risk we face is one of deflation, rather than inflation. As noted above, the underlying driver of this situation is most likely the emergence of China as a key player in the world economy, which now sets the marginal price in an ever increasing number of industries. Given this, we need to take a closer look at this country and its future before constructing our scenarios for possible asset class returns.

Four (often implicit) assumptions seem to underlie a lot of people's current thinking about China: (1) Because of its huge supply of labor and growing labor productivity, it will remain the world's most attractive export platform. (2) Continued economic growth will lead to higher consumption spending, and eventually to the development of a huge domestic market. (3) China will remain politically stable and will be accommodating to foreign investors. (4) Over time, economic development will result in political liberalization and a country that is powerful, but deeply engaged in the international system and fundamentally benign. How likely is it that all four of these will hold true in the future? A lot of people (not necessarily in the financial markets) have been asking this question over the past couple of years. The conclusions they have reached are not encouraging.

Let's start with the big picture: China's grand strategy, as summed up in the 2002 Report to Congress by the U.S. China Security Review Commission. "It is clear that China anticipates America's decline and is working to shape a world with a weaker United States and stronger competing poles of power where it can play a central role. China's strategy to achieve this objective appears to include biding its time by avoiding confrontation with the United States, and meanwhile gaining access to American investment, technology and know-how...Economic growth is a central pillar of Chinese power. The Chinese government and its industries share an overwhelming and driving goal to increase the power and international standing of China as a nation-state...Chinese policy has been guided since the 1970s by the maxim enunciated by Deng Xiaoping that science and technology from abroad is the prime force of production and central to China's rise from poverty and weakness... They view joining the World Trade Organization as essential to continue rapid growth by accelerating economic reform, attracting higher levels of foreign investment, maintaining and expanding

export markets, and playing a more influential role in shaping the rules of the world trading system...China's economic relations with Europe and Japan reflect both an interest in building relations with America's traditional allies and also decreasing China's dependency on the United States for its technology, investment and export markets. ...Chinese leaders believe that American-style democratic capitalism threatens the Chinese Communist Party's political monopoly, but they also believe they can grow economically and still maintain their power...China has carefully fanned the flames of nationalism and anti-Americanism through the state-controlled media...[This] reflects a larger strategy on the part of the CCP to maintain stability and control as the economy rapidly opens up to the outside world and to American values and culture."

Since the introduction of reforms by Deng Xiaoping in 1978, this grand strategy has, to date, been remarkably successful. But will it continue to be in the future? A number of recent analyses suggest that China may be entering a much more turbulent period. An article in the July/August 2001 issue of *Foreign Affairs* ("China's Coming Transformation" by Gilboy and Heginbotham) concludes that "the social forces unleashed by economic reform are driving towards a fundamental transformation of Chinese politics...The struggle to maintain the political status quo while pursuing rapid economic growth has resulted in a non-adaptive, brittle state that is unable to cope with an increasingly organized, complex and robust society...Efforts [by the CCP] to resist political change will only squander economic dynamism...and ultimately threaten the system with collapse."

A subsequent article, ("China's Governance Crisis" by Minxin Pei in the September/October 2002 issue of *Foreign Affairs*) adds more detail to this argument. Pei notes that "China's current crisis results from fundamental contradictions in the reforms it has pursued over the last two decades, the hidden costs of which have begun to surface." These include the increasing problems caused by a weak legal system, declining participation in the CCP (former President Jiang Zemin's attempt to attract intellectuals and entrepreneurs to the party proved unsuccessful), widespread corruption (involving many CCP members) an growing resentment of it, widening income gaps, particularly between urban dwellers and the 800 million people living outside the cities, weakening of the healthcare and educational systems,

growing unemployment and widespread underemployment (particularly at state owned enterprises), increasing environmental problems, energy shortages, and a huge volume of non-performing loans (estimated at up to 50% of total assets) to unprofitable (but job creating) state owned enterprises piled up on the books of China's four main state owned banks which dominate the financial system. Regarding the latter, some have estimated that the cost to clean up the state owned banks' books (ahead of full opening to foreign bank competition due in 2006 under the terms of the WTO agreement) amounts to 30% of GDP. Unfortunately, a key tool for alleviating the bad loan problem has recently been put on hold: due to questions about the accuracy of their financial reporting, further public equity offerings by state owned Chinese companies effectively have been suspended by the SEC. Added to the existing 30% public debt/GDP ratio, the contingent liability for cleaning up the Chinese banking system brings the country's public sector liabilities to 60% of GDP, an amount roughly equal to that found in the United States and Eurozone. Whether or not this will constrain the government's ability to address critical problems in the areas of healthcare, education and old age pensions that lead to high domestic saving (and hold back the development of domestic demand) remains to be seen.

Last but not least, a number of commentators have recently pointed to the mounting signs that the money supply growth caused by China's recycling of U.S. dollar export receipts is beginning to have noticeable negative effects on the economy, including, for example, overinvestment in productive capacity, potential asset bubbles in the property market, and greater number of non-performing loans state owned banks.

To be sure, the current leadership of the CCP is trying to address these issues. President Hu Jintao and Prime Minister Wen Jiabao have launched a widespread anti-corruption program, and tried to reposition the CCP as a more populist organization fighting for the country's still very, very large number of "have-nots." At the same time, they have explicitly set lower growth goals for the economy, and taken steps to limit the impact of dollar recycling (e.g., mandating slower bank credit growth, and allowing more overseas investment of export proceeds by companies). The critical uncertainty is whether these actions will be able to limit the building pressures for fundamental political change. If it does not, their only alternative

means of holding the state together (and maintaining the CCP in power) would logically require an appeal to nationalism, which in turn would seem to require a more bellicose China (e.g., a serious, and economically debilitating crisis involving Taiwan).

The pressures on the political system "already in the pipeline" also seem likely to become more intense due to mounting economic problems. A recent report from the RAND Corporation ("Fault Lines in China's Economic Terrain") highlights eight problem areas, and the reduction in GDP growth they could cause:

Problem Area	Potential Reduction in Real GDP Growth
Growing unemployment, poverty and social unrest	(0.3%) to (0.8%)
Economic effects of increasing corruption	(0.5%)
Growth of HIV/AIDS and epidemic diseases (e.g., SARS)	(1.8%) to (2.2%)
Declining water resources and rising pollution	(1.5%) to (1.9%)
Growing imported energy consumption and rising energy prices	(1.2%) to (1.4%)
Fragility of the financial system and state-owned enterprises	(0.5%) to (1.0%)
Possible shrinkage of foreign direct investment	(0.6%) to (1.6%)
Taiwan and other potential conflicts	(1.0%) to (1.3%)

As the RAND report notes, "while the probability that all [of these problems] will occur is very low, the probability that several will ensue is higher than their joint probabilities would normally imply ...because their individual probabilities are not independent of one another. The occurrence of one or two will raise the probability that others will ensue."

So, let us sum all this up in a pair of scenarios. Based on our analysis, and the current state of various financial markets, what do we see as the most likely outcome? Basically, muddling through for a couple of more years followed by a prolonged period of low growth. However,

this scenario critically depends on a few key assumptions: (1) continued willingness of the rest of the world to keep on accumulating claims on the United States; (2) no major political and/or economic crisis in China; (3) no major energy crisis (e.g., caused by terrorism or the destabilization of Saudi Arabia); (4) continuation of weak but positive growth in Europe and Japan, which in turn depends on renewed progress toward removing the obstacles holding down domestic demand. (Each of these, of course, suggests an indicator to watch for that would point towards the downside scenario developing.) Under the most likely scenario, we see no compelling reason to make a short-term departure from any of the strategic asset allocations in our model portfolios. In short, the world economy muddles along, with different asset classes doing relatively better and relatively worse each year, and diversification delivering its expected long-term benefits.

But what would the most dangerous scenario look like? Ugly. As we have repeatedly stated, we continue to believe that the balance of risks in the world economy is towards deflation in the short term (which, were it to happen, would inevitably be followed by the mother of all concerted global efforts to reflate). While corporations have the possibility of increasing their productivity faster than deflation to avoid real increases in their debt burden, households find this much more difficult (most two-earner households today are probably already running at maximum productivity). As a result, a sharp fall in demand would most likely lead to a sharp cutback in consumer spending, which would only worsen the downturn. It is a short step from there to a collapse in asset values in a classic debt deflation/recession (if not depression). Could this happen? Of course -- debt deflations triggered by sharp increases in productivity happened frequently throughout the 19th century, culminating in the global depression of the 1930s (which was really the last great 19th century financial panic). Unlike the "muddle along" scenario, under this "most dangerous" scenario departures from our model portfolios' asset allocation policies would be justified. Specifically, we would lower our equity allocations, and raise our allocations to real return bonds (provided the bonds in question had, as in the case of TIPS, a provision keeping capital at least equal to the face value of the bond) and investment grade bonds (with the proviso that we would have to switch out of them at the outset of the reflationary phase at the end of this scenario). We would also probably tilt our commodity allocation more toward gold, or perhaps another real asset such as timber (see this

month's letter to the editor). We would not increase our allocations to property (which are usually highly leveraged investments which could suffer in a prolonged deflationary recession) until we were confident reflation had taken hold.

Last but not least, let's look at current fixed income asset class valuations. We take the following approach in our analysis. We start with the current real bond yield (using the longest maturity available). To that we add the average historical rate of inflation between 1989 to 2003 to get a required rate of return on the ten-year government bond. We then compare this to the actual current nominal yield on a ten-year government bond. Using our required and the actual rates of return, we calculate present values for each bond (assuming a zero coupon structure) and compare them to get a rough estimate of the extent to which each asset class is over or undervalued. The results of these calculations are shown in the following table:

Region	Current Real Rate	Average Inflation Premium (89-03)	Required Nominal Return	Nominal Return Supplied (10 year Govt)	Rate Gap (negative = overvaluation)	Asset Class Over or (Under) Valuation
Australia	3.06%	2.96%	6.02%	5.47%	-0.55%	5.34%
Canada	2.35%	2.40%	4.75%	4.34%	-0.41%	4.00%
Eurozone	1.18%	2.37%	3.55%	3.96%	0.41%	-3.87%
Japan	1.11%	0.77%	1.88%	1.42%	-0.46%	4.63%
UK	1.78%	3.17%	4.95%	4.78%	-0.17%	1.63%
USA	1.96%	2.93%	4.89%	3.88%	-1.01%	10.16%

Product and Strategy Notes

The Impact of Commodity Fund Fees

More than once we have been asked whether we take the relatively high expenses charged by commodity index funds into account when developing our model portfolios. The answer is we do not, because we have no way of knowing what commodity index funds may be introduced

in the future (e.g., there are rumors that a commodity index ETF will soon be introduced with much lower expenses than the two existing U.S. commodity index mutual funds). Still, it is a question that we thought deserved further analysis. We took two approaches to this issue. First, we calculated the expected value of different share classes of the Oppenheimer Real Assets Fund after different holding periods, based on our underlying asset class real return assumptions (expected annual return of 8.1%, and standard deviation of 18.3%). In our analysis, the fund's Class A shares had a front end load of 5.75%, and an annual expense charge of 1.49%. The Class B shares had no front-end load; their annual expense charge was 2.44% through year six, after which it was 1.49%. The Class C shares also had no front end load, but charged annual expenses of 2.40% throughout their holding period. Our analysis was undertaken from the perspective of a long-term investor. The following table shows the expected value of the different share classes (based on an initial \$1,000 investment) after holding periods of different length.

Holding Period	Class A Shares	Class B Shares	Class C Shares
6 Years	\$1,374	\$1,376	\$1,379
10 Years	\$1,767	\$1,769	\$1,709
20 Years	\$2,420	\$2,423	\$2,234

This table certainly makes one thing clear: let it never be said that the folks at Oppenheimer don't have sharp pencils! As you can see, for a long-term investor, there is basically no difference between the expected value of the Class A and Class B shares. The Class C shares are another story, however, and seem better suited to people who don't expect to own the fund for very long.

Our second analysis looked at what would happen to our model portfolio asset allocations if we reduced the expected return on the commodities asset class to reflect the incremental expense (above that of a "typical" index fund) associated with the Oppenheimer fund. We chose to use our U.S. dollar 7% target real return portfolio in our analysis. While keeping the commodities asset class standard deviation unchanged, we reduced its expected return from

8.10% to 6.86%, reflecting the Oppenheimer Real Asset Fund's "extra" expenses of 1.24% (1.49% less a "normal" index fund expense ratio of .25%). We tested the impact of this change using both historical asset class returns and expected future returns as inputs into our simulation optimization model. In the former case, we found that the change had some impact, resulting in a 5% reduction in our allocation to commodities, and a 5% increase in our allocation to domestic equity. However, in the simulations based on expected future returns, the reduced commodities return had no impact on our asset allocation. Given the 67% weight put on the historical portfolio in determining our final model portfolios, the net impact of the higher commodities fund expenses was approximately a 3% reduction in our commodities asset class weight, and a three percent increase in domestic equities. However, this analysis comes with one important caveat: we deliberately used the most expensive commodities index fund in this analysis. Had we chosen another fund (say the PIMCO Commodities Real Return Fund institutional shares that are available through many fund supermarkets, and which have a relatively low .75% expense ratio), we suspect there would have been no impact at all on our asset allocations.

More on Retail Hedge Fund Products

A number of readers have written us asking us to write about a number of actively managed mutual funds that employ hedge fund-type strategies. The great majority of these are long/short equity funds in which the manager attempts to make money not only by being long undervalued companies, but also short overvalued ones. These funds include BPLEX, BNNIX, RMSIX, RMNIX, GFLAX, MLSAX, and CHLAX. While we don't know enough about any of these to prefer one over another, we have a couple of observations to make. First, the expense charges (and often front-end loads) on these funds are all quite high. Second, their performance is not very impressive (though many of them are new). Finally, as we have noted in previous articles on this subject, we are not big fans of the long/short equity subset of the hedge fund universe. As we have shown, the returns on the CSFB/Tremont long/short style index are quite highly correlated with returns on the equity market. Based on our analysis, a far better choice is a combination of the equity market neutral and global macro hedge fund style indexes. Whereas long/short equity still contains a substantial amount of

equity market beta risk, equity market neutral managers typically hedge all of this away, leaving just their bets on company-specific risks and returns (also known as alpha). Logically, EMN has a lot of appeal: you should not pay the high fees charged by an active manager to obtain beta (i.e., pure asset class) risk and return, which you can obtain much more cheaply through an index fund. Rather, you should pay up only for alpha, which is what you're getting with the EMN style. Unfortunately, we do not know of any retail EMN funds available today.

Global Macro funds are altogether different. In essence, global macro managers pursue the age-old art of market timing, pure and simple, tactically shifting their asset class weights in line with their forecasts for future relative returns. While there is still no "pure" global macro style index fund available, there may be the next best thing. Pimco has recently launched its All Asset Fund, managed by Bob Arnott of First Quadrant Securities (one of the smartest people you will encounter in the investment business). The fund's brief is to maximize long term real returns by tactically shifting its allocations between the same broad set of asset classes we use in our model portfolios. The institutional class shares of this fund (which may be available through various fund supermarket programs) trade under the ticker PAAIX. Between June, 2003 and February, 2004, the funds compound nominal return was 0.86% versus 1.22% on the CSFB/Tremont Global Macro Hedge Fund Style Index (the funds in which probably use more leverage than the Pimco fund). The correlation of returns between the two (over an admittedly very short period) was .57. In sum, if one were trying to figure a low cost way to include hedge fund type vehicles in a portfolio, this looks like it would be a very good place to start.

New ETF's in the USA

Finally, a short note on two new ETFs that will soon be launched. The first will track a gold index, and the second will track an index of Chinese stocks. The attractiveness of both of these issues is contingent on your views regarding the alternative scenarios we described in this month's economic review. Clearly, if future changes indicate that the most dangerous situation is developing, shorting China (if you are inclined to make this type of active bet) and

going long gold may make a lot of sense. In the absence of these conditions, however, we would avoid a tilt towards gold within the broader commodities asset class (after all, gold is included in both the Goldman Sachs and Dow Jones-AIG indexes), or towards China within the broader emerging markets asset class (again, China is included in the MSCI Emerging Markets Index).

Model Portfolio Performance

<i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i>			
	YTD 31Mar04	Weight	Weighted Return
	In U.S. \$		In U.S. \$
High Risk/Return Portfolio			
<i>Asset Classes</i>			
<i>U.S. Benchmark</i>			
U.S. Equity	2.0%	80%	1.6%
U.S. Bonds	2.7%	20%	0.5%
		100%	2.1%
<i>Global Benchmark</i>			
U.S. Equity	2.0%	40%	0.8%
Non-U.S. Equity	4.6%	40%	1.8%
U.S. Bonds	2.7%	10%	0.3%
Non-U.S. Bonds	1.4%	10%	0.1%
		100%	3.1%
<i>Recommended</i>			
U.S. Equity	2.0%	55%	1.1%
Foreign Equity (EAFE)	4.4%	25%	1.1%
Emerging Mkts Equity	7.8%	7%	0.5%
Commercial Property	11.7%	3%	0.4%
Commodities	16.6%	10%	1.7%
		100%	4.8%

<i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i>			
Medium Risk/Return Portfolio			
<i>Asset Classes</i>			
<i>U.S. Benchmark</i>			
U.S. Equity	2.0%	60%	1.2%
U.S. Bonds	2.7%	40%	1.1%
		100%	2.3%
<i>Global Benchmark</i>			
U.S. Equity	2.0%	30%	0.6%
Non-U.S. Equity	4.6%	30%	1.4%
U.S. Bonds	2.7%	20%	0.5%
Non-U.S. Bonds	1.4%	20%	0.3%
		100%	2.8%
<i>Recommended</i>			
U.S. Equity	2.0%	47%	0.9%
Foreign Equity (EAFE)	4.4%	10%	0.4%
U.S. Bonds	2.7%	12%	0.3%
U.S. High Yield Bonds	2.0%	5%	0.1%
Non-U.S. Bonds	1.4%	5%	0.1%
Commercial Property	11.7%	6%	0.7%
Emerging Mkts Equity	7.8%	5%	0.4%
Commodities	16.6%	10%	1.7%
		100%	4.6%

<i>These portfolios seek to maximize return while matching their benchmark's risk (standard deviation)</i>			
Low Risk/Return Portfolio			
<i>Asset Classes</i>			
<i>U.S. Benchmark</i>			
U.S. Equity	2.0%	20%	0.4%
U.S. Bonds	2.7%	80%	2.2%
		100%	2.6%
<i>Global Benchmark</i>			
U.S. Equity	2.0%	10%	0.2%
Non-U.S. Equity	4.6%	10%	0.5%
U.S. Bonds	2.7%	40%	1.1%
Non-U.S. Bonds	1.4%	40%	0.6%
		100%	2.3%
<i>Recommended</i>			
U.S. Equity	2.0%	16%	0.3%
U.S. Bonds	2.7%	55%	1.5%
U.S. High Yield Bonds	2.0%	3%	0.1%
Real Return Bonds	5.0%	10%	0.5%
Commercial Property	11.7%	5%	0.6%
Foreign Equity (EAFE)	4.4%	6%	0.3%
Commodities	16.6%	5%	0.8%
		100%	4.0%

<i>These portfolios seek to minimize risk while matching their benchmark's returns.</i>			
	YTD 31Mar04	Weight	Weighted Return
	In U.S. \$		In U.S. \$
High Risk/Return Portfolio			
<i>Asset Classes</i>			
<i>U.S. Benchmark</i>			
U.S. Equity	2.0%	80%	1.6%
U.S. Bonds	2.7%	20%	0.5%
		100%	2.1%
<i>Global Benchmark</i>			
U.S. Equity	2.0%	40%	0.8%
Non-U.S. Equity	4.6%	40%	1.8%
U.S. Bonds	2.7%	10%	0.3%
Non-U.S. Bonds	1.4%	10%	0.1%
		100%	3.1%
<i>Recommended</i>			
U.S. Bonds	2.7%	5%	0.1%
Commercial Property	11.7%	10%	1.2%
U.S. Equity	2.0%	58%	1.2%
Foreign Equity (EAFE)	4.4%	17%	0.7%
Commodities	16.6%	10%	1.7%
		100%	4.9%

<i>These portfolios seek to minimize risk while matching their benchmark's returns.</i>			
Medium Risk/Return Portfolio			
<i>Asset Classes</i>			
<i>U.S. Benchmark</i>			
U.S. Equity	2.0%	60%	1.2%
U.S. Bonds	2.7%	40%	1.1%
		100%	2.3%
<i>Global Benchmark</i>			
U.S. Equity	2.0%	30%	0.6%
Non-U.S. Equity	4.6%	30%	1.4%
U.S. Bonds	2.7%	20%	0.5%
Non-U.S. Bonds	1.4%	20%	0.3%
		100%	2.8%
<i>Recommended</i>			
U.S. Equity	2.0%	45%	0.9%
Foreign Equity (EAFE)	4.4%	10%	0.4%
U.S. Bonds	2.7%	29%	0.8%
U.S. High Yield Bonds	2.0%	5%	0.1%
Commercial Property	11.7%	6%	0.7%
Commodities	16.6%	5%	0.8%
		100%	3.8%

Low Risk/Return Portfolio			
<i>Asset Classes</i>			
<i>U.S. Benchmark</i>			
U.S. Equity	2.0%	20%	0.4%
U.S. Bonds	2.7%	80%	2.2%
		100%	2.6%
<i>Global Benchmark</i>			
U.S. Equity	2.0%	10%	0.2%
Non-U.S. Equity	4.6%	10%	0.5%
U.S. Bonds	2.7%	40%	1.1%
Non-U.S. Bonds	1.4%	40%	0.6%
		100%	2.3%
<i>Recommended</i>			
U.S. Equity	2.0%	10%	0.2%
Foreign Equity (EAFE)	4.4%	8%	0.4%
Commercial Property	11.7%	4%	0.5%
U.S. Bonds	2.7%	40%	1.1%
Real Return Bonds	5.0%	25%	1.3%
U.S. High Yield Bonds	2.0%	8%	0.2%
Commodities	16.6%	5%	0.8%
		100%	4.3%

<i>These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.</i>			
	YTD 31Mar04	Weight	Weighted Return
	In US\$		In US\$
7% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Real Return Bonds	5.0%	3%	0.2%
U.S. Bonds	2.7%	3%	0.1%
Non-U.S. Bonds	1.4%	29%	0.4%
Commercial Property	11.7%	10%	1.2%
Commodities	16.6%	13%	2.2%
U.S. Equity	2.0%	25%	0.5%
Foreign Equity (EAFE)	4.4%	0%	0.0%
Emerging Mkt. Equity	7.8%	17%	1.3%
Hedge Funds	1.9%	0%	0.0%
		100%	5.8%
<hr/>			
	YTD 31Mar04	Weight	Weighted Return
	In US\$		In US\$
5% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Real Return Bonds	5.0%	2%	0.1%
U.S. Bonds	2.7%	15%	0.4%
Non-U.S. Bonds	1.4%	22%	0.3%
Commercial Property	11.7%	13%	1.5%
Commodities	16.6%	6%	1.0%
U.S. Equity	2.0%	27%	0.5%
Foreign Equity (EAFE)	4.4%	5%	0.2%
Emerging Mkt. Equity	7.8%	10%	0.8%
Hedge Funds	1.9%	0%	0.0%
		100%	4.9%

	YTD 31Mar04	Weight	Weighted Return
	In US\$		In US\$
3% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Real Return Bonds	5.0%	40%	2.0%
U.S. Bonds	2.7%	25%	0.7%
Non-U.S. Bonds	1.4%	8%	0.1%
Commercial Property	11.7%	8%	0.9%
Commodities	16.6%	7%	1.2%
U.S. Equity	2.0%	7%	0.1%
Foreign Equity (EAFE)	4.4%	3%	0.1%
Emerging Mkt. Equity	7.8%	2%	0.2%
Hedge Funds	1.9%	0%	0.0%
		100%	5.3%

<i>These portfolios seek to maximize the probability of achieving at least the target real return over twenty years, at the lowest possible risk.</i>		<i>These portfolios are the same as our other target real return portfolios, except that they can also invest in hedge fund index products.</i>	
	YTD 31Mar04	Weight	Weighted Return
	In US\$		In US\$
7% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Real Return Bonds	5.0%	3%	0.2%
U.S. Bonds	2.7%	0%	0.0%
Non-U.S. Bonds	1.4%	27%	0.4%
Commercial Property	11.7%	13%	1.5%
Commodities	16.6%	10%	1.7%
U.S. Equity	2.0%	20%	0.4%
Foreign Equity (EAFE)	4.4%	0%	0.0%
Emerging Mkt. Equity	7.8%	12%	0.9%
Hedge Funds	1.9%	15%	0.3%
		100%	5.3%
	YTD 31Mar04	Weight	Weighted Return
	In US\$		In US\$
5% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Real Return Bonds	5.0%	5%	0.3%
U.S. Bonds	2.7%	20%	0.5%
Non-U.S. Bonds	1.4%	22%	0.3%
Commercial Property	11.7%	7%	0.8%
Commodities	16.6%	10%	1.7%
U.S. Equity	2.0%	20%	0.4%
Foreign Equity (EAFE)	4.4%	0%	0.0%
Emerging Mkt. Equity	7.8%	6%	0.5%
Hedge Funds	1.9%	10%	0.2%
		100%	4.6%

	YTD 31Mar04	Weight	Weighted Return
	In US\$		In US\$
3% Target Real Return	<i>YTD Returns are Nominal</i>		
<i>Asset Classes</i>			
Real Return Bonds	5.0%	42%	2.1%
U.S. Bonds	2.7%	16%	0.4%
Non-U.S. Bonds	1.4%	11%	0.2%
Commercial Property	11.7%	10%	1.2%
Commodities	16.6%	7%	1.2%
U.S. Equity	2.0%	7%	0.1%
Foreign Equity (EAFE)	4.4%	2%	0.1%
Emerging Mkt. Equity	7.8%	2%	0.2%
Hedge Funds	1.9%	3%	0.1%
		100%	5.5%