Asset Allocation in a Zero Interest Rate World

Inflation scenarios and the impact on traditional Australian Balanced Portfolios

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Summary

Investors have been well served by the tradition 60:40 growth/defensive Balanced portfolio. Over the past three decades this strategy has delivered solid investment returns above inflation (circa CPI plus 3.5%). Overall investment returns have been supported by falling inflation, interest rates and overall positive economic growth. This paper considers the role for alternative asset allocations in a 60/40 balanced portfolio in different economic scenarios over the medium term.

The current low level of interest rates provides investors with a very low starting point for forecasting future market returns. A key paper from JP Morgan "*The Long Term Strategist: 60:40 in a near zero world*" by Jan Loeys and Shiny Kundu (30th June 2020) showed that "the traditional 60:40 US equity bond/split earned 10% pa over the past 40-50 years, but is more likely to earn ~3.5% over the coming decade." (3.5% less inflation not above it).

Structural changes to government fiscal spending and monetary conditions resulting from an unprecedented government response to Covid-19 gives rise to a wider possible range of inflation and economic outcomes;

- lower for longer where there is a continuation of slow trend growth and persistent sub-par inflation,
- unexpected increase in inflation given the high level of debt monetisation, or
- the possibility (albeit low) of a deflationary economic environment or depression.

The key challenge for investors in generating returns above inflation is very low cash and government bond yields. Constructing a portfolio to achieve investment objectives in different future inflation outcomes will likely require an evolution from the traditional 60/40 portfolio. Defensive portfolios that have traditionally relied on government bonds may need to diversify into different asset classes to try and achieve positive real returns.

Balanced portfolios with significant equity exposure cannot further rely on government bonds to provide meaningful portfolio insurance in negative market environments. We expect alternative assets and credit markets with positive real risk premiums and less exposure to inflation, such as floating rate credit, to become more prominent in asset allocation.

Strategic Asset Allocation accounts for roughly 90% of the variability of a typical Fund's overall returns (according to Ibbotson and Kaplan) – so it is important for investors to start with the right mix of assets that will generate real returns for the next decade. This paper examines the role that credit might play for portfolios going forward.

Key Take-Outs

- i. Future investment returns will be lower
- ii. A different asset allocation is required
- iii. Credit spreads are a larger component of fixed income yield
- iv. The dual challenge of achieving both real income and capital protection
- v. Asset class correlations are likely to be less reliable in the future
- vi. Yields provide a good starting point for estimating future returns
- vii. Traditional asset allocations are likely to begin giving less reliable returns





Chart 1: Historical Returns & Volatility compared with Prospective Yields

Sources, barcley's capital, bentiani, box mem cynch, biotinieg, creat safse, 5r Morgan, Morgan stanley & 053 Past performance is not a reliable indicator of future performance. For equities forward yield, Bentham inverted the forward PE and added 2.5% growth.

of years: 28.6 to 31-1-2021

Economic and inflation scenarios for the 2020s

Investment markets have overall had favourable conditions over the past thirty years supported by economic growth, productivity growth and a gradual fall in inflation. The fall in inflation has consequently resulted in falls in interest rate risk premiums and supported valuations for equity markets.

Going forward the continuity of favourable returns relies on inflation remaining constrained as well as positive economic and corporate earnings growth. The rare event of a global pandemic in 2020 has been a pivotal as an unprecedented level of government intervention to the economy and capital markets. These artificial distortions present a challenge for economic forecasters.

Currently, market consensus is that the recent trend of low inflation is likely to continue over the next few years. But the major risk to investment returns is a reversion to the more inflationary periods. In terms of the outlook for 2020-2030, we can characterise three global inflation scenarios for developed countries:

<u>Scenario 1: "Japanization" – low inflation and</u> <u>slowing economic growth.</u>

Bond market pricing for inflation expectations suggests that there is no foreseeable inflation risk. This view is consistent with general developed market central bank forecasts. For example, the RBA forecast in its August 2020 Statement on Monetary Policy for the underlying inflation rate to stay under 2% in the medium term (2020-22).

The common expectation is that bond yields will also stay near zero for years, reflecting the view that 'economic agents – people, companies and governments' will save more' to de-lever, prepare for old age. Productivity growth can be expected to remain low due in part to the persistence of **'zombie companies'** which have been supported by easy fiscal and monetary policies. Significant ongoing technological change is also likely to add to excess capacity.





Source: Bloomberg

Support for this scenario is reinforced by the considerable excess capacity in goods and labour markets (high unemployment and underemployment) caused by the COVID-19 pandemic. Recent IMF forecasts show significant excess capacity (as measured by the output gap which is the difference between actual and potential GDP) is likely to remain over 2020-21 for the major economies and then persist to some degree in 2022-23.

Chart 3: IMF - Economies are expected to operate well below capacity into 2022. (GDP losses relative to Pre-Covid (Jan 2020) by region.)



Source: IMF staff calculations.

Note: AE = advanced economies; Em. Asia ex. CHN = emerging and developing Asia excluding China; Em. Eur. = emerging and developing Europe; EMDE = emerging market and developing economies; LAC = Latin America and the Caribbean; MECA = Middle East and Central Asia; SSA = sub-Saharan Africa.

Source: IMF WEO January 2021

¹ Gross debt refers to the nonfinancial public sector and includes sovereign debt held by the central.

As stated in the IMF's October 2020 World Economic Outlook "After the rebound in 2021, global growth is expected to gradually slow to about 3.5% into the medium term. This implies only limited progress toward catching up to the path of economic activity for 2020–25 projected before the pandemic for both advanced and emerging market and developing economies".

Future economic growth may be constrained by the significant increase in government debt. Economists had already been revising down their expectations for long-term growth, even before the COVID-19 pandemic shock.

In its June 2020 World Economic Outlook, the IMF forecast that the gross debt* of the World to rise from 82.8% in 2019 to 103.2% by 2021. For advanced economies, the IMF forecast an increase in gross debt¹ from 105.2% in 2019 to 132.2% in 2021. One consequence of public debt levels over 90% is that it may lead to lower future GDP growth rates².

Chart 4: Long-term global growth forecasts have fallen steadily since 2010



Source: IMF "The Growth Forecast Puzzle" M. Ayhan Kose, Franziska Ohnsorge, and Naotaka Sugawara, Finance and Development, March 2019, page 53

² According to research by Carmen M. Reinhart and Kenneth S. Rogoff, NBER Working Paper No. 15639, January 2010,



Scenario 2: Higher inflation (3% to 5%+) or debt monetization

Over the past decade, investment markets have accepted the practice of central banks purchasing the bonds of their respective governments' (quantitative easing). Some forecasters are warning that QE may eventually ³promote a higher inflation environment.





Source: Bloomberg

QE effectively allows governments to finance their fiscal deficit spending by simply "printing money" but risks increasing inflation expectations. Keeping inflation expectations low is in itself a factor in avoiding higher inflation.

The concern over higher inflation stems from the famous US monetarist economist Milton Friedman's conclusion that "inflation is always and everywhere a monetary phenomenon⁴", which is derived from the Fisher's quantity theory of money (MV=PT)⁵. The theory has been undermined by globalization and the structural fall in the velocity of money for the past three decades. Inflation concerns from the increase in money supply since Covid-19 in March 2020 have mitigated somewhat as the rate of household and business savings have accelerated.



However, monetization could quickly occur if the commercial bank's money multiplier (credit creation) rises sharply, increasing the velocity of money. The consequence of this scenario occurring is exaggerated by the significant expansion in central bank base money and balance sheets.

Chart 7: Annual Money Supply (M2) Growth in Major Advanced Economies (& Australia M1)



Source; Bloomberg

Further, the likely rebound in activity following the possibility of a COVID-19 vaccine or treatment that can effectively be implemented globally in the short-term creates the risk that excess demand

⁴⁴ Milton Friedman "The Quantity Theory of Money – A Restatement" (1956)

 $^{^{5}}$ Money supply (M) multiplied by the velocity of money that is the rate at which each unit of currency is used to purchase goods (V) = the number of transactions involving money payments (T) times the average price of each transaction,



along with easy monetary conditions could generate higher inflation in the short-term. An additional short-term inflationary factor is that global supply chains are being dislocated by a partial reversal of globalization, reflecting factors such as geopolitical tension between the US and China. The COVID-19 pandemic has accelerated this trend.

In the long run, the US Federal Reserve (the Fed) expects inflation to reach its 2% target. The Fed recently announced that it will now use average inflation targeting (AIT) in setting policy interest rates, allowing for temporary overshoots in inflation. The new policy means the Fed is willing to wait until inflation has gone above 2% until it tries to control inflation to ensure other objectives are first met, such as full employment. This new policy increases the risk of higher inflation.



What about asset price inflation?

Already, zero interest rates and quantitative easing have led to asset price inflation (notably in equities most recently despite the global pandemic shock in the first half of 2020) so the question is whether this will flow over into higher consumer prices.

Furthermore, there are a range of structural forces that could lead to a significant acceleration in inflation in the longer term. These are set out in a recently released controversial book by Charles Goodhart (former member of the Bank of England policy committee) and Manoj Pradhan⁶.

The unique current circumstances may possibly see a reversal of the major great structural deflationary trends over the past three decades (over and above the microchip revolution). These four deflationary trends include;

- i. The fall of the Berlin Wall in 1989 and ending of the Cold War soon after;
- ii. Rise of emerging markets, particularly China;
- Peaking of baby boomer participation in developed country labour markets; and
- iv. Secular increase in female workforce participation.

Could inequality be the trigger?

Increasing inequality in the West (reflecting in part income redistribution to the East) is seen by Goodhart and Pradhan as triggering a reversal of disinflation along with deglobalization and the rise of left/right populism in the developed world.

Although there are a number of factors that may revive inflation in the long term, intuitively it is difficult to forecast the driver of rising prices given the current extent of excess capacity and technological change displacing labour.

⁶ "The Great Demographic Reversal: Ageing Societies, Waning Inequality, and an Inflation Revival". (Palgrave Macmillan, August 2020)



Inflation pulled then pushed up!

Practically, economists point to inflation arising from either 'demand pull' or 'cost push' sources. On the 'demand side', as in the 1920s (a period of weak global power leadership and high debt), pent-up demand post Covid-19 could see reduced savings and increased spending in areas such as travel.

On the 'supply side', traditional 'cost push' influences are summarized, in Australia's case, in the core equations for the 'mark-up' model of underlying inflation as described in a recent RBA research paper RDP 2019-07: "MARTIN Has Its Place: A Macroeconometric Model of the Australian Economy"

- In the long run, firms are assumed to set their prices as a fixed mark-up over their input costs. As such, there is a long-run relationship between the price level, nominal unit labour costs and the price of imported consumption goods.
- Less spare capacity in the labour market, as measured by a decreasing unemployment rate, will lead to faster wages growth. Higher inflation expectations and faster growth in the GDP deflator also raise wages growth, as nominal wages will need to increase more quickly to maintain a given real wage. An increase in productivity growth also leads to faster wage growth, because it raises the marginal product of labour.

Headline consumer price inflation is heavily influenced by globally traded USD oil prices flowing into local petrol prices (AUD).

Globally, manufacturing prices have been set by the lowest cost producers (particularly China) while services prices have also been subject to global competition even in professional services. So, this is why demographic forces would be important in facilitating a sustained increase in labour costs.

New major trends underway

- the transition of energy sources from fossil fuels to sustainable sources may increase prices from time to time (especially within global supply chains as electricity markets re-price for example), and
- China developing its own capital markets and aiming to displace the US Dollar as a reserve currency, at least in Asia.
- Unexpected impact to the global financial system with the development of digital currencies by central banks (following on from Bitcoin and other private currencies).



Scenario 3: Deflation- replay of the 1930s Great Depression.

A deflationary scenario seems very unlikely but based on the premise that a high level of excess capacity in the global economy (exacerbated by labour saving technological change) combined with decreasing aggregate demand (described in Scenario 1) reduces prices on a sustained basis.

In this scenario, monetary policy would be ineffective in lifting the economy out of the 'liquidity trap'. However as in the 1930s period, a massive fiscal stimulus would be required to stimulate growth but could take years to have an impact on the level of prices.

Chart 9: US Inflation Annual 1914 to 1920



Deflation is not often seen in modern economies with their high services component and 'paper' currencies. However, it has been observed in certain areas such as electronic goods.

Inflation Indicators of Regime Change

With markets alert to the risk of higher inflation in the medium-term, bond market vigilantes will likely be back in vogue. Although there have been plenty of false warnings in the last decade.

Indicators to watch include;

- Breakeven bond spreads (from TIPs),
- Commodity prices and shares,
- Direct real estate prices,
- 'Big data' on consumer price items on retail platforms,
- Broker company analysis of trends in corporate margins and industry transformations, and
- Business surveys (to better understand input and output price relationships).

Conclusion: don't be surprised by a transition

We believe that the consensus base case for constrained inflation and extended easy monetary policy is already firmly priced into forward markets. However, different inflation scenarios are possible and investors should be prepared for nonconsensus outcomes. These different scenarios could have significant risks for traditionally constructed portfolios.



Inflation and the 60/40 portfolio

Investors have achieved favourable average returns over the past three decades in different inflation environments. However, falling bond yields are unlikely to be a driver of returns going forward.

Equities and credit have generated positive real returns during periods of stable as well as rising inflation. However, the bulk of the returns generated from government bonds have been derived from income (coupon payments), and only generate capital growth during periods in which inflation is falling.

Table 1 outlines the returns of equity, bond and credit markets when starting from a low inflation environment (similar to one we are in now) and then either a falling, stable or rising rate environment over the following 12 months.

We then look at how changes in inflation may impact the correlation between equities and bonds (in turn impact the traditional 60/40 portfolio). Over the past 20 years, (in what could be described as a pro-cyclical environment with low inflation) equities and bonds have been negatively correlated and have provided a good hedge for Balanced Funds in terms of providing downside protection.

Historically the correlation of equity and bond returns have changed over time and have been positive or negative for prolonged periods. In fact, during the 1970's and 1980's the correlation was positive. This was a period where we experienced sharp rises in energy and food prices (i.e. inflationary). The 1970's was also characterised by the abandonment of the gold window in the US (meaning foreign Governments could no longer exchange their dollars for Gold) and Keynesian economic policy.



Chart 11: Yields are much lower and interest rate risk is much higher for traditional benchmarks



Table 1: US asset class returns in different periods of inflation

| | Periods of Falling inflation | | | Periods of Stable inflation | | | Periods of Rising inflation | | | | |
|----------------|------------------------------|--------|--------|-----------------------------|-------|--------|-----------------------------|--|-------|--------|--------|
| | Total | Income | Growth | | Total | Income | Growth | | Total | Income | Growth |
| US Gov't Bonds | 7.1% | 2.3% | 4.8% | | 3.6% | 3.0% | 0.7% | | 3.3% | 3.0% | 0.4% |
| US Credit | 1.2% | 3.5% | -2.3% | | 2.6% | 3.4% | -0.7% | | 8.6% | 4.5% | 4.0% |
| US Equities | 11.2% | 2.3% | 8.9% | | 17.0% | 2.3% | 14.8% | | 13.9% | 2.3% | 11.6% |

Bonds proxy US 10yr government bonds, Credit proxy is equal weighted blend of to US Investment Grade Corporate Bonds (US IG), US Leveraged Loans (US LL), and US High Yield Bonds (US HY). Equity proxy S&P500

CPI Scenarios; Falling – 12 month periods where US CPI decreased by at least 25bps, Stable - 12 month periods where US CPI finished within 25bps of starting inflation, Rising – 12 month periods where US CPI increased by at least 0.25%.

Based on monthly inflation data since January 1995 source: Bloomberg.

Going forward, investors will need to consider whether this negative correlation will hold into the future and what impact (if any) will changes in inflation and monetary policy make.

Chart 10: Rolling 12 month correlation between US Equities and US Gov't Bonds



Source: Bloomberg Finance LP, Equities = S&P 500, US Gov't Bonds = US government bonds 10 year. Lastly, the interest rate risk of traditional fixed interest benchmarks has increased over time as borrowers have extended their debt maturities. Exchange traded funds that provide exposure to these indices will be more risky. The conundrum for 60:40 balanced portfolios is that the increased interest rate risk may mean that portfolios should not have as many government bonds. However, lower starting yields means that the insurance benefit of holding government bonds is theoretically much lower than historical data suggests.



Optimising a balanced portfolio for the next decade

Asset allocation process

The process of optimising the asset allocation for a balanced portfolio has the goal of achieving the highest expected return for a given level of risk. Key considerations for modelling include;

- choosing appropriate historical return data,
- including sector limits to counter model biases,
- incorporating forward looking capital market assumptions, and
- considering other portfolio constraints to achieve other risk objectives, including liquidiy.

In practice, the commonly used Strategic Asset Allocation for a 60/40 portfolio has comprised a broad range of asset classes including alternatives.

| Table 2: Typical allocation | n for a 60/40 | portfolio |
|-----------------------------|---------------|-----------|
|-----------------------------|---------------|-----------|

| Risk | Asset Class | Allocation |
|------|----------------------|------------|
| é | Cash | 5% |
| nsiv | Aust Bonds | 17% |
| efe | Global Govt Bonds | 7% |
| Ō | Global Credit IG | 6% |
| v | Global Credit Non-IG | 5% |
| 다 | Alternatives | 10% |
| NO | Aust. Equities | 20% |
| ច | Global Equities | 30% |
| | Grand Total | 100% |

*Source: Douglas Funds Consulting

The defensive allocation included cash, government bonds and high-grade credit bonds. The growth allocation included growth assets such as equities. In between these two main categories there are a range of specific sectors in global credit markets, property, commodities and other "alternatives".

Mid-risk assets have historically received less focus as asset allocators have concentrated their decision making on switching their allocations between defensive and growth.

⁷ We used monthly data from the last 10 years as it covers many surprise events, different scenarios and it is an environment where global QE is in use.

Many investors are still optimising for history

As a starting point for optimising asset allocation weights we used historical return data. Subject to a number of high-level constraints (see appendix), we conducted a portfolio optimization for different levels of risk tolerance using a Variance-Covariance Matrix, based on purely historical data⁷.

The returns were adjusted as returns over cash or the relevant duration matched benchmark, this way we are able to better separate different risk factors or return contributions (i.e. interest rate risk premium, credit risk premium & equity risk premium). For Australian equities we have included the benefit of franking credits which has added about 1.5% to returns over the past 15 years.

Naturally, the optimised portfolio had an increasing allocation to growth assets as the risk tolerance levels were increased. For the purposes of this paper, we have nominally defined a balanced portfolio having a 7.5% annualised volatility, which is an intermediate risk.

These quantitatively derived weights seem indicative of commonly published model portfolios, which suggests that the market is still modelling using a significant bias to historical return data. Historically, all asset classes have had positive real returns return outcomes. There has not been too much difference between balanced and aggressive investors. Conservative investors holding cash have also earned positive real returns.

Historical performance is not a reliable indicator of future performance. When the same historical weighted portfolio is applied to current valuations, the prospective efficient frontier implies lower forward returns, which is more detrimental for conservative portfolios.





Chart 12: Optimised allocations for historical returns and volatility

 2.0%
 2.6%
 3.2%
 3.8%
 4.4%
 5.0%
 5.6%
 6.2%
 6.8%
 7.4%
 8.0%
 8.6%
 9.2%
 9.8%
 10.4%
 11.0%
 11.6%

 Source: Bentham, 25 years of Historical Data
 Portfolio Ann. Volatility

Should be optimising using prospective returns

Current valuations imply different relative returns among asset classes. For example, US interest rates have been structurally falling for the past three decades, which has benefited US government bonds returns and other asset returns, which simply cannot be repeated in the same way.

Chart 13: Prospective returns is particularly lower for defensive portfolios than achieved historically



Even when excluding periods of higher inflation, relative to historical periods of low inflation, government bonds are the least likely to repeat historical returns with the US 10-year bond yield 1.87 standard deviations below historical average.

In the same low inflationary periods, US equities are now 2.8 standard deviations higher than average with a starting P/E of 25.6 (relative to history), while a US credit spread proxy of 4.11% is slightly below its average.

Table 3: Asset Class Valuation Benchmarks vs historic level in low inflation environments

| | Average Level | Current level | z-score |
|--------------------------|------------------|------------------|---------|
| Bond Starting Yield | 2.85% | 0.68% | -1.9 |
| Credit Starting Spread | 4.05% | 4.11% | 0.06 |
| Equity Starting PE ratio | 17.0x | 25.6x | +2.8 |
| C D 11 | | | |

Source: Bentham





Chart 14: Optimised allocation for prospective yield is different

 2.4%
 3.0%
 3.6%
 4.2%
 4.8%
 5.4%
 6.0%
 6.6%
 7.2%
 7.8%
 8.4%
 9.0%
 9.6%
 10.2%
 10.8%
 11.4%
 12.0%

 Source: Bentham, Adjusted 25 years of Historical Data & Forward Returns
 Forward Returns
 Portfolio Ann. Volatility

To optimize a portfolio's asset allocation that accounts for prospective returns rather than just historical data, we use assume a return for each individual asset class return, to generate a weighted average portfolio return and then multiply those portfolio weights to the historical returns to calculate an estimated volatility for the portfolio. As a base case optimisation scenario, we have used an average of prospective yields for each asset and median capital market return forecast from independent sources.

Yield provides an assumption for future returns, which is very simplistic but provides an objective measure. Independent capital market forecasts take into account subjective forecasts of other factors that influence prospective returns.

Optimised results are highly sensitive to these assumptions, which is a limitation to purely relying on quantitative models, and as such we have used some asset class limits that compensate for these biases and other portfolio constraints to achieve other risk objectives (see appendix).

Changes in correlation expectations also have a material impact on the optimisation process, particularly the correlation between equities and bonds.

The optimisation for a balanced portfolio using forward looking returns suggests some changes:

- Government bonds should have a lower weight, also with a tilt towards global rather than Australian bonds for defensive portfolios.
- EMD should see a higher allocation for defensive and balanced portfolios.
- Global credit to have a higher weight in defensive and balanced portfolio allocations.
- Alternatives should have a higher weight with some inclusion of Gold.
- Australian Equities play a relatively more important role in equity allocations.



| | Historical | Allocation for | Change in | Sector Limit | | |
|------------------------------|------------|-----------------------|------------|--------------|-------|--|
| | Allocation | Forward Valuations | Allocation | Min | Max | |
| Cash | 5.0% | 5.0% | - | 5.0% | 15.0% | |
| Australian Comp Bonds | - | 5.0% | +5.0% | 5.0% | 90.0% | |
| Global Gov't Bonds | 28.7% | 10.9% | -17.7% | 5.0% | | |
| Global Credit Inv Grade | - | - | - | 5.0% | 60.0% | |
| Global Credit Non-IG | 5.0% | 20.0% | +15.0% | 5.0% | 20.0% | |
| Emerging Market Debt | 2.6% | 5.0% | +2.4% | - | 10.0% | |
| Global REIT & Infrastructure | - | - | - | - | 35.0% | |
| Global Equities | 23.7% | 16.7% | -7.0% | 15.00/ | 60.0% | |
| Australian Equities | 30.0% | 28.5% | -1.5% | 15.0% | 30.0% | |
| Alternatives | 5.0% | 8.8% | +3.8% | - | 30.0% | |

Table 4: Summary of allocation changes for a balanced portfolio

Overall lower yield curves and return expectations means conservative and defensive portfolios need additional risk in order to generate a prospective return above inflation.

Global credit is expected to play a more significant role in supporting portfolio construction, benefiting from both yield and less correlated return. Within a credit exposure, non-investment grade (NIG) credit it's expected to contribute a higher proportion of a balanced portfolio's total return.

Chart 15: The efficient frontier can be improved by changing weights



Portfolio Annualised Volatility Benthan Assumes Return Period of 25 years of monthly data to 31-Aug-2020, Forward yield for equities is assumed as earnings yield plus 2.5%



Key Take-Outs

i. Future investment returns will be lower

The key take-away for investors is that expected returns going forward will be lower given the lower starting point for bond yields. The very high historical allocation to global rates and global equities and narrow sleeve of everything else shows that the traditional barbell strategy has worked very well given the double bull run for both government bonds and equities.

ii. A different asset allocation is required

Investors will need to take on more risk and diversify (by targeting higher volatility portfolios) to generate the required returns above inflation. Reflecting the changing market environment, we have already seen a number of the major super funds in Australia reducing their target returns for Balanced Funds to around CPI + 3.0% from around CPI + 4.0%-4.5%.

iii. Credit spreads are a larger component of fixed income yield

The traditional 60/40 accumulation portfolio may need to include a higher allocation to credit given the low yield environment and the longer term forecasted returns and volatility from other asset classes. In particular, floating rate credit may have a bigger role to play given the lower sensitivity to interest rates.

iv. The dual challenge of achieving both real income and capital protection

For pre-retirement and retirement portfolios there are challenges to maintain income and preserve capital which will require a re-invention of asset allocation and product design given the range of possible inflation scenarios.

v. Asset class correlations are likely to be less reliable in the future

Changes in correlation may impact the composition of portfolios, particularly if we see a spike in inflation and the negative correlation between equity and bonds diminish (in this instance the traditional barbell strategy may be less effective).

vi. Yields provide a good starting point for estimating future returns

The current starting point for Government Bonds Yields and Credit spreads suggests that going forward credit markets will likely deliver better returns per unit of risk than interest rate risk. As per the analysis in the paper, Government bonds may be reliant on a weak outlook for inflation to generate a real return going forward and may struggle to deliver positive absolute returns in an inflationary environment.

vii. Traditional asset allocations are likely to begin giving less reliable returns

Also, relying on switching between traditional asset classes to add value is likely to be insufficient to meet investor goals going forward. A more active approach will be required, taking into account of manager fees and transaction costs. This is particularly the case for credit markets, where significant value can be added through active management and where the return features of the sub-asset classes are materially different.



Appendix - Modelling Assumptions

- Mean variance optimization uses monthly returns from 31-Dec-1994 to 31-Oct-2020
- Yield for equities is the inverted P/E ratio plus 2.5%.
- Yield for Australian and Global REITS is calculated as the Broker Consensus Estimate of "Funds from Operations" divided by Price.
- Both the historic return and future yield of the ASX200 assumes a franking credit benefit of 1.5% p.a..

| | | | Current Yld | Median Broker |
|----------------------|----------------------------|--|----------------|---------------|
| Group | Sector | Index Name | Implied Excess | Long Term |
| | | | Return | Excess Return |
| Aust Bonds | Australian Fixed Interest | Bloomberg AusBond Composite Index | 0.6% | -0.8% |
| Aust Bonds | Australian ILBs | Bloomberg AusBond Inflation Govt Index | 0.6% | -0.8% |
| Global Govt Bonds | Global Govt Bonds | Bloomberg Global Agg Treasuries Index | 0.7% | -0.6% |
| Global Govt Bonds | Global Bond Aggregate | Bloomberg Global-Aggregate | 0.8% | -0.5% |
| Global Credit IG | US IG Corporate Bonds | Bloomberg US Inv Grade Corp Bond | 1.0% | 1.9% |
| Global Credit Non-IG | Syndicated Loans | Credit Suisse Leveraged Loan Index | 5.1% | 3.5% |
| Global Credit Non-IG | US High Yield Bonds | Bloomberg US High Yield Corp Bond | 3.5% | 4.0% |
| EMD | Emerging Market Bonds | Bloomberg EM USD Aggregate | 4.5% | 3.4% |
| Aust. Equities | Australian Equities | ASX 300 Total Return | 8.9% | 8.1% |
| Global Equities | World Equities | MSCI ACWI Index | 6.3% | 5.5% |
| Global Equities | S&P 500 Index | S&P500 Total Return Index | 6.3% | 4.8% |
| REITs | Australian Property Trusts | ASX200 A-REIT Index | 5.6% | 5.8% |
| REITs | Global REITs | S&P Global REIT USD | 5.0% | 5.0% |
| Alternative | BBG Commdty | Bloomberg Commodity Index | n.a. | 2.9% |
| Alternative | Gold | XAU GOLD USD Spot | n.a. | 2.0% |

Table A1: Asset Class Index Definitions used for Beta modelling

Table A2: Periods of falling, stable and increasing inflation



Using monthly data on US CPI YoY changes since Jan-1995: over any 12-month period;

- where CPI has increased by 0.25% or more, we classify that period as an "increased inflation" period,
- where CPI has decreased by 0.25% or less, we classify that period as an "decrease inflation" period, and
- all other periods would be defined as "stable inflation"