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INVESTMENT RESEARCH

Asset Allocation Strategies: A Historical Perspective

By Daniel R Wessels

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1. Introduction

The widely accepted approach to professional portfolio management rests upon the diversification of asset class investments. Typically, the allocation of asset class weights is determined according to the maximising of the expected portfolio return for a given level of accepted risk (volatility). Generally, it is known as multi-asset class or balanced portfolios.

This study endeavours to investigate how successful such a strategy has been over the past twenty years. Does such a portfolio adhere to the creation of real returns, but at the same time limit the volatility of those returns over time? Furthermore, is it possible that portfolio returns could be enhanced by applying alternative methodologies, and if so, could these strategies replace the conventional approach?

I start my analysis by giving an outline of the return characteristics of asset classes, based on the historical evidence over the past twenty years. Next, I will formulate the primary objectives of an investment strategy based on typical investors' concerns and evaluate how well the conventional asset allocation strategies have matched up to these objectives over the review period.

I will subsequently investigate how such a strategy would have measured up against alternative strategies over the past twenty years. The formulation of alternative portfolios is based on market timing and past performances. I will also discuss the feasibility of implementing these alternative strategies in portfolio management. Following the results of this analysis I will put forward recommendations for prudent portfolio management.

2. Asset Classes

Broadly defined, professionally managed investments can be categorised into four distinct asset classes, namely equities (stocks), bonds (government and corporate), commercial property unit trusts and cash (money markets).

Each asset class has unique fundamental drivers of return. For example, equity investments do well in an economic environment conducive to strong economic growth and low interest rates which in turn will stimulate consumer spending and an appreciation of asset values in general.

The return on property investments, especially commercial, is more affected by the level of economic activity, expected growth and demand than interest rate movements alone, which in turn is perhaps the dominant driver in the real estate (housing) market growth. The performance of long-term bond investments is inversely related to inflation expectations and thus interest rate movements in the future.

The *expected* return from each asset class can be predicted based on the expected strength of these fundamental drivers. Typically, one finds these projections to be within certain parameters. For example, the expected return from equity investments ranges between 10-20% per annum, property investments between 10-15% per annum, bond investments between 8-12% per annum and cash between 6-9% per annum.

However, the historical performances of certain asset classes, notably equities and commercial property investments, prove to be volatile and inconsistent, at least when measured over the short term, for example one-year periods. Even worse, negative returns from especially equity and property investments do occur from time to time.

Table 1 and 2 illustrate this variability of asset class returns over the past twenty years (1987-2006). The total annual return (dividends and growth in asset prices) of the JSE All Share Index (ALSI) is used as proxy for equity investments, the All Bond Index (ALBI) as a proxy for bond investments, and Property Unit Trusts (PUTS) for commercial property investments.

Table 1: Asset Class Returns and Inflation (CPI)

YEAR	EQUITY	BONDS	PUTS	CASH	INFLATION
1987	-4.8%	14.8%	12.9%	9.6%	14.7%
1988	14.8%	8.3%	-7.0%	13.4%	12.5%
1989	55.5%	21.8%	53.7%	19.1%	15.3%
1990	-5.1%	16.2%	2.7%	20.9%	14.6%
1991	31.0%	14.4%	18.7%	18.9%	16.2%
1992	-2.0%	27.8%	6.5%	15.8%	9.6%
1993	54.8%	32.0%	10.0%	12.6%	9.5%
1994	22.7%	-9.1%	9.7%	11.4%	9.9%
1995	8.8%	30.2%	10.2%	14.6%	6.9%
1996	9.3%	6.6%	-9.3%	16.5%	9.4%
1997	-4.5%	29.2%	20.0%	17.4%	6.1%
1998	-10.1%	5.0%	1.6%	18.5%	9.0%
1999	61.5%	29.9%	52.7%	15.5%	2.2%
2000	-0.1%	20.0%	25.1%	10.9%	7.0%
2001	29.1%	18.4%	7.7%	10.6%	4.2%
2002	-8.4%	16.4%	20.4%	12.1%	12.4%
2003	15.8%	18.5%	38.9%	12.6%	0.3%
2004	24.8%	14.2%	39.5%	8.2%	3.4%
2005	46.8%	11.1%	38.9%	7.5%	3.7%
2006	41.2%	5.5%	16.2%	7.9%	5.8%
Annualised Return	17.0%	16.1%	17.2%	13.6%	8.6%
Annualised Volatility	23.3%	10.4%	18.1%	4.0%	4.7%
Annualised Real Return	8.4%	7.5%	8.6%	5.1%	

Source: Glacier Research, Statistics SA

Table 2: The Variability of Asset Class Returns

1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
15%	15%	56%	21%	31%	28%	55%	23%	30%	17%	29%	18%	61%	25%	29%	20%	39%	40%	47%	41%
13%	13%	54%	16%	19%	16%	32%	11%	15%	9%	20%	5%	53%	20%	18%	16%	18%	25%	39%	16%
10%	8%	22%	3%	19%	7%	13%	10%	10%	7%	17%	2%	30%	11%	11%	12%	16%	14%	11%	8%
-5%	-7%	19%	-5%	14%	-2%	10%	-9%	9%	-9%	-5%	-10%	15%	0%	8%	-8%	13%	8%	8%	5%

KEY:

	Equities
	Property
	Bonds
	Cash

From the above tables:

- Equity and property investments delivered the highest annualised real returns over this period, but with considerable volatility; i.e. inconsistent returns. For example: equity investments were 9 out of 20 years the best asset class performer, but also 8 times the worst performer!
- During this period equity investments yielded negative returns 7 times, while property investments had two such returns.
- Bond and cash investments achieved unusually high real returns over this period as the monetary authority imposed a policy of high real interest rates to curb spiralling inflation.
- Cash investments were the worst performing asset class only 5 out of 20 times, despite predictions that cash should have been the worst performer every year!
- No asset class maintained its relative performance position to other asset classes more than two years in succession, except property investments which achieved the top performing spot from 2002 to 2004.

3. The Investor's Dilemma

Successful investment strategies rest upon two fundamental premises, namely to prevent or minimise the probability of capital losses, and the ability to yield real returns (better than inflation) over time.

To a certain extent the above objectives are contradictory, which makes successful investing challenging. While the surest way of achieving positive returns year on year is to invest in cash only, it is also the worst possible strategy to outperform inflation over time, especially if income tax considerations are taken into account. Equity investments on the other hand have a fantastic ability to yield high real returns over time, but negative returns in any given year are a real possibility. These concepts are illustrated in charts 1 and 2 below.

Chart 1 shows the cumulative real return for the different asset class from 1987-2006. Equity and property investments realised the highest real returns over this period, followed by bond investments. Cash investments showed significantly lower real returns compared to the other asset classes.

However, note that equity and property investments only achieved their sharp outperformance due to the prevailing bull market that started in 2003; before then they had indifferent results compared to bond and cash investments.

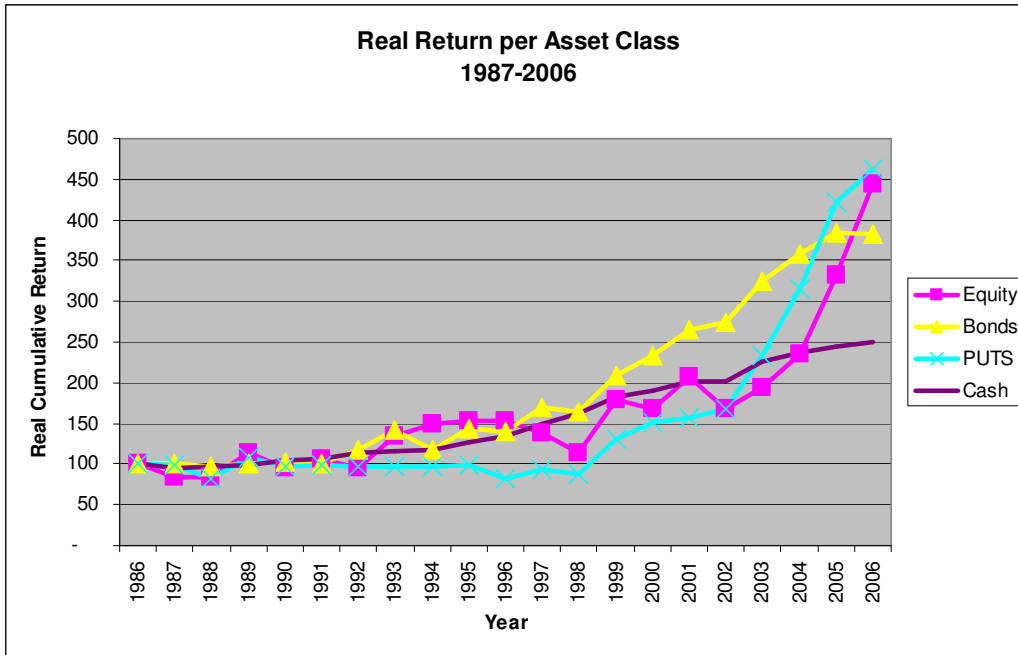


Chart 1: Long-term real returns by various asset classes

Chart 2 depicts the cumulative returns of two portfolios, A and B, where portfolio A in the first year has a negative return of -20% versus portfolio B's 0%. Thereafter, portfolio A will outperform portfolio B consistently by 5% per annum, for example 15% versus 10%. Nonetheless, it will take portfolio A 6-7 years to catch up and overtake portfolio B!

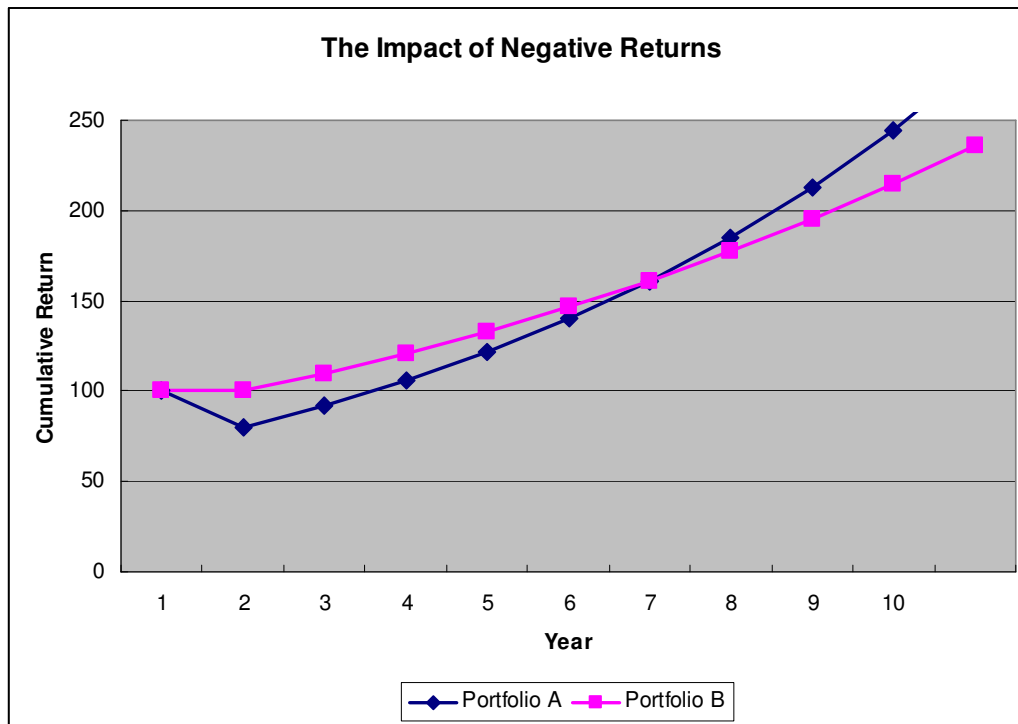


Chart 2: The impact of negative returns on the success of investment strategies

Basically, a significant negative return in any one year seriously handicaps the actual outcome of an investment strategy versus a strategy that yields consistently positive returns year after year.

Thus, investors face the challenge of harmonising both investment objectives – long-term real gains and minimising the risk of capital losses. Since asset class performances proved to be inconsistent from one year to the next year, the logical response from a prudent investor would be to diversify investments across all asset classes. However, such a diversification strategy would only be sensible if asset class performances are not closely related to one another;

in other words, the different asset class performances exhibit low or negative correlation.

Table 3 shows the correlation factors between the different asset classes over the past twenty years. Bonds and cash investments exhibit low and negative correlation to equity and property investments, while the returns from the latter two asset classes were more closely related. Thus, diversifying one's investment across bonds and cash, besides equity and property investments, would have made perfect sense over the past two decades.

Table 3: Cross-correlations between asset classes (1987-2006)

<i>ASSET CLASS</i>	<i>EQUITY</i>	<i>BONDS</i>	<i>PUTS</i>	<i>CASH</i>
EQUITY	1.00			
BONDS	0.12	1.00		
PUTS	0.55	0.31	1.00	
CASH	-0.20	0.23	-0.17	1.00

4. The Conventional Approach: Multi-Asset (Balanced) Funds

Despite the supposedly superior return capabilities of equity and property investments, professional investors know that their returns are inconsistent and unlike their theoretical justifications or predictions, very often are not the best performers, and in fact may yield negative returns in any given year.

Therefore, the real investment challenge for professional managers and advisors is to decide how much should be allocated to each asset class whereby the potential returns for investors can be maximised for a given level of accepted volatility.

Generally, three different asset allocation solutions, namely “low equity”, medium equity” and “high equity” balanced portfolios are offered to investors by professional investment managers. Their typical asset class exposures are shown in table 4.

Table 4: Asset class composition of different asset allocation solutions

Asset Class and Balanced Fund Type	Equities	Bonds	Property (PUTS)	Cash
Low Equity	30%	40%	10%	20%
Medium Equity	50%	30%	10%	10%
High Equity	75%	10%	10%	5%

How well did these respective strategies work over the past twenty years?

The annual returns from each of the three strategies over the period 1987-2006 are shown in table 5 and depicted in charts 3 and 4.

Table 5: Annual returns from different asset allocation strategies (1987-2006)

Year	Low Equity	Medium Equity	High Equity
1987	7.7%	4.3%	-0.3%
1988	9.5%	10.1%	11.5%
1989	33.4%	40.4%	49.5%
1990	8.8%	4.0%	-1.3%
1991	20.5%	23.3%	27.3%
1992	14.1%	9.3%	2.6%
1993	32.0%	38.3%	45.2%
1994	5.8%	10.4%	17.7%
1995	18.0%	15.2%	10.9%
1996	8.2%	7.8%	8.1%
1997	15.0%	9.1%	1.2%
1998	3.3%	-1.0%	-5.9%
1999	35.6%	43.3%	53.3%
2000	12.8%	9.6%	4.7%
2001	18.8%	21.5%	24.7%
2002	9.1%	4.6%	-2.1%
2003	18.3%	18.5%	18.1%
2004	17.8%	20.4%	23.9%
2005	22.1%	28.9%	39.0%
2006	17.5%	24.0%	32.9%
Annualised Return	16.1%	16.5%	16.8%
Volatility	9.1%	12.8%	18.3%

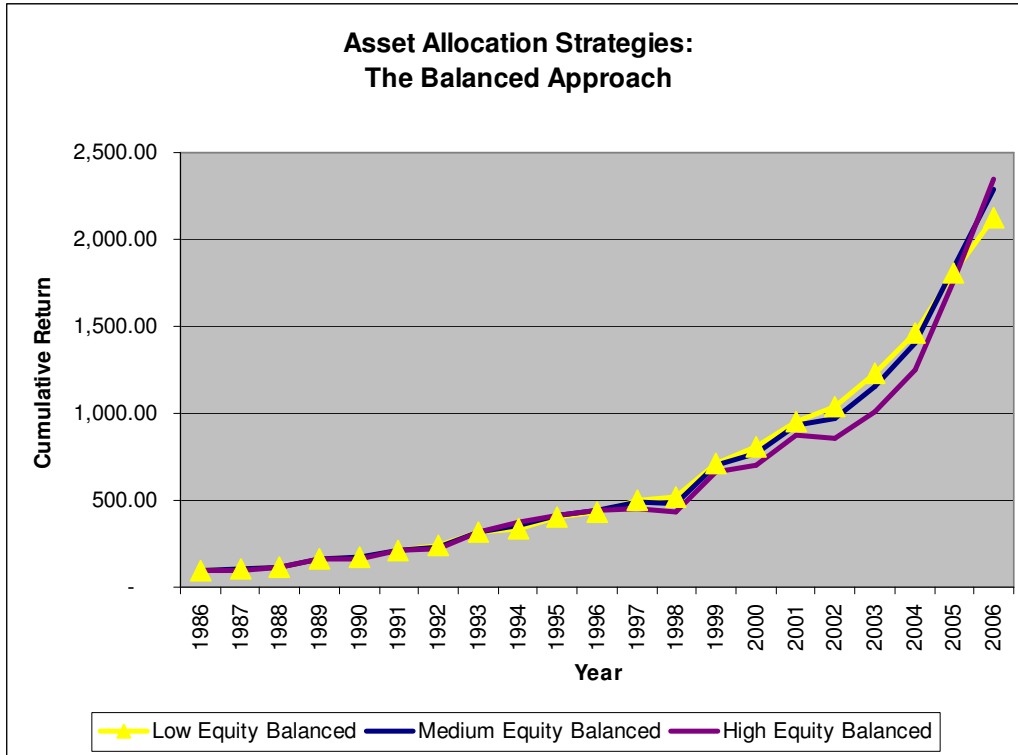


Chart 3: Cumulative return of different asset allocation strategies

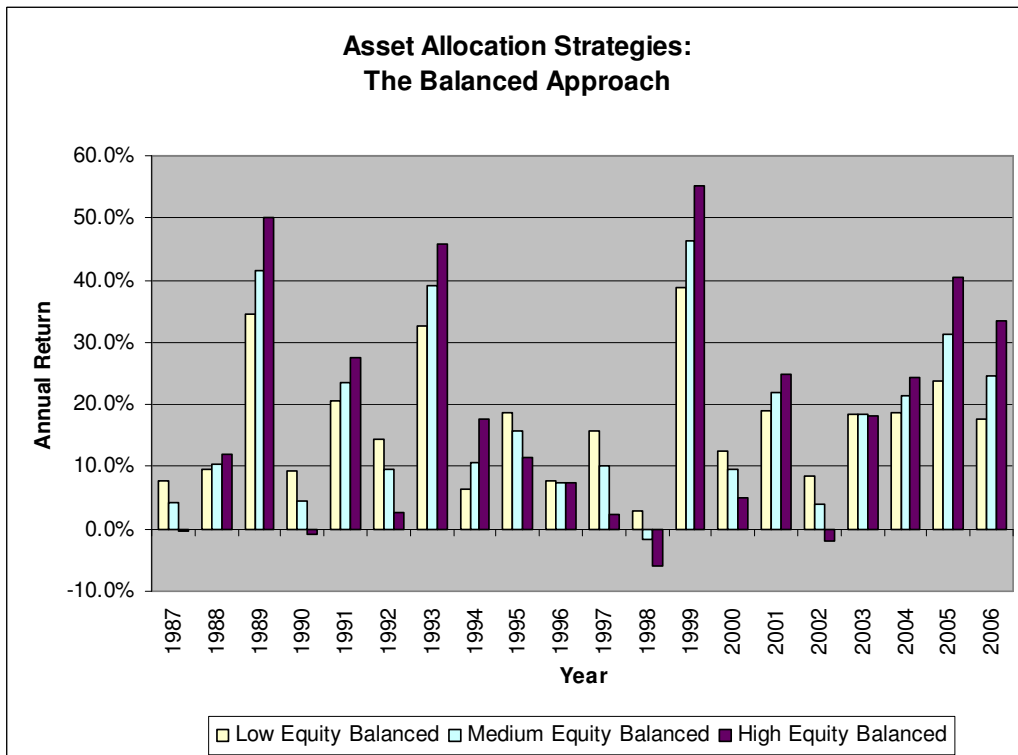


Chart 4: Annual returns of different asset allocation strategies

All three strategies yielded a satisfactory real return of about 7-8% per annum, but with considerable differences in volatility. In fact, the “low equity” and “medium equity” strategies comfortably outperformed the “high equity” strategy on a risk-adjusted basis.

However, one must be careful to conclude that “high equity” strategies are not worthwhile to pursue. The better-than-expected returns from the other two strategies were mainly achieved through the spectacular real returns from bond and cash investments, which in all likelihood will not be repeated, given the current structurally low interest rate environment.

5. Alternative Investment Strategies

Besides the diversification approach discussed above, I investigated two alternative strategies, namely to predict the best performing asset class each year (market timing) and to invest in either the previous year's best performing or worst performing asset class (following the principles of behavioural finance).

5.1 Market Timing

Alternatively, an investor can predict which asset class will perform best each year and allocate capital to such asset classes. This process implies market timing, which in practice is very difficult to master and most often will have disappointing results for investors.

The range of returns that investors could have realised with this strategy over the past 20 years is shown in tables 6 and 7. When an investor could have predicted with 100% certainty each year which asset class was due to be the best performer, a maximum compounded return of about 31% per annum was possible. On the other side of the spectrum, an investor that each year invested in the worst performing asset class realised a meagre return of only 1.7% per annum.

While it would be very unlikely for any investor to have shared in any of these extreme ranges of possible returns, the wide range of the potential return spectrum implies that the margin of error in predicting asset class allocation is huge and therefore not likely to be recommended as a prudent investment strategy.

Table 6: The best possible market timing portfolio

Year	Best Performing Asset Class	Annual Return
1987	BONDS	14.8%
1988	EQUITY	14.8%
1989	EQUITY	55.5%
1990	CASH	20.9%
1991	EQUITY	31.0%
1992	BONDS	27.8%
1993	EQUITY	54.8%
1994	EQUITY	22.7%
1995	BONDS	30.2%
1996	CASH	16.5%
1997	BONDS	29.2%
1998	CASH	18.5%
1999	EQUITY	61.5%
2000	PUTS	25.1%
2001	EQUITY	29.1%
2002	PUTS	20.4%
2003	PUTS	38.9%
2004	PUTS	39.5%
2005	EQUITY	46.8%
2006	EQUITY	41.2%
Annualised Return		30.9%
Volatility		14.0%

Assumption:

A switching fee of 0.5% of the asset value is applied annually, except where no switching occurred or investments were made into cash holdings.

Table 7: The worst possible market timing portfolio

Year	Worst Performing Asset Class	Annual Return
1987	EQUITY	-4.8%
1988	PUTS	-7.0%
1989	CASH	19.1%
1990	EQUITY	-5.1%
1991	BONDS	14.4%
1992	EQUITY	-2.0%
1993	PUTS	10.0%
1994	BONDS	-9.1%
1995	EQUITY	8.8%
1996	PUTS	-9.3%
1997	EQUITY	-4.5%
1998	EQUITY	-10.1%
1999	CASH	15.5%
2000	EQUITY	-0.1%
2001	PUTS	7.7%
2002	EQUITY	-8.4%
2003	CASH	12.6%
2004	CASH	8.2%
2005	CASH	7.5%
2006	BONDS	5.5%
Annualised Return		1.7%
Volatility		9.6%

Assumption:

A switching fee of 0.5% of the asset value is applied annually, except where no switching occurred or investments were made into cash holdings.

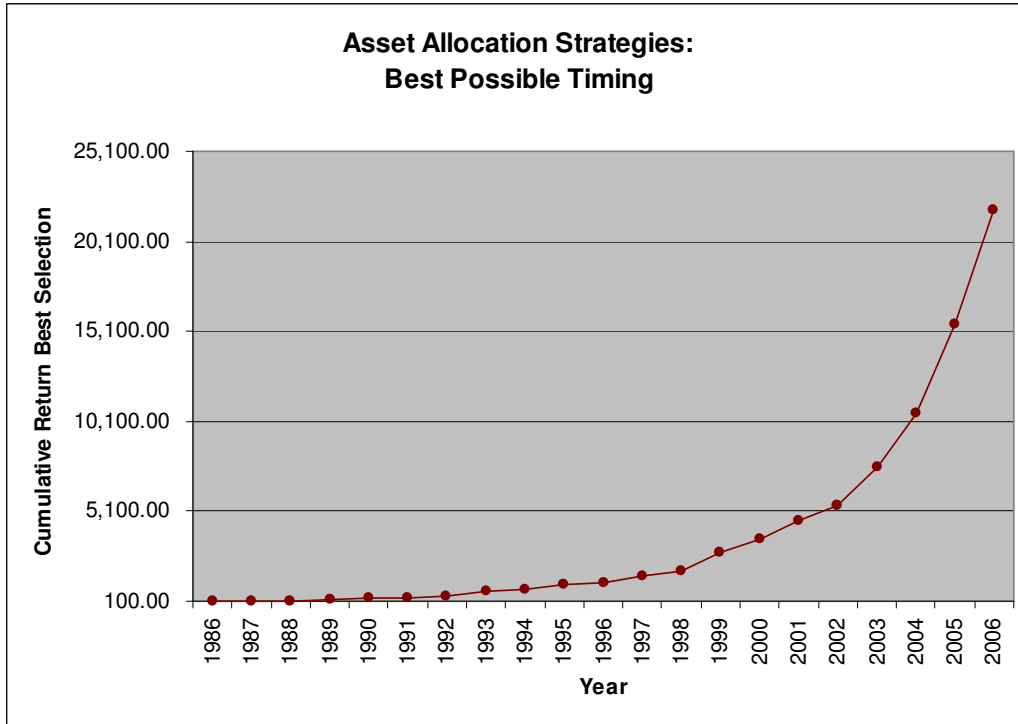


Chart 5: The cumulative return of a portfolio with the best possible market timing

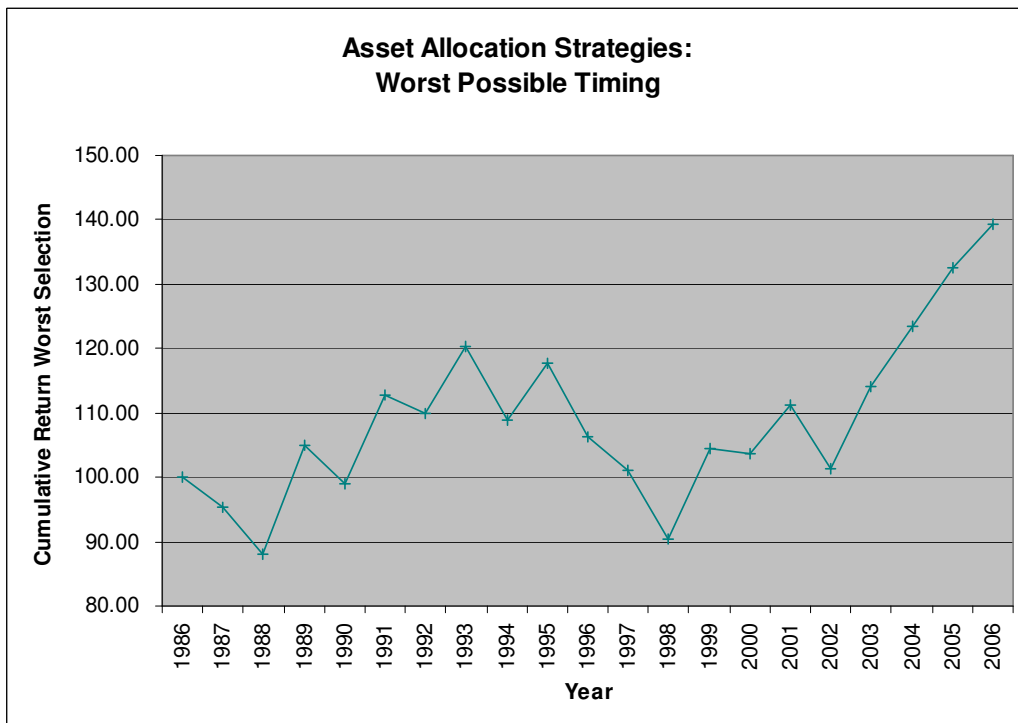


Chart 6: The cumulative return of a portfolio with the worst possible market timing

5.2 Behavioural Finance Applications

Behavioural finance strategies rest upon the notion that the majority of investors typically invest in past “winners”, while the contrarian investor seeks out those investments that are currently disregarded by the market. Basically, contrarian investors believe that markets exhibit mean-reverting tendencies and design their investment strategies to exploit such phenomena.

In this example two such strategies were compared, namely where investments were made each year in the previous year’s best performing asset class (“winner” strategy) *versus* a strategy of allocating investments each year into the previous year’s worst performing asset class (“loser” strategy).

Switching fees, charged at 0.50% of the asset value were taken into account, except where no asset class changes occurred from one year to the next or where investments were switched into cash holdings.

The results of these strategies are shown in tables 8 and 9 and depicted in charts 7 and 8. The asset class selected for each year, based on which asset class was the best or worst performer the previous year, together with the actual performance for each year, is shown.

From these results it follows that the “loser” strategy significantly outperformed the “winner” strategy by a massive annualised margin of five percentage points (20.2% versus 15.1%). When compounded over twenty years, this margin represents a cumulative difference of more than 20 times the original capital invested!

Interestingly, this outperformance margin was achieved despite the “loser” strategy significantly underperforming the “winner” strategy over the past four years (2003 – 2006).

Table 8: Invest in best performing asset class of the previous year

Year	Invest into	Annual Return
1987	EQUITY	-4.8%
1988	BONDS	7.7%
1989	EQUITY	54.7%
1990	EQUITY	-5.1%
1991	CASH	18.9%
1992	EQUITY	-2.5%
1993	BONDS	31.4%
1994	EQUITY	22.1%
1995	EQUITY	8.8%
1996	BONDS	6.0%
1997	CASH	17.4%
1998	BONDS	4.5%
1999	CASH	15.5%
2000	EQUITY	-0.6%
2001	PUTS	7.2%
2002	EQUITY	-8.9%
2003	PUTS	38.2%
2004	PUTS	39.5%
2005	PUTS	38.9%
2006	EQUITY	40.5%
Annualised Return		15.1%
Volatility		18.5%

Assumption:

A switching fee of 0.5% of the asset value is applied annually, except where no switching occurred or investments were made into cash holdings.

Table 9: Invest in worst performing asset class of the previous year

Year	Invest into	Annual Return
1987	PUTS	12.9%
1988	EQUITY	14.2%
1989	PUTS	52.9%
1990	CASH	20.9%
1991	EQUITY	30.4%
1992	BONDS	27.1%
1993	EQUITY	54.0%
1994	PUTS	9.2%
1995	BONDS	29.5%
1996	EQUITY	8.8%
1997	PUTS	19.4%
1998	EQUITY	-10.5%
1999	EQUITY	60.6%
2000	CASH	10.9%
2001	EQUITY	28.4%
2002	PUTS	19.8%
2003	EQUITY	15.2%
2004	CASH	8.2%
2005	CASH	7.5%
2006	CASH	7.9%
Annualised Return		20.2%
Volatility		17.7%

Assumption:

A switching fee of 0.5% of the asset value is applied annually, except where no switching occurred or investments were made into cash holdings.

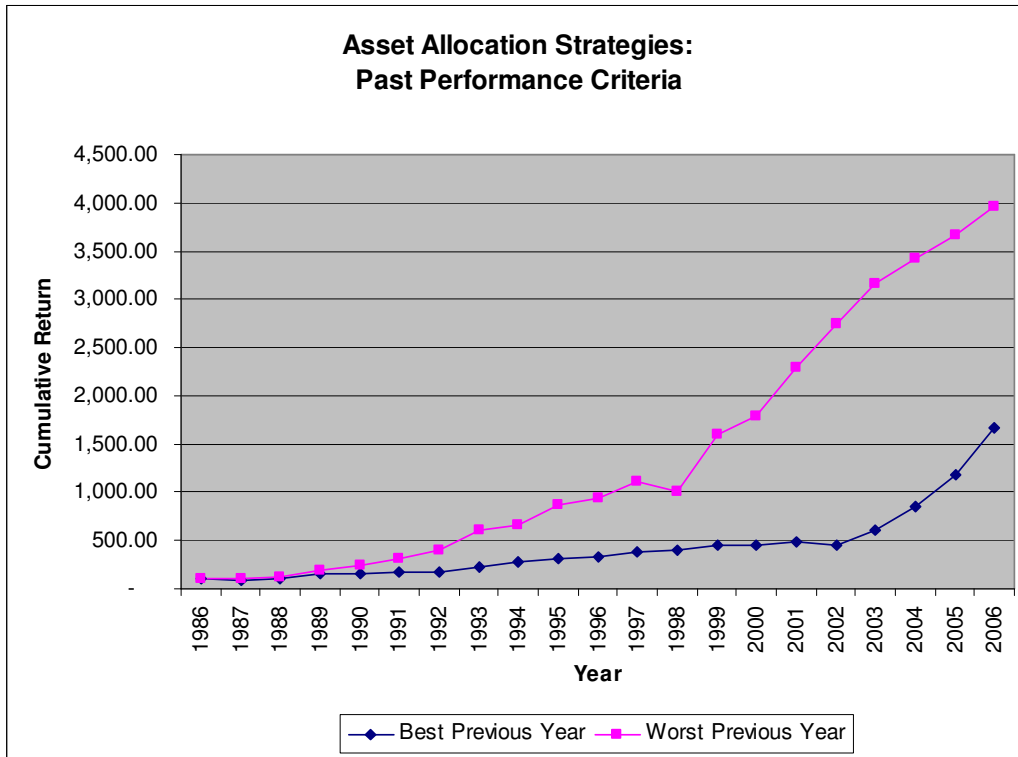


Chart 7: Cumulative return of strategies based on past performances

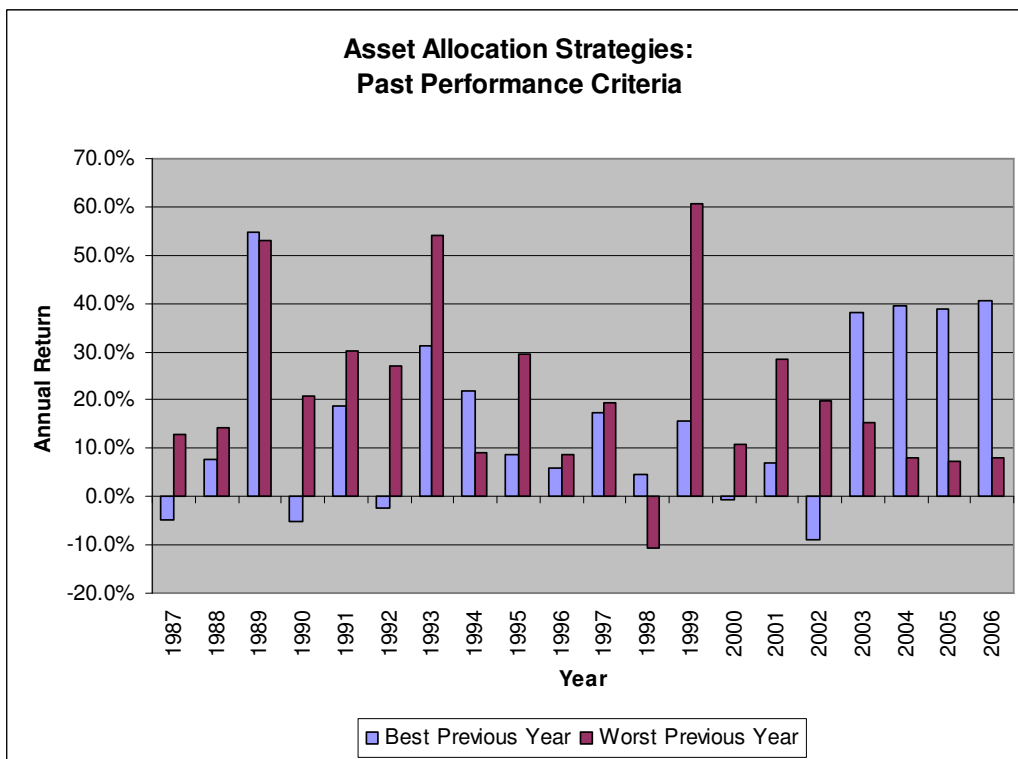


Chart 8: Annualised return of strategies based on past performances

However, two potential problems arise for investors who may want to implement this strategy. First, it may be impossible to control or predict the expected volatility in portfolio returns since no formal asset allocation model would be in place to manage volatility. Second, it may well be that the “loser” portfolio significantly underperforms the conventional portfolio approach for a prolonged period – exactly what would have happened over the past four years.

Despite its superior performance record, a “loser” investment strategy is unlikely to be implemented in practice. Nonetheless, this approach proved that mean-reverting tendencies in asset class performances could be an important contributor to portfolio returns.

Thus, by incorporating at least partially this mean-reverting trend in asset class performance within a conventional multi-asset class portfolio, the potential portfolio returns should be enhanced. This process is known as rebalancing and will be investigated in the next section.

6. Enhancing Portfolio Returns

If one has a set asset allocation weight structure (asset allocation benchmarks) one would expect that over time the actual asset class weights will move away from their original benchmark weights since asset classes yield different return levels over time. For example, if equity investments in one year yielded a strong positive return and the other asset classes yielded no return, the weight of equities will increase relative to the other asset classes in a portfolio.

The above phenomenon does not pose a problem if a particular asset class consistently outperforms the other asset classes, but market reality indicates otherwise where asset class performances are inconsistent and seldom maintain their relative performance position measured against other asset classes. This implies that if an investment portfolio is not periodically re-weighted (rebalanced) to its original asset allocation benchmarks, the returns of an “unchanged” portfolio will lag the “rebalanced” portfolio over time.

However, one caveat is lurking. The cost implications of rebalancing may negate the potential rebalancing benefits, i.e. it may cost more to constantly re-weight a portfolio back to its benchmark weights than the potential return benefits following from such a strategy.

I subsequently evaluated whether *rebalancing* done on an annual and bi-annual basis held any return benefits after cost over a passive strategy where no changes were made to the asset class weights.

A fixed rebalancing fee of 0.50% was charged on the asset values to be redistributed to other asset classes, except for allocations to cash investments. For example, the equity weight benchmark for a portfolio is set at 50% and for bonds 30%. At the end of a given year the equity holding was 60% and bonds 20% of the total asset value. It meant that 10% of the equity

holdings had to be redistributed to bonds. A fee of 0.50% would then be levied on the amount redistributed and represents the rebalancing cost.

The results of the “passive” (unchanged) portfolios, compared with those of the portfolios that were annually and bi-annually rebalanced are shown in table 10. Charts 9-11 illustrate the annual returns of the different asset allocation portfolios compared with their rebalanced counterparts.

The “rebalanced” portfolios outperformed the “passive” portfolios by between 0.3% and 0.5% per annum, when measured on an after-cost basis. While the difference may seem negligible, the compounded effect over a period of twenty years is significant. For example, this outperformance margin represents a nominal difference in value after twenty years of more or less equal the original investment amount!

The significance of this outperformance is further highlighted when considering that the rebalancing benefits only would have dissipated if the rebalancing cost was set at 5%, instead of 0.50%, of the asset values being rebalanced.

Table 10: The effect of rebalancing on portfolio returns

Strategy	Results	<i>Low Equity</i>	<i>Medium Equity</i>	<i>High Equity</i>
No Rebalancing	Annualised Return	16.1%	16.5%	16.8%
	Volatility	9.1%	12.8%	18.3%
Annually Rebalanced	Annualised Return	16.5%	17.0%	17.1%
	Volatility	9.7%	13.5%	18.7%
Bi-annually Rebalanced	Annualised Return	16.4%	16.8%	17.0%
	Volatility	9.5%	13.3%	18.5%

Assumption:

The rebalancing cost is equal to 0.50% of the asset value to be re-allocated to meet asset allocation targets, except for allocations to cash which are free of any charges.

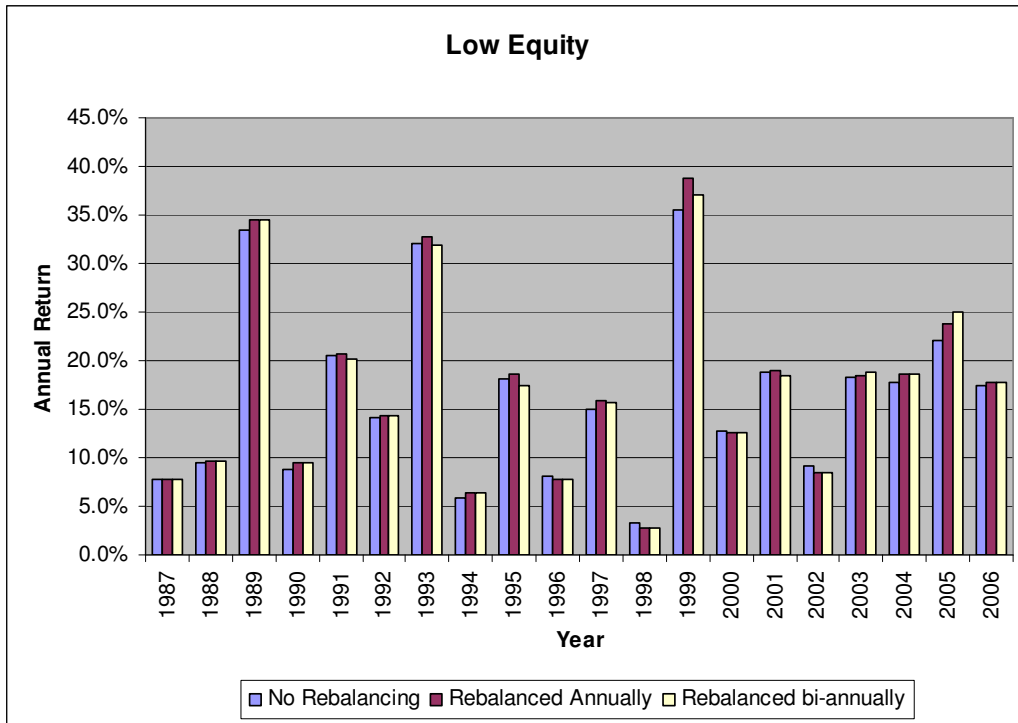


Chart 9: Annual returns of low-equity portfolios using different rebalancing time-frames

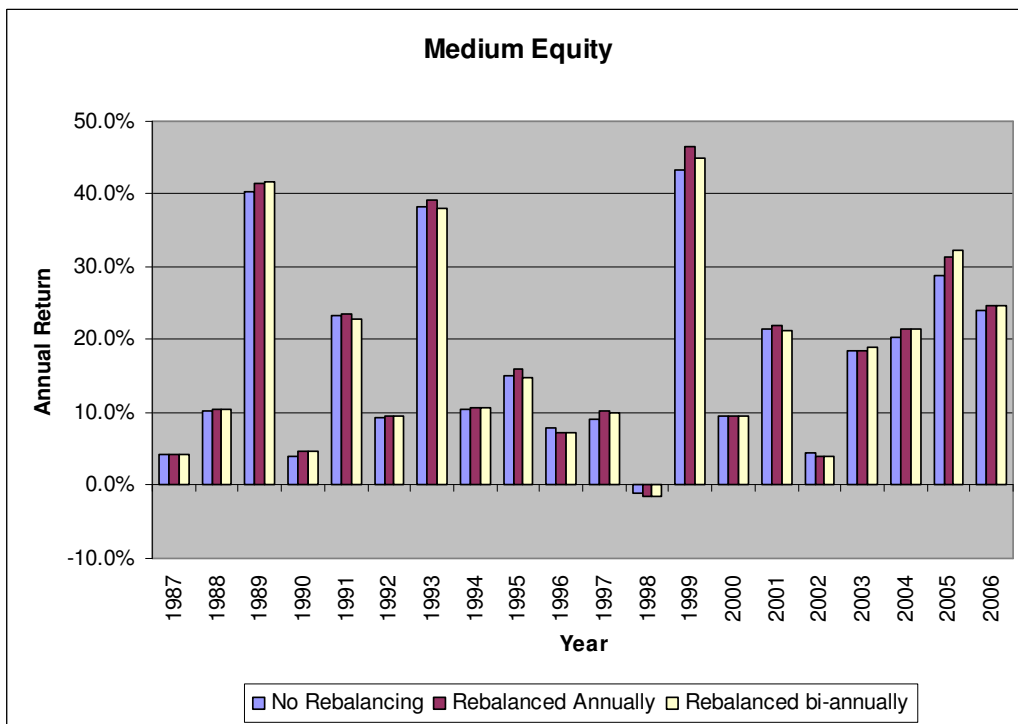


Chart 10: Annual returns of medium-equity portfolios using different rebalancing time-frames

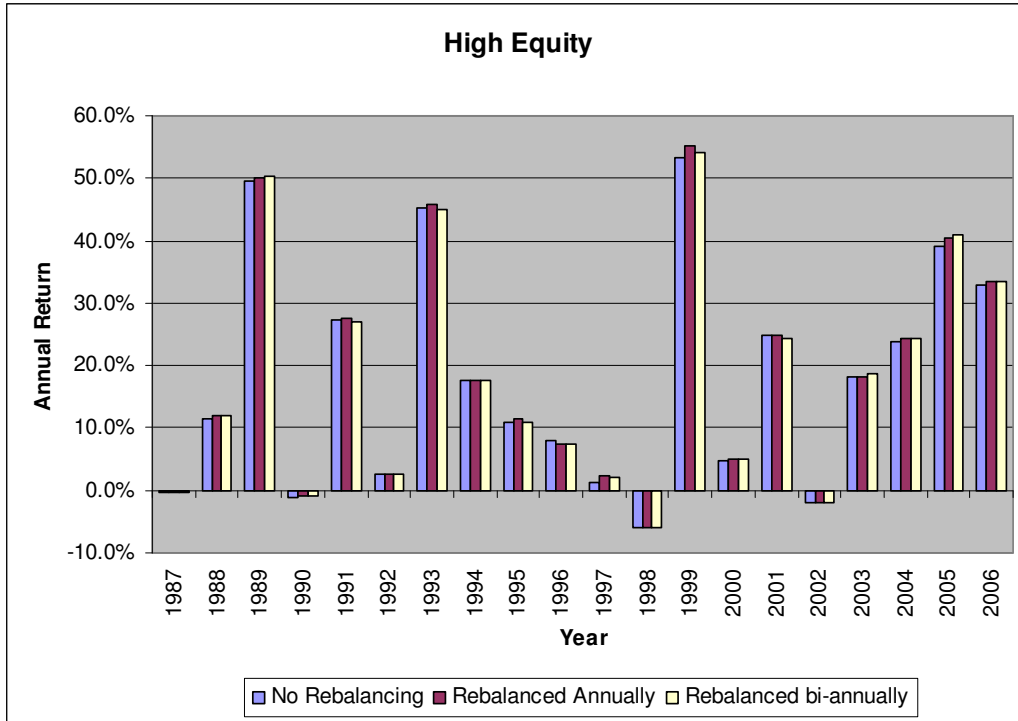


Chart 11: Annual returns of high-equity portfolios using different rebalancing time-frames

Asset Allocation Strategy (1987-2006)	Annualised Return	Volatility
Market Timing: Perfect Best Selection	30.9%	14.0%
Market Timing: Perfect Worst Selection	1.7%	9.6%
Past Performance: Invest only in best performing asset class previous year	15.1%	18.5%
Past Performance: Invest only in worst performing asset class previous year	20.2%	17.7%
The Balanced Approach: Low equity exposure (30%)	16.1%	9.1%
The Balanced Approach: Medium equity exposure (50%)	16.5%	12.8%
The Balanced Approach: High equity exposure (75%)	16.8%	18.3%

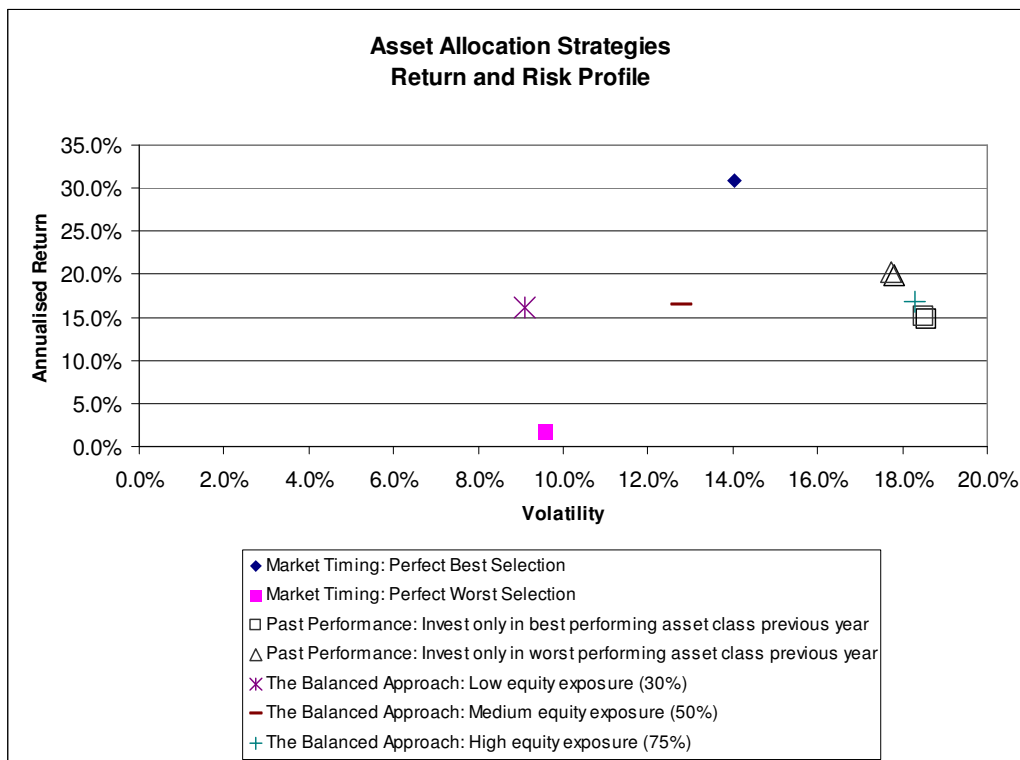


Chart 12: Asset allocation strategies

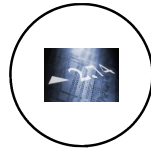
7. Synopsis

The primary objective of any investment plan should be to realise real returns with the minimum probability of losing money over any period. The multi-asset class approach to investing is the most appealing since asset class performances are unstable in both absolute and relative terms. Furthermore, equity returns are usually uncorrelated with fixed interest investments; thus significant diversification benefits are possible over time.

Superior returns are possible through market timing strategies, but it seems a risky proposition with a wide return dispersion between the best and the worst possible market timing strategies. While quantitative forecasting models might arguably add some value to predict asset class returns, it is nonetheless unlikely to be the major source of portfolio returns over time. The latter would rather be attributed to the benefits of asset class diversification.

Merit exists however, in exploiting mean-reverting tendencies in asset class performances. While a strategy of constantly investing in the previous year's worst asset class performer proved to yield surprisingly good results over the review period, it is unlikely to be the most preferred investment strategy. The control of portfolio risk would be problematic since no asset class weight benchmarking will apply to manage the volatility of returns over time.

However, the mean-reverting tendency of asset class returns can be captured by rebalancing asset class weights regularly to their benchmark weights. Such a strategy yielded an improved portfolio performance compared with an unchanged multi-asset class portfolio over time and is therefore recommended.



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