ANU Student Managed Fund

Asset allocation recommendation: Semester 2, 2023

Contents

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Glossary

AA – Asset Allocation
AAE – Active Australian Equities
AC – Australian Cash
AE – Australian Equities
AFI – Australian Fixed Income
AUD – Australian Dollar
DM – Developed Markets
DM,H – Developed Markets, Hedged
DM,U – Developed Markets, Unhedged
EM – Emerging Markets
ETF – Exchange Traded Fund
FC – Foreign Currency
GDP – Gross Domestic Product
IRD – Interest Rate Differential
PC – Portfolio Construction
PE – Price to Earnings
RBA – Reserve Bank of Australia
ROE – Return on Equity
SMF – Student Managed Fund
US – the United States
USD – US Dollar
VGAD – Vanguard MSCI Index International Shares (Hedged) ETF
VGS – Vanguard MSCI Index International Shares ETF

1 Asset allocation recommendation

The Asset Allocation (AA) team of the Student Managed Fund (SMF) recommends an increase in the target weight of Developed Markets, Unhedged (DM,U), from 5% to 10% of the total portfolio, funded by a decrease in the target weight of Developed Markets, Hedged (DM,H), from 10% to 5% of the total portfolio. This proposed change is an outcome of the implementation and interpretation of the AA team's Foreign Currency (FC) Model.

1.1 Proposed target weights

The following changes are being proposed to the SMF's target strategic asset allocation:

- Increase the DM,U target weighting from 5% to 10% (returning it to the reference portfolio weighting) by purchasing the Vanguard MSCI Index International Shares Exchange Traded Fund (ETF) (VGS)
- Decrease the DM,H target weighting from 10% to 5% (an underweighting of 5% versus the reference portfolio) by selling the Vanguard MSCI Index International Shares (Hedged) ETF (VGAD)

The proposed asset allocation changes shift the weightings within the growth portion of the AA portfolio, leaving the growth/defensive target weights at 80%/20% in line with the reference portfolio. The structure of the defensive portion is proposed to remain unchanged, with target weights of 15% in Australian Fixed Income (AFI) and 5% in Australian Cash (AC).

Figure 1: Portfolio Weights

Asset classes	Reference portfolio	Current target portfolio	Current actual portfolio	Proposed target portfolio
Australian Equity (AE)	**60%**	**55%**	**53.77%**	**55%**
International Equity	**20%**	**25%**	**26.13%**	**25%**
DM,H	10%	10%	10.89%	5%
DM,U	10%	5%	5.53%	10%
Emerging Markets (EM)	0%	10%	9.71%	10%
AFI	**15%**	**15%**	**14.23%**	**15%**
AC (including accruals)	**5%**	**5%**	**5.87%**	**5%**
TOTAL	**100%**	**100%**	**100%**	**100%**

1.2 Key Metrics

Figures 2 and 3 present the projected 3-year and 10-year real returns for each asset class, respectively. Figures 4 and 5 report changes in real portfolio value and key portfolio metrics over 3 and 10 years, respectively, including the expected portfolio value, accounting for distributions.

Figure 2: Asset class 3-year expected real returns under 11 scenarios

	Scenarios			3-year expected real return (% p.a.)					
No.	Inflation	Growth / potential	Probability	AE	DM,H	DM,U	EM	AFI	AC
1	High	High	5%	7.23	3.43	-0.81	5.93	-1.94	0.61
2	High	Medium	16%	2.37	0.98	1.75	2.74	-1.55	0.35
3	High	Low	3%	-5.15	-1.02	2.09	1.12	-0.93	0.19
4	Medium	High	12%	7.48	5.09	0.79	9.36	-0.02	-0.16
5	Medium	Medium	28%	1.30	3.12	3.91	6.44	0.72	-0.24
6	Medium	Low	14%	-1.33	1.49	4.67	4.55	1.06	-0.36
7	Low	High	2%	4.55	6.51	2.15	8.91	1.39	-0.66
8	Low	Medium	5%	0.56	4.07	4.86	6.61	2.27	-0.65
9	Low	Low	10%	-3.80	1.32	4.49	3.23	2.63	-0.77
10	Stagflation	Stagflation	2%	-13.37	-4.00	0.71	-1.79	-2.70	0.42
11	Crisis	Crisis	3%	-23.15	-3.38	1.36	-4.33	2.48	-1.48
Probability-Weighted			100%	0.75	2.32	2.97	5.08	0.42	-0.20

Figure 3: Asset class 10-year expected real returns under 11 scenarios

	Scenarios			10-year expected real return (% p.a.)					
No.	Inflation	Growth / potential	Probability	AE	DM,H	DM,U	EM	AFI	AC
1	High	High	5%	6.40	3.58	-0.66	6.26	-0.01	1.87
2	High	Medium	16%	3.84	0.78	1.56	3.04	-0.19	1.18
3	High	Low	3%	0.04	-1.93	1.14	1.30	-0.79	0.66
4	Medium	High	12%	8.33	5.86	1.53	9.66	1.37	1.01
5	Medium	Medium	28%	5.68	3.63	4.42	7.10	0.95	0.55
6	Medium	Low	14%	4.64	1.61	4.80	5.37	0.75	0.13
7	Low	High	2%	9.58	7.03	2.65	9.56	2.47	0.18
8	Low	Medium	5%	6.70	4.49	5.29	7.72	2.05	-0.16
9	Low	Low	10%	3.90	1.56	4.74	4.53	1.77	-0.49
10	Stagflation	Stagflation	2%	-4.43	-6.81	-2.24	-3.30	-1.24	1.01
11	Crisis	Crisis	3%	-0.77	-3.29	1.45	-4.76	1.99	-0.91
Probability-Weighted			100%	5.22	2.74	3.28	5.93	0.88	0.55

Figure 4: Expected real portfolio value after 3 years (allowing for distributions)

	Scenarios			Expected change in real portfolio value (% p.a.)		
No.	Inflation	Growth / potential	Probability	Reference portfolio	Current portfolio	Proposed portfolio
1	High	High	5%	-0.35	-0.09	-0.30
2	High	Medium	16%	-3.09	-3.02	-2.99
3	High	Low	3%	-7.47	-7.22	-7.07
4	Medium	High	12%	0.34	0.84	0.63
5	Medium	Medium	28%	-2.99	-2.63	-2.59
6	Medium	Low	14%	-4.54	-4.26	-4.11
7	Low	High	2%	-0.90	-0.37	-0.57
8	Low	Medium	5%	-3.03	-2.66	-2.62
9	Low	Low	10%	-5.78	-5.50	-5.35
10	Stagflation	Stagflation	2%	-12.84	-12.40	-12.18
11	Crisis	Crisis	3%	-17.66	-17.04	-16.81
Probability-weighted			**100%**	**-3.59**	**-3.27**	**-3.25**
Year 3 real portfolio metrics						
Expected portfolio value				0.8962	0.9050	0.9057
Probability of shortfall				88.00%	88.00%	88.00%
Expected shortfall				-10.51%	-9.81%	-9.66%
Expected utility				-0.2010	-0.1821	-0.1774

Note: Shortfall is measured relative to a target of maintaining the real value of the portfolio after distributions.

Figure 5: Expected real portfolio value after 10 years (allowing for distributions)

	Scenarios			Expected change in real portfolio value (% p.a.)		
No.	Inflation	Growth / potential	Probability	Reference portfolio	Current portfolio	Proposed portfolio
1	High	High	5%	-0.46	-0.14	-0.34
2	High	Medium	16%	-2.04	-2.01	-1.97
3	High	Low	3%	-4.62	-4.55	-4.40
4	Medium	High	12%	1.23	1.68	1.47
5	Medium	Medium	28%	-0.31	-0.11	-0.07
6	Medium	Low	14%	-1.10	-1.04	-0.89
7	Low	High	2%	2.29	2.62	2.41
8	Low	Medium	5%	0.58	0.74	0.78
9	Low	Low	10%	-1.40	-1.38	-1.23
10	Stagflation	Stagflation	2%	-7.97	-7.97	-7.75
11	Crisis	Crisis	3%	-4.54	-5.02	-4.79
Probability-weighted			**100%**	**-0.82**	**-0.65**	**-0.63**
Year 10 real portfolio metrics						
Expected portfolio value				0.9214	0.9370	0.9384
Probability of shortfall				81.00%	81.00%	81.00%
Expected shortfall				-10.22%	-9.47%	-8.99%
Expected utility				-0.1952	-0.1826	-0.1718

Note: Shortfall is measured relative to a target of maintaining the real value of the portfolio after distributions.

2 Rationale for the recommendation

This section elucidates the rationale behind the proposal to alter the weights of DM,U and DM,H, as DM,U is poised to yield more attractive returns when accounting for risk. According to the analysis of the AA team, the expected returns of Developed Markets (DM) over the 10-year investment horizon is lower than those forecasted for AE and EM, but the AA team sees diversification benefits from continuing to hold 15% of the growth portfolio in DM equities. The AA team's recommendation of switching 5% from DM,H to DM,U is supported by the quantitative analysis via the PC Model assuming that the Australian Dollar (AUD) is to remain relatively weak for the foreseeable future.

After incorporating the FC model into the PC model, it is evident that DM,U significantly reduces overall variance while still providing exposure to DM. More specifically, although DM,U embeds more currency risk, it allows the portfolio to benefit from developed markets' securities. Consequently, the AA team advocates increasing the weighting of DM,U from 5% to 10%. This position is supported by the PC Model's outputs, which assign higher utility to the proposed asset allocation between DM,H and DM,U over the current allocation. This preference is driven by both the higher probability-weighted return of DM,U over DM,H and the reduced forecasted variance resulting from holding an asset in USD against the AUD's historical risk-on nature.

The AA team's anticipation of weak AUD favours the outputs. First and foremost, the Federal Reserve's interest rate hikes have been more pronounced than those of the Reserve Bank of Australia (RBA), further increasing the interest rate differential (IRD) between these two currencies (Appendix A Figure 8), making United States (US) dollar-denominated assets more appealing as safe-haven investments and thereby reducing the demand for the AUD overseas (Venz, 2023). This is reflected in the FC Model output where the computed IRD in favour of the United States Dollar (USD) plays a material role in forecasting the weaker terminal AUD/USD exchange rate.

Secondly, Australia's economic dependence on China is well-documented, with the relationship between Australian commodity prices and the strength of the AUD forming a cornerstone of the AA team's FC Model. Evidently, China's predicted economic recovery has not materialised as expected, with particular pain points in the housing sector flowing on and impacting the expected recovery in demand for Australian iron ore, further delaying the appreciation of the AUD (Australian Financial Review, 2023).

Over the longer term, in line with consensus forecasts, although the AA team sees a potential recovery in the AUD across higher Gross Domestic Product (GDP) scenarios, baseline outcomes are expected to be broadly similar to the AUD's recent historical performance (Appendix A Figure 9). Although it would suggest that the AUD is trading more towards the lower half of its historic band, the AA team's analyses indicate that the aforementioned factors leave further room for the exchange rate to deteriorate. This outlook provides the basis for the AA team advocating for the changes in the respective weightings of DM,U and DM,H. The model shows that although DM,U is forecasted to outperform DM,H across a cumulative 81% of the scenario states (Appendix A Figure 10), there are scenarios in which DM,H is forecasted to outperform (scenarios 1, 4, and 7). Thus, the AA team is not recommending for the SMF's entire DM exposure to be through DM,U.

3 Foundations of the investment thesis

The AA team's process begins by considering the optimised asset weights generated by our model. We then incorporate qualitative adjustments to formulate our suggested asset allocation. Our PC model suggests a growth/defensive weight of 100/0, with the growth component divided into 40% in Australian Equities (AE) and 60% in Emerging Markets (EM). The allocation of 40% to AE aligns with the lower constraint on AE weights specified in the SMF's Investment Policy Statement, to allow for the Active Australian Equities (AAE) team's continued individual stock analyses. The AA team wishes to stress that the model serves as a quantitative tool to guide our asset allocation decisions, rather than making them outright. The following discussion outlines the steps the AA team has taken to transition from the 'optimised' weights to the proposed weights.

3.1 Scenario Modelling

The 'AA Investment Process' entails specifying 3- and 10-year scenario projections and probabilities across both economic drivers and asset class inputs; with the latter being fed into the DCF-based asset models to generate wealth and return paths for each scenario. Below is the discussion of the most significant deviations from historical data in our 3- and 10-year forecasts that have influenced our modelling and thus proposed asset allocation. Details on the projections can be found in the Appendices.

The AA team refers to historical data to inform its PC Model, which is based on classifying the economic drivers of inflation and the output gap (measured by actual GDP to potential GDP) into scenarios. These scenarios consist of inflation-output gap pairings contingent on the historical series with qualitative adjustment based on AA team analysis. The drivers are translated into asset class inputs, with the main inputs being PE, Return on Equity (ROE), bond yields and cash rates. The AA team undertakes analysis and applies judgement in translating the asset class inputs into forward projections across each of the 11 scenarios. The key considerations underpinning the qualitative adjustments to the historical series are discussed below.

Based on work completed at the start of the semester there were several changes made to the probabilities of the 11 scenarios (Figure 6) compared to historical averages (Figure 7). Firstly, there was a slight decrease in the probability of the crisis scenario from 3.5% to 3% compared to last semester. This reflected AA's view that there are still significant uncertainties in the global environment as mentioned earlier in the report however slightly less than last semester.

Secondly, there was a decrease in the High GDP scenario from 24.5% to 19%. This is because of the AA team's belief that major developed economies are on track to achieve a soft landing with their concurrent rate rises that have occurred since May of 2022. Thus, although each passing month seems to increase the likelihood of avoiding recession, the AA team's expectations of breakout GDP growth has also tapered. The AA team is of the opinion that the probabilities associated with the economy achieving middling results has increased and have consequently reflected this belief in our scenario state probabilities. Also important to note is that the high and medium inflation ranges are lower than historical average due to the introduction of the stagflation scenario.

Figure 6: Forecasted Scenario Probabilities

Scenario	GDP/Potential					
		High 1.015	**Medium** 0.995	**Low** 0.980	**Stagflation** 0.950	**Crisis** 0.935
Inflation	**High** 4.5%	5.0%	16.0%	3.0%		
	Medium 2.5%	12.0%	28.0%	14.0%		
	Low 1%	2.0%	5.0%	10.0%		
	Stagflation 7%				2.0%	
	Crisis 0%					3.0%

Figure 7: Historical Scenario Probabilities (1992 - Present)

Scenario	GDP/Potential		
	High 1.017	**Medium** 1.002	**Low** 0.989
Inflation **High** 6.1%	6.2%	15.0%	1.8%
Medium 3%	15.0%	25.7%	12.4%
Low 1.6%	3.5%	9.7%	10.6%

3.2 Qualitative Adjustments

This section outlines the considerations taken by the AA team that are not fully captured within the modelling.

3.2.1 PC Model Optimized AA weightings

The unconstrained 3- and 10-year PC models allocate 100% weighting to growth asset classes, with a 60% weighting in EM and the remaining weighting in AE. The optimiser is providing corner solutions and is influenced by the increase in probability attributed to the high inflation scenarios and related outperformance by EM and AE. The discussion below sets out the AA team's reasoning for deviating from the optimised weights towards the proposed target weights.

3.2.2 Equity weights

The AA team maintains a 55% allocation to AE. This allocation not only allows the AAE team to actively trade individual shares but also underscores the attractiveness of the stable and mature operating environment typically seen in Australian stocks. This aligns with the SMF's conservative return strategy, where we prioritise safeguarding capital against losses. Additionally, the SMF's status as a tax-free investor is worth reiterating, with significant benefits associated with the full redemption of any received franking credits, enhancing the returns available to AE.

The AA team forecasts that EM will slightly outperform AE over a 10-year horizon, with annual real returns of 5.93% and 5.22%, respectively. EM's superior return potential against AE is forecasted in most scenarios, except for scenarios 1 and 2, and the crisis scenario, which is attributed to the different forward price to earnings (PE) input in the PC Model. AA expects EM to trade at 13.70x forward PE over long term, whereas AE is expected to trade at 15.0x times.

Despite the projected outperformance of EM, the AA team does not recommend an additional incremental weight increase towards EM due to the risks not captured by the historical data-based PC Model analysis. The biggest concern is regarding China's weak recovery. From the AA team's macroeconomic outlook research, China's real estate market is in an overtly weakened state, with many interested parties awaiting further news. This development has effectively served to undermine one of the primary engines of China's historical economic growth over the past several decades. Additionally, the persistently high youth unemployment rate and low consumer confidence in China, combined with the delayed implementation of an attempted structural transformation towards a more consumption-driven economy suggests that there is a real risk the Chinese economy may no longer be the reliable driving force of EM growth as it has been in the past (Australian Financial Review, 2023).

Geopolitical risk is also a concern that makes the AA team less optimistic about EM than the model may suggest. Since the addition of EM to the SMF portfolio, substantial political developments in the Asian region have been overwhelmingly negative. Of singular importance is the continued deterioration of US-China relations, which has manifested through an escalation of the US-China trade war, and the related tech ban. The AA team anticipates

ongoing future instability in East Asia as the power struggle between the US and China escalates, with increasing political risk arising from a breakdown of communication channels and a multitude of issues from which neither country is willing to compromise, particularly the Taiwan problem. These factors, in combination with the index's heavy exposure to the East Asian region, including 30% weighting to China, 15% to Taiwan, and 13% to South Korea, makes the AA team hesitant to recommend a greater allocation to EM.

Nevertheless, given the PC Model's projected high returns, and diversification benefits associated with holding EM, the AA team still advocates to maintain a 10% holding of EM. This is consistent with Goldman's analysis that changes in earnings per share in China showed minimal or no correlation with those in the rest of the world over the past three years (Sivabalan, 2023). Additionally, other economies, including India, Indonesia, Brazil, and Mexico, are poised for growth in the coming years, fuelled by demographic advantages, metals production for electric vehicles, nearshoring trends, and increased foreign direct investment, potentially starting a recovery phase in the latter half of 2023, barring a global recession (Lazard Asset Management, 2023).

3.2.3 Defensive Asset weights

AA team forecasts that the defensive portfolio comprised of AFI and AC will underperform the growth portfolio over the prediction periods, with negative real returns after taking distributions into account. However, the AA team proposes that the SMF should maintain the defensive asset weights at their strategic level (AFI at 15% and AC at 5%) due to the considerations related to liquidity risk, diversification benefits and the macroeconomic outlook (Appendix B Figures 11 and 12). According to the ANU SMF Charter and Governance Structure document, liquidity risk should be taken into consideration, and the SMF should maintain an adequate cash reserve to meet distribution requirements. The accrued franking credits of SMF are recognized as cash, meaning that the SMF's actual cash balance is less than its accounting value. Moreover, fixed income assets enhance portfolio diversification and consequently reduces overall portfolio risk. For instance, defensive assets tend to perform well during crisis periods compared to other asset classes based on PC model. Also, AC and AFI perform better than all other asset classes historically in the stagflation scenario. Lastly, defensive portfolio allows the SMF to gain any benefits arising from future rate cuts. AA team assume that RBA will reduce its cash rate starting from the beginning of 2024. As a result, if Government bond yields decrease, the price of the bond will rise, resulting in higher returns for defensive assets. As seen in Appendix B Figure 13, for instance, the price of VGB-ASX is currently near its lowest level in the past decade, approximately 8.8% lower than the 10-year average, indicating that there are sufficient room for price appreciation.

3.3 Conclusion

The AA team is recommending that the weighting of DM,U be increased from 5% to 10% of the total portfolio. This increase is to be funded by an equivalent reduction in the weighting of DM,H from 10% to 5% of the total portfolio, with all other target weights within the portfolio remaining unchanged. The investment thesis underpinning this recommendation is the combination of the quantitative output of the PC Model suggesting sustained weakness in the AUD/USD trajectory, as well as qualitative macroeconomic analysis lending further credence to this position.

4 Appendices

4.1 Appendix A: Graphs Related to Foreign Currency

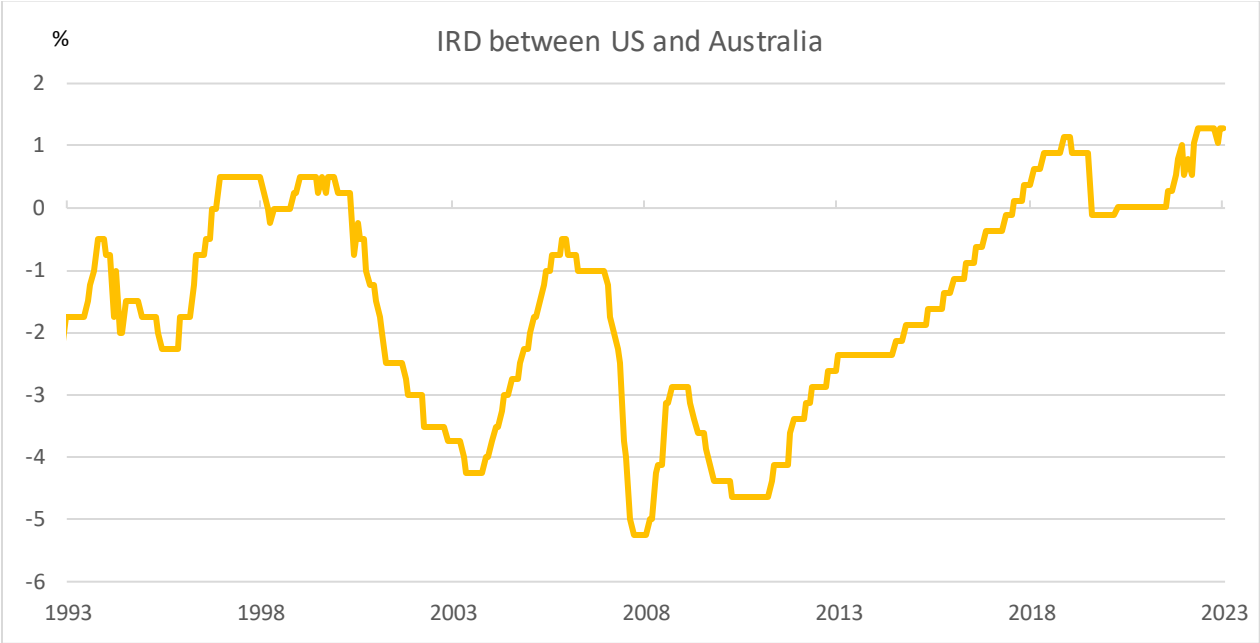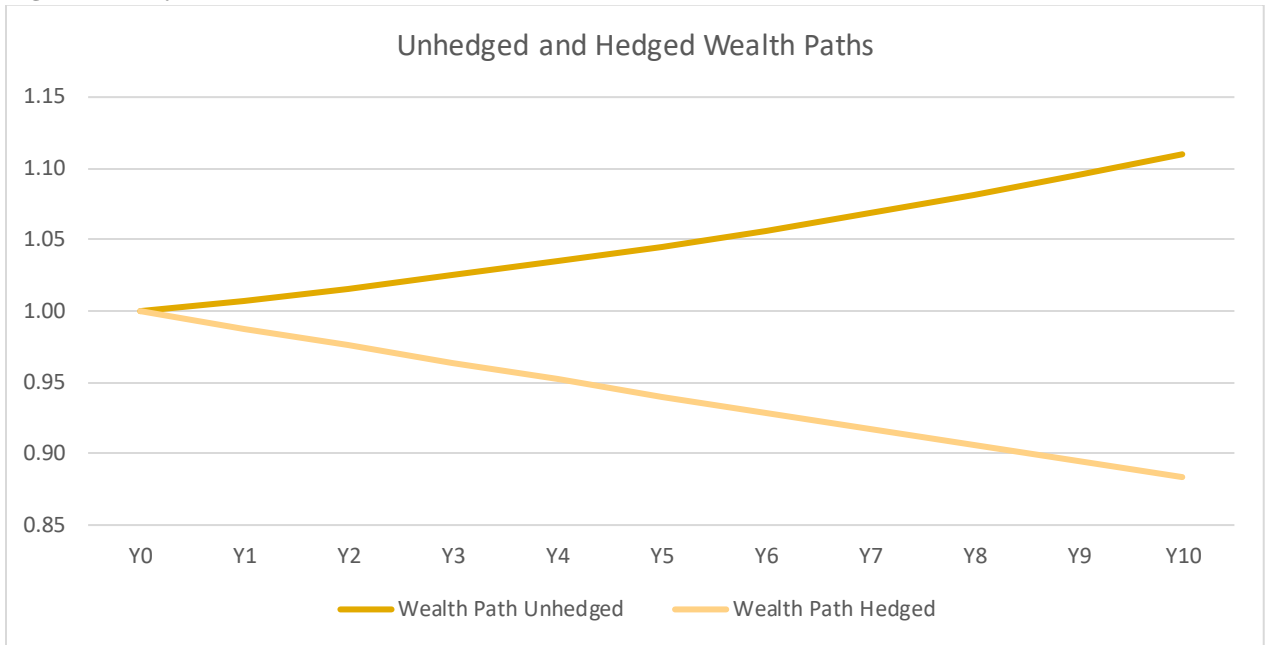**Figure 8: Australian – United States Interest Rate Differential (IRD) (1993 – present)**

Figure 9: AUD to USD Exchange rate (1993 – present)

Figure 10: 10 year forecast of DM,U and DM,H

4.2 Appendix B: Graphs Related to the Defensive Portfolio
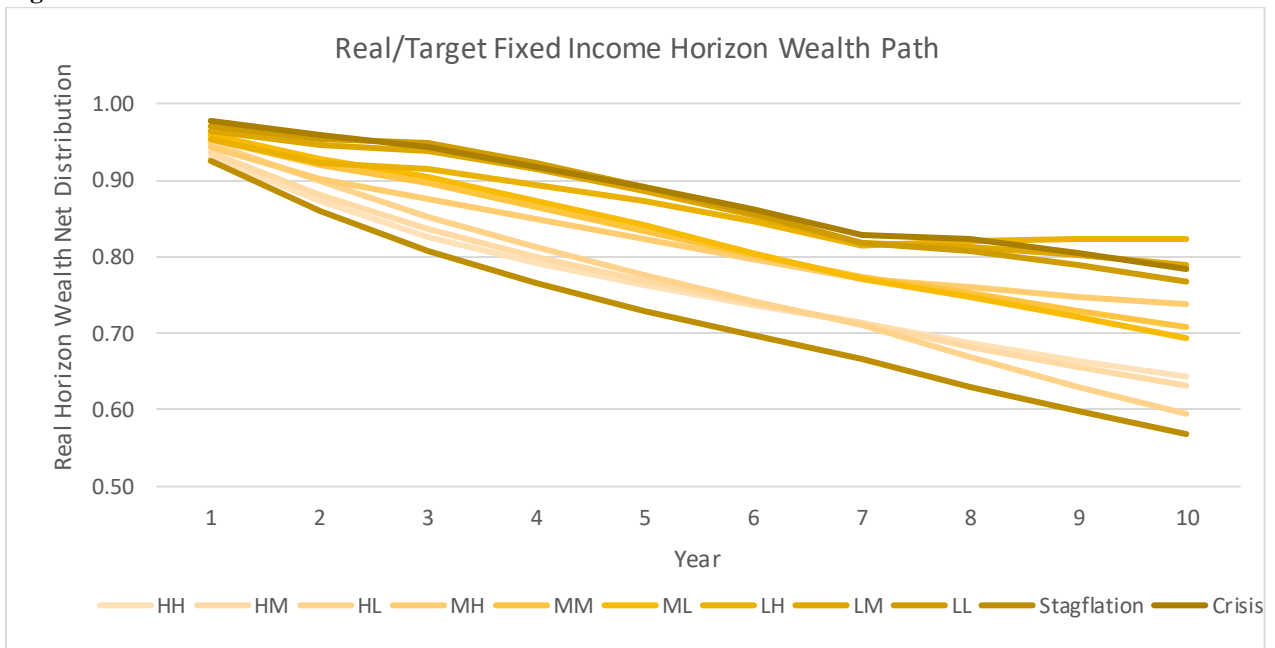
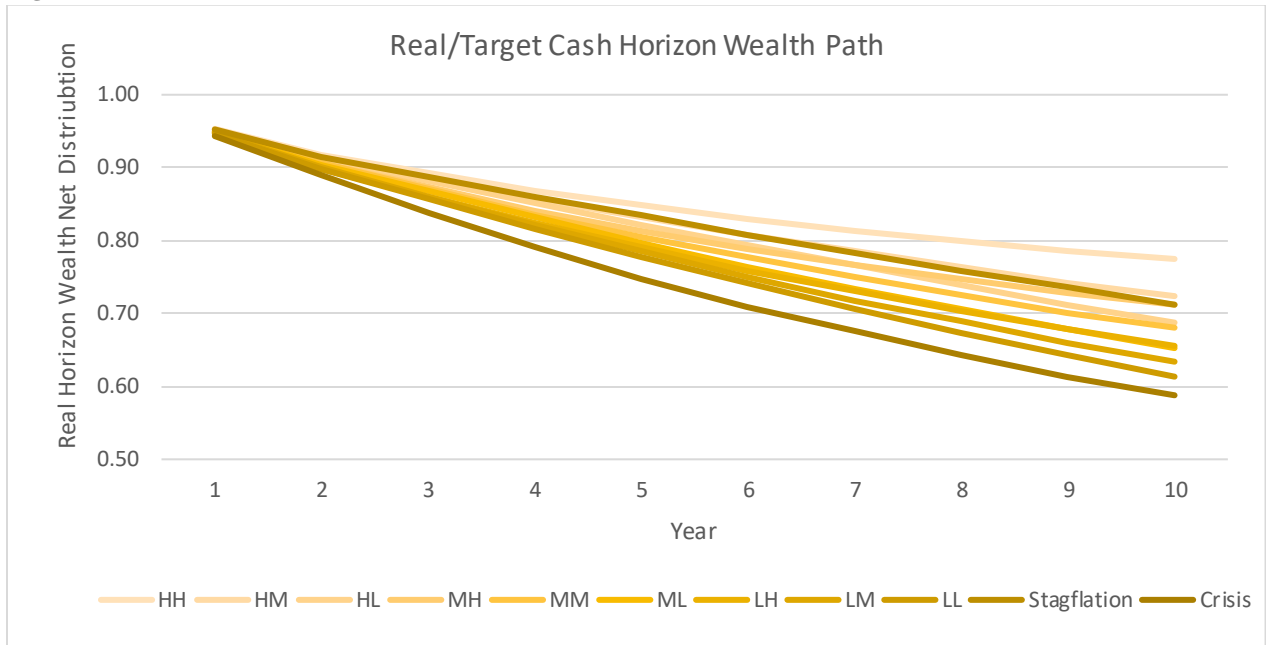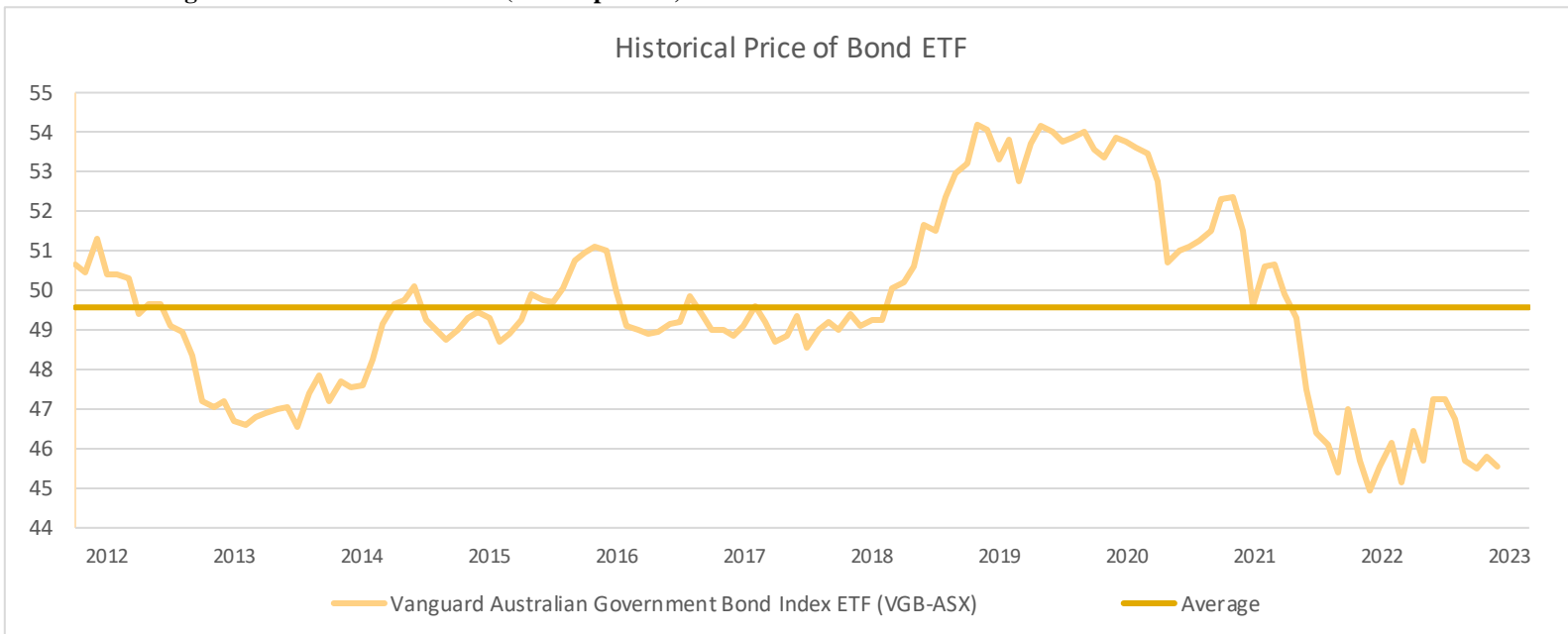**Figure 11: Fixed Income Wealth Paths**

Figure 12: Cash Wealth Paths

Real/Target Cash Horizon Wealth Path

Figure 13: Price of VGB-ASX (2012 – present)

Historical Price of Bond ETF

4.3 Appendix C: Years 3 and 10 Asset Model Assumptions, Inputs and Forecasts

4.3.1 Inflation

Figure 14: Australian Inflation Targets

Scenario	Year 3 Inflation	Year 10 Inflation
High	4.2%	4.5%
Medium	2.9%	2.5%
Low	2.0%	1.0%
Stagflation	5.0%	7.0%
Crisis	2.0%	0.0%

4.3.2 GDP/Potential

Figure 15: Australian GDP/Potential Targets

Scenario	Year 3 GDP/Potential	Year 10 GDP/Potential
High	0.998	1.015
Medium	0.990	0.995
Low	0.986	0.980
Stagflation	0.976	0.950
Crisis	0.960	0.935

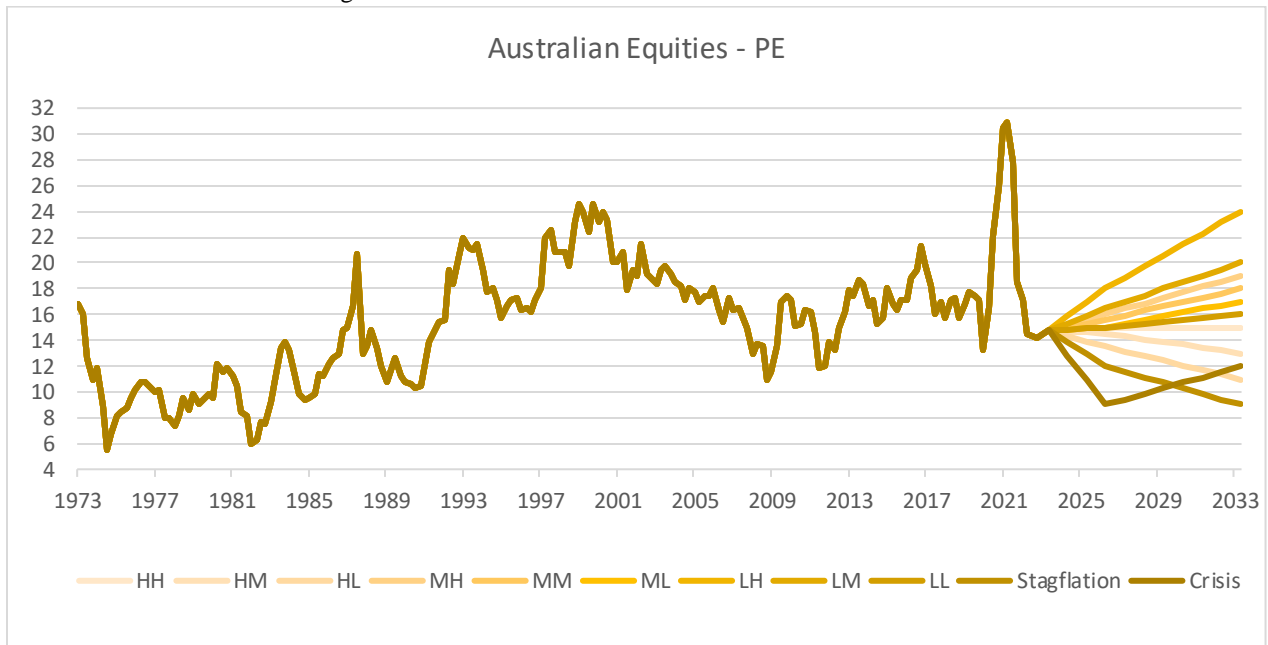**Figure 16: Return on Equity (ROE) of Australian Equities**
Historical Data and Future Targets
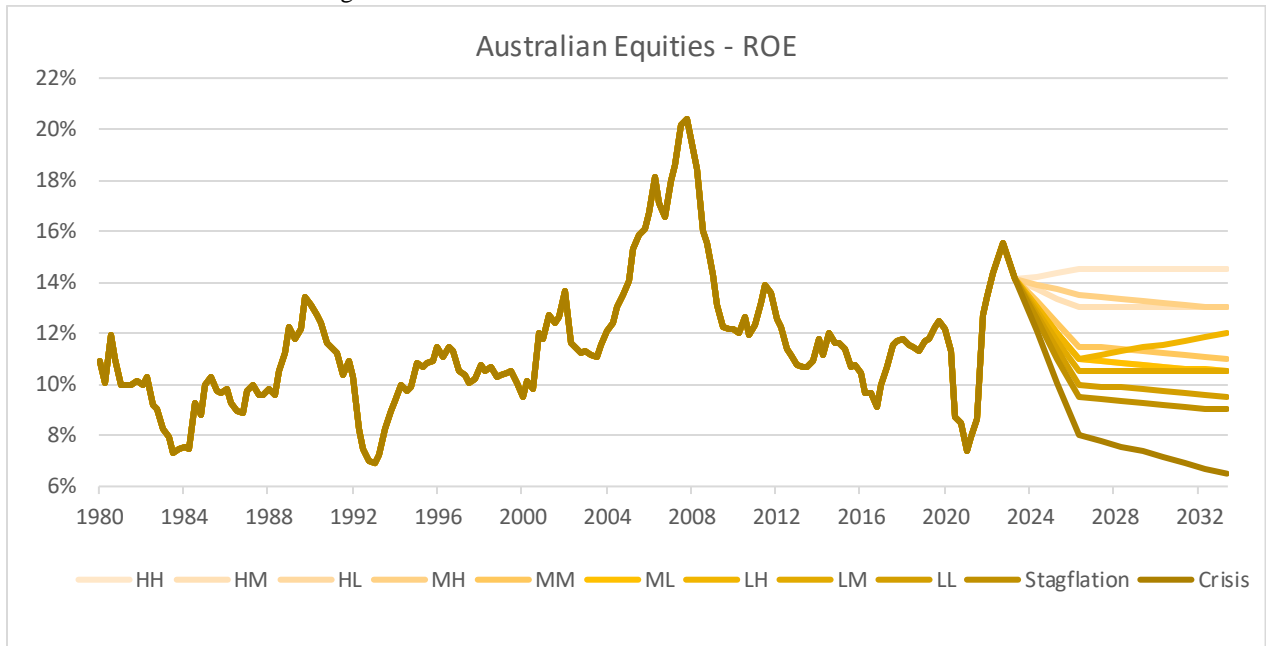
Australian Equities - ROE

Note: Historical data is reported on ROE and forecasts are ROE on existing operations. Data is from the DataStream Australian Market series.

Figure 17: Price to Earnings (PE) ratio of Australian Equities
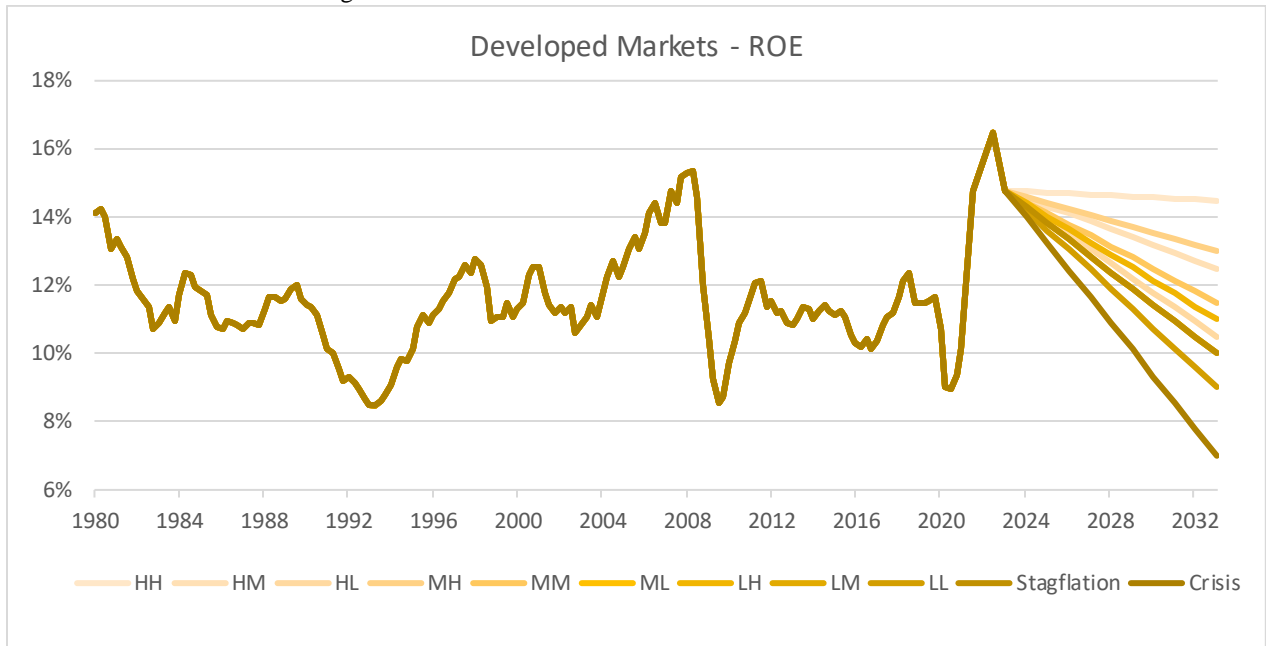Historical Data and Future Targets

Australian Equities - PE

Note: This chart shows all available history for the AE PE ratio based on the DataStream Australian market series.

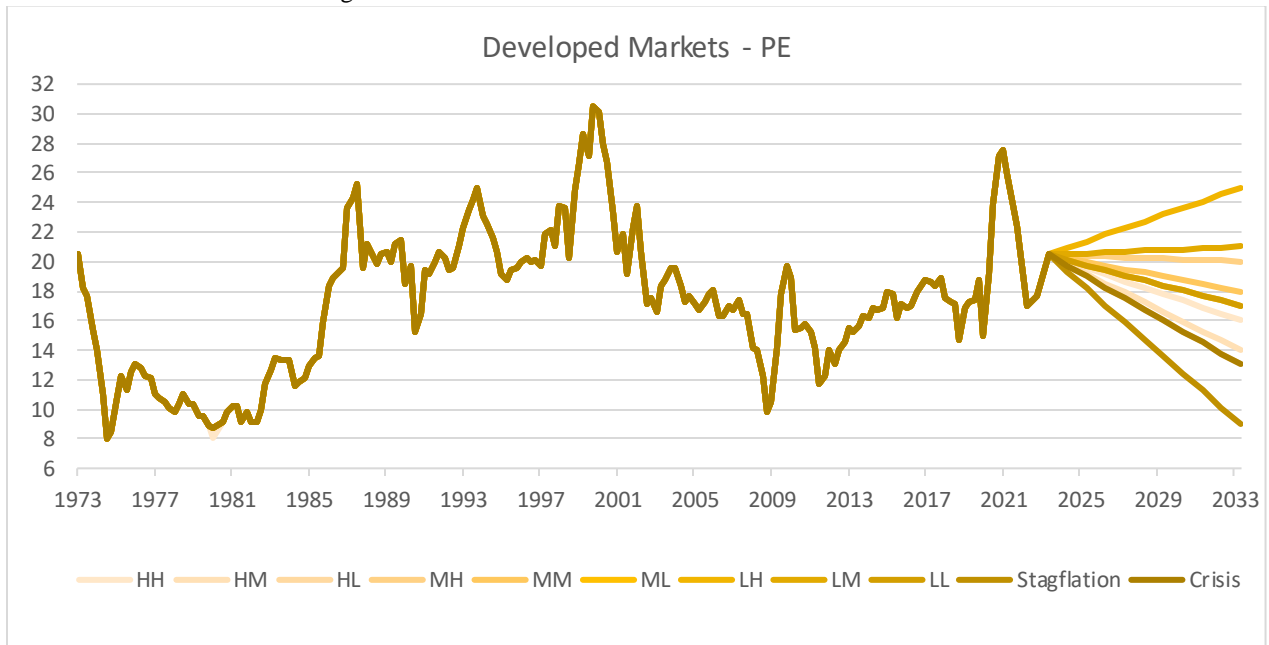**Figure 18: Return on Equity (ROE) of International Equities**

Historical Data and Future Targets

Note: Historical data is reported on ROE and forecasts are ROE on existing operations. Data is from the Datastream Total World series.

Figure 19: Price to Earnings (PE) ratio of International Equities
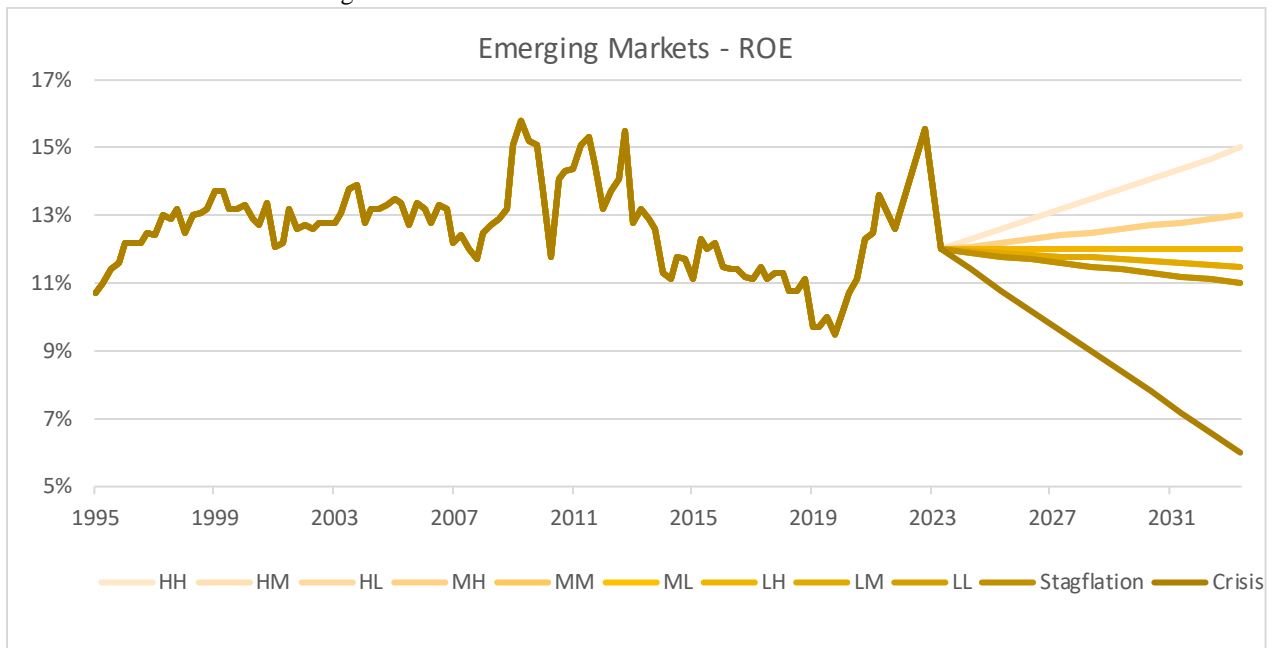
Historical Data and Future Targets

Note: This chart shows all available history for the Developed Markets PE ratio based on the DataStream Total World series.

Figure 20: Return on Equity (ROE) of Emerging Markets

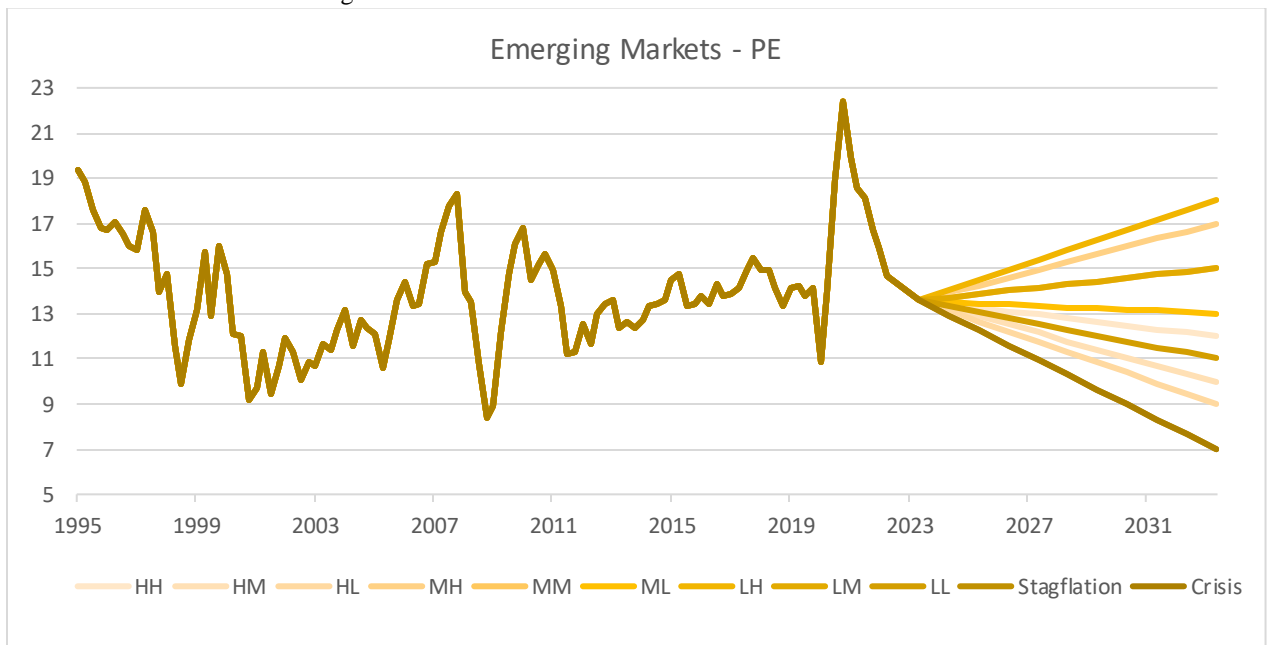Historical Data and Future Targets

Note: Historical data is reported on ROE and forecasts are ROE on existing operations. The data is from the DataStream Emerging Market series.

Figure 21: Price to Earnings (PE) ratio of Emerging Markets
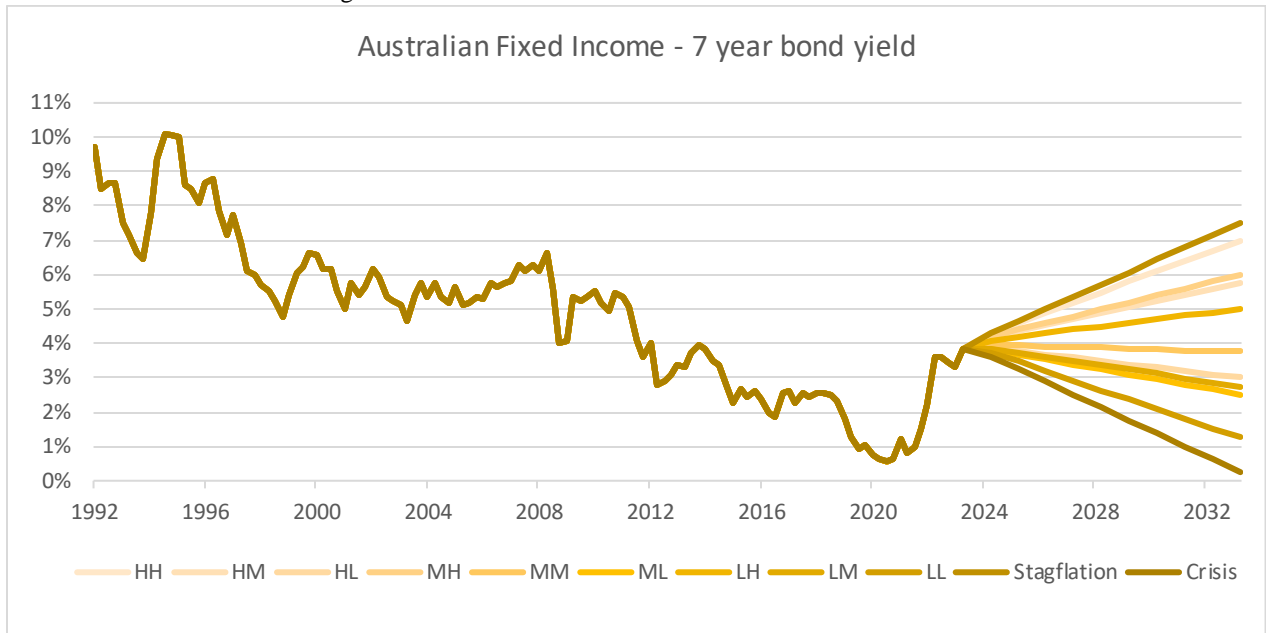
Historical Data and Future Targets

Note: This chart shows all available history for the EM PE ratio based on the DataStream Emerging Market series.

4.3.6 Australian Fixed Income

Figure 22: Seven Year Bond Yield

Historical Data and Future Targets

Notes: This chart shows history from 1992 as this is considered the most representative period. A proxy for 7-year bond yields is formed by interpolating between 5-year and 10-year government bond yields as reported by the Reserve Bank of Australia.

4.3.7 Australian Cash

Figure 23: Australian Official Cash Rate

Historical Data and Future Targets
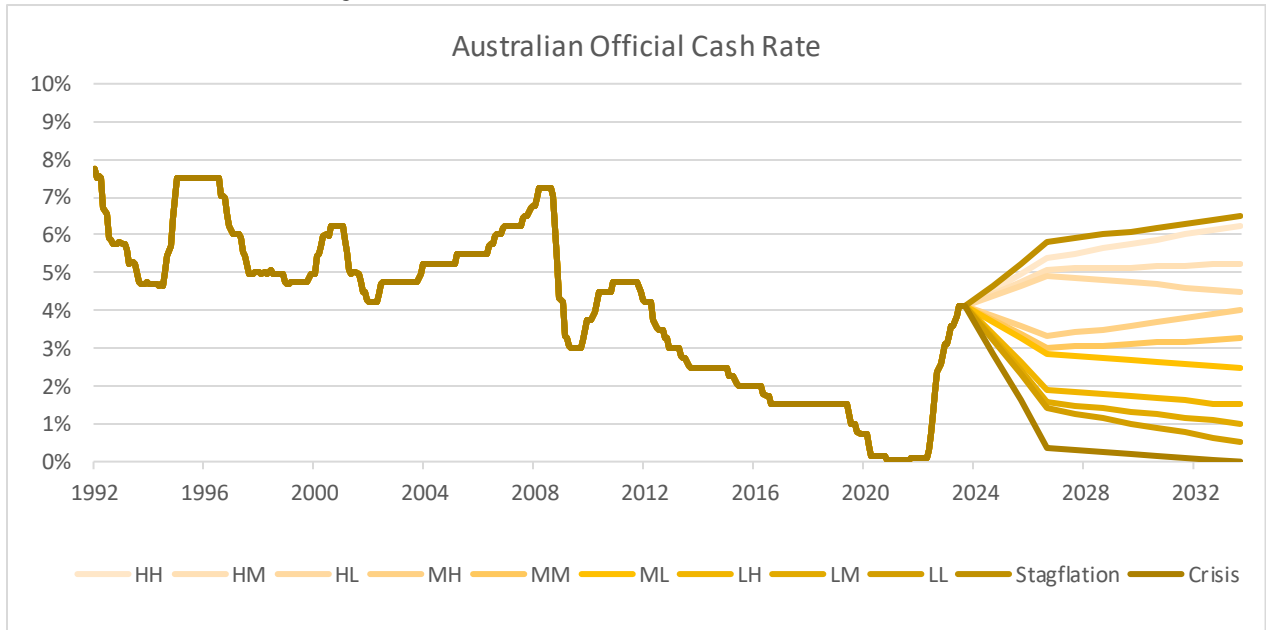
Note: This chart shows history from 1992 as this is considered the most representative period. Cash rate data is sourced from the Reserve Bank of Australia.

4.4 Appendix D: Nominal Horizon Asset Returns

Figure 24: 3 Year Nominal Horizon Asset Returns under 11 scenarios

	Scenarios			Year 3 Expected Nominal Horizon Return under 11 Scenarios (% p.a.)					
No.	Inflation	Growth / potential	Probability	Australian equities (AE)	Developed markets hedged (DM,H)	Developed markets unhedged (DM,U)	Emerging markets (EM)	Australian fixed income (AFI)	Australian cash (AC)
1	High	High	5%	12.24	8.25	3.82	10.88	2.64	5.30
2	High	Medium	16%	7.14	5.69	6.50	7.53	3.05	5.03
3	High	Low	3%	-0.72	3.60	6.85	5.84	3.69	4.86
4	Medium	High	12%	11.71	9.24	4.77	13.68	3.92	3.78
5	Medium	Medium	28%	5.14	7.04	7.86	10.48	4.54	3.55
6	Medium	Low	14%	2.42	5.35	8.65	8.52	4.89	3.42
7	Low	High	2%	8.15	10.17	5.66	12.65	4.88	2.76
8	Low	Medium	5%	3.77	7.39	8.22	10.02	5.54	2.53
9	Low	Low	10%	-0.72	4.56	7.83	6.53	5.91	2.40
10	Stagflation	Stagflation	2%	-8.86	1.00	5.95	3.32	2.36	5.65
11	Crisis	Crisis	3%	-20.70	0.87	5.81	-1.28	5.76	1.66
	Probability-Weighted		100%	4.40	6.33	7.02	9.13	4.34	3.73

Figure 25: 10 Year Nominal Horizon Asset Returns under 11 scenarios

	Scenarios			Year 10 Expected Nominal Horizon Return under 11 Scenarios					
No.	Inflation	Growth / potential	Probability	Australian equities (AE)	Developed markets hedged (DM,H)	Developed markets unhedged (DM,U)	Emerging markets (EM)	Australian fixed income (AFI)	Australian cash (AC)
1	High	High	5%	11.14	8.20	3.77	11.00	4.45	6.41
2	High	Medium	16%	8.48	5.28	6.08	7.63	4.26	5.69
3	High	Low	3%	4.50	2.44	5.65	5.82	3.64	5.15
4	Medium	High	12%	11.64	9.09	4.63	13.01	4.47	4.09
5	Medium	Medium	28%	8.85	6.74	7.56	10.32	3.99	3.58
6	Medium	Low	14%	7.79	4.67	7.95	8.53	3.78	3.14
7	Low	High	2%	11.81	9.20	4.73	11.79	4.55	2.21
8	Low	Medium	5%	8.79	6.53	7.35	9.83	4.05	1.80
9	Low	Low	10%	5.93	3.54	6.79	6.57	3.76	1.46
10	Stagflation	Stagflation	2%	1.17	-1.35	3.49	2.36	4.55	6.93
11	Crisis	Crisis	3%	0.77	-1.25	3.59	-3.28	3.57	0.63
	Probability-Weighted		100%	8.33	5.76	6.43	8.92	4.06	3.76

4.5 Appendix E: Detailed Portfolio Weights

Figure 26: Portfolio Weights – Detailed Breakdown

Asset Weights	Reference target portfolio	Proposed portfolio	Deviation vs. reference
GROWTH ASSETS			
Active Australian Equities Portfolio	50%	50%	0%
Australian Equities in AA Portfolio	10%	5%	-5%
Total Australian Equities	**60%**	**55%**	**-5%**
Developed Markets, Hedged	10%	5%	-5%
Developed Markets, Unhedged	10%	10%	0%
Emerging Markets, Unhedged	0%	10%	+10%
Total International Equities	**20%**	**25%**	**+5%**
Total Growth Assets	**80%**	**80%**	**0%**
DEFENSIVE ASSETS			
Australian Fixed Income	15%	15%	0%
Australian Cash	5%	5%	0%
Total Defensive Assets	**20%**	**20%**	**0%**
TOTAL	**100%**	**100%**	**0%**

## 4.6 Appendix F: Macro Driver Assumptions and Inputs

Figure 27: Inflation Paths

Scenario	Historical level (1992-present)	Historical probability (1992-present)	Forecast level	Forecast probability
High	6.1%	23.0%	4.5%	24%
Medium	3.0%	53.1%	2.5%	54%
Low	1.6%	23.9%	1.0%	17%
Stagflation			7.0%	2%
Crisis			0.0%	3%

Figure 28: GDP/Potential Paths

Scenario	Historical level (1992-present)	Historical probability (1992-present)	Forecast level	Forecast probability
High	1.017	24.8%	1.015	19%
Medium	1.002	50.4%	0.995	49%
Low	0.989	24.8%	0.980	27%
Stagflation			0.950	2%
Crisis			0.935	3%

Figure 29: Historical inflation vs output gap (1970 – present)

Inflation vs. Output Gap
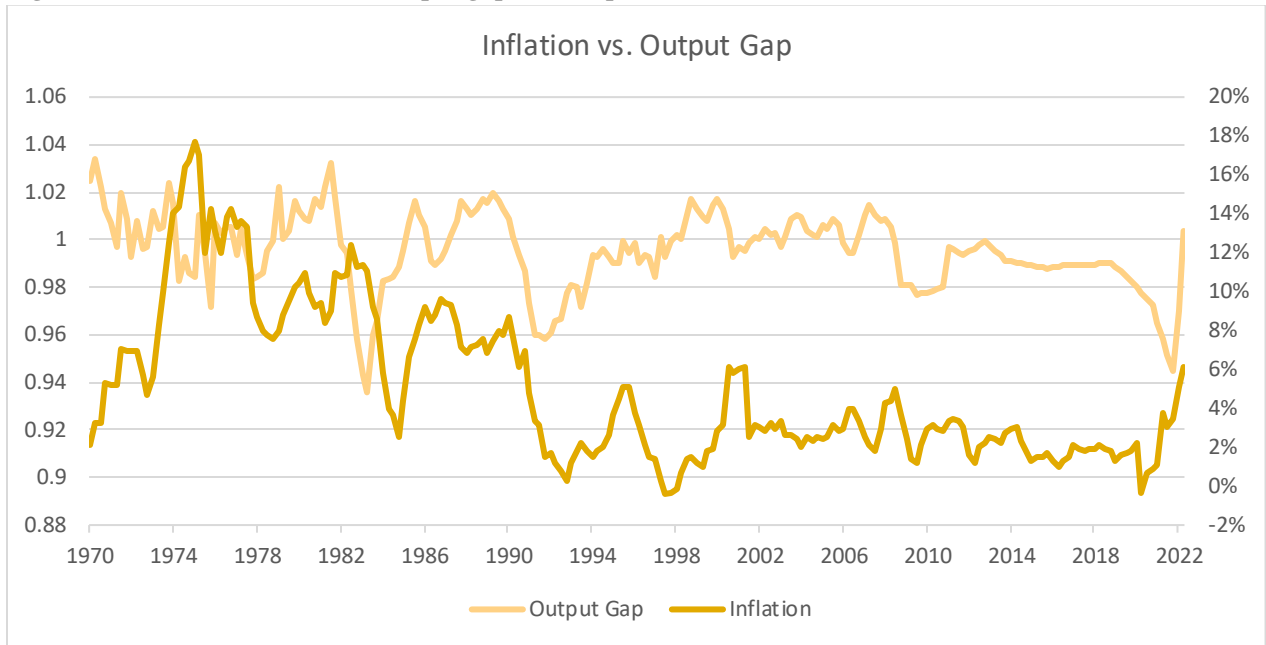
Note: This chart shows the history for Australian inflation and output gap (GDP/Potential) commencing in 1970, when data for some asset class inputs becomes available. Inflation data is sourced from the Reserve Bank of Australia, and output gap data is sourced from the Organisation for Economic Co-operation and Development (OECD).

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