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MONASH BUSINESS SCHOOL

CAN DIVERSIFIED PORTFOLIOS DELIVER? EVIDENCE FROM MCFS CAPITAL MARKET ASSUMPTIONS

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EXECUTIVE SUMMARY

In an environment where interest rates and cash yields are elevated, Australian investors face increasingly complex decisions about how to allocate assets, especially between equities and fixed income. This research evaluates the trade-offs across these asset classes by constructing a spectrum of diversified portfolios – from fully defensive (100% fixed income) to fully growth-oriented (100% equity) – and analysing their expected performance over a 10-year horizon.

Using Monte Carlo simulations that account for fat-tailed return distributions, we assess each portfolio against six key investment criteria: risk-adjusted performance, downside risk, maximum drawdown, inflation protection, performance relative to cash, and the probability of meeting target return objectives. Our findings highlight several important insights.

- First, balanced allocations, such as 50E/50FI or 40E/60FI, capture a substantial proportion of equity-driven returns while limiting volatility, resulting in the highest risk-adjusted performance, a near-zero probability of negative returns and relatively low maximum drawdowns.
- Second, more defensive allocations, such as 30E/70FI and 20E/80FI, offer comparatively stronger protection against inflation, enhancing the preservation of purchasing power.
- Third, despite elevated cash yields, diversified portfolios with meaningful equity exposure are less likely to underperform cash over the long term.
- Fourth, portfolio objectives matter. Balanced allocations maximise the likelihood of meeting target returns, while equity-heavy portfolios offer greater upside potential.

Overall, maintaining exposure to growth assets remains essential for achieving more reliable long-term performance, but the most appropriate allocation depends on the investor's objective – whether that is risk efficiency, downside protection, inflation resilience, cash outperformance, or meeting a specific return target.

PORTFOLIO PERFORMANCE

Is increasing exposure to growth assets, such as equities, justified given heightened uncertainty? While equities are expected to outperform defensive assets like bonds over the long term (see our CMAs for details), the central issue is whether this return advantage is sufficient to compensate for the additional volatility. This trade-off sits at the core of portfolio design.

To frame this, we define two broad asset-class building blocks. Equity (E) represents a globally diversified allocation, split evenly between Australian and international equities. Fixed Income (FI) comprises a diversified bond portfolio, with equal exposure to Australian and global composite bonds. The latter is AUD-hedged.

Using these components, we construct 11 portfolios spanning the risk spectrum – from fully defensive (100FI) to fully growth-oriented (100E) – in 10% increments of equity exposure. For each portfolio, we estimate expected return and risk and evaluate a range of outcome-based metrics.

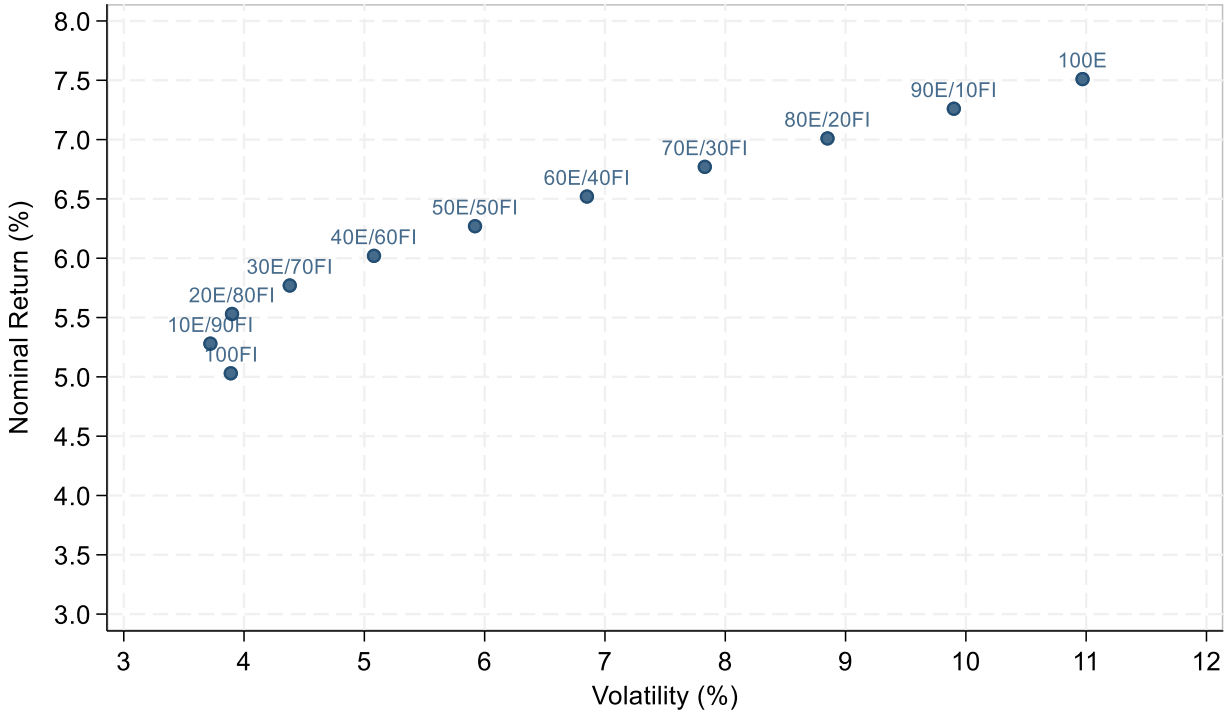

Figure 1. Portfolio performance after 10 years (in nominal terms)

As equity exposure increases, expected returns rise alongside volatility. This requires investors to balance return objectives against risk tolerance. Higher equity allocations offer greater long-term returns but come with larger short-term losses.

This trade-off is reflected in risk-adjusted performance. The Sharpe ratio peaks at around 0.305 for the 40E/60FI portfolio, closely followed by the 50E/50FI portfolio. These allocations appear as the most efficient balance between return and risk. At the extremes, efficiency declines: the fully defensive portfolio (100FI) delivers insufficient returns, while the fully growth-oriented portfolio (100E) introduces disproportionately higher risk for only modest incremental gains.

Taken together, the results suggest that a balanced allocation captures most of the benefits of equities without excessive volatility. Although the optimal mix ultimately depends on individual preferences, the model points to a clear risk-return sweet spot in the mid-range of equity exposure.

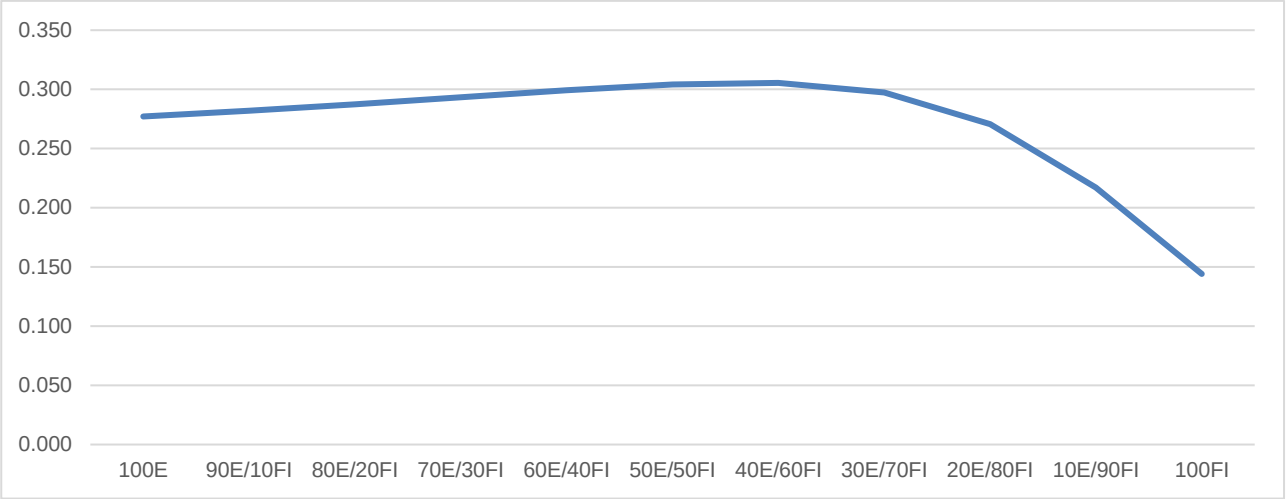

Figure 2: Portfolio Sharpe ratio

DOWNSIDE RISK: PROBABILITY OF NEGATIVE RETURNS

While higher returns are attractive, investors remain focused on downside risk – specifically, the likelihood of ending with less than the beginning balance over 10 years. We estimate this using Monte Carlo simulations (10,000 paths, with fat-tailed returns modelled by a t-distribution with 7 degrees of freedom).

Figure 3 highlights how asset allocation shapes return outcomes. A fully equity-based portfolio (100E) carries the highest risk, with a 2.3% probability of negative outcomes. As equity exposure decreases, this risk declines steadily – falling to 0.9% at 80E/20FI and just 0.3% at 60E/40FI. More balanced allocations, particularly in the 40-50% equity range, reduce the probability of negative returns to near zero, while still maintaining meaningful exposure to growth assets. Portfolios with very low equity allocations (30E/70FI and below) effectively eliminate downside risk in this framework, though typically at the cost of lower long-term return potential.

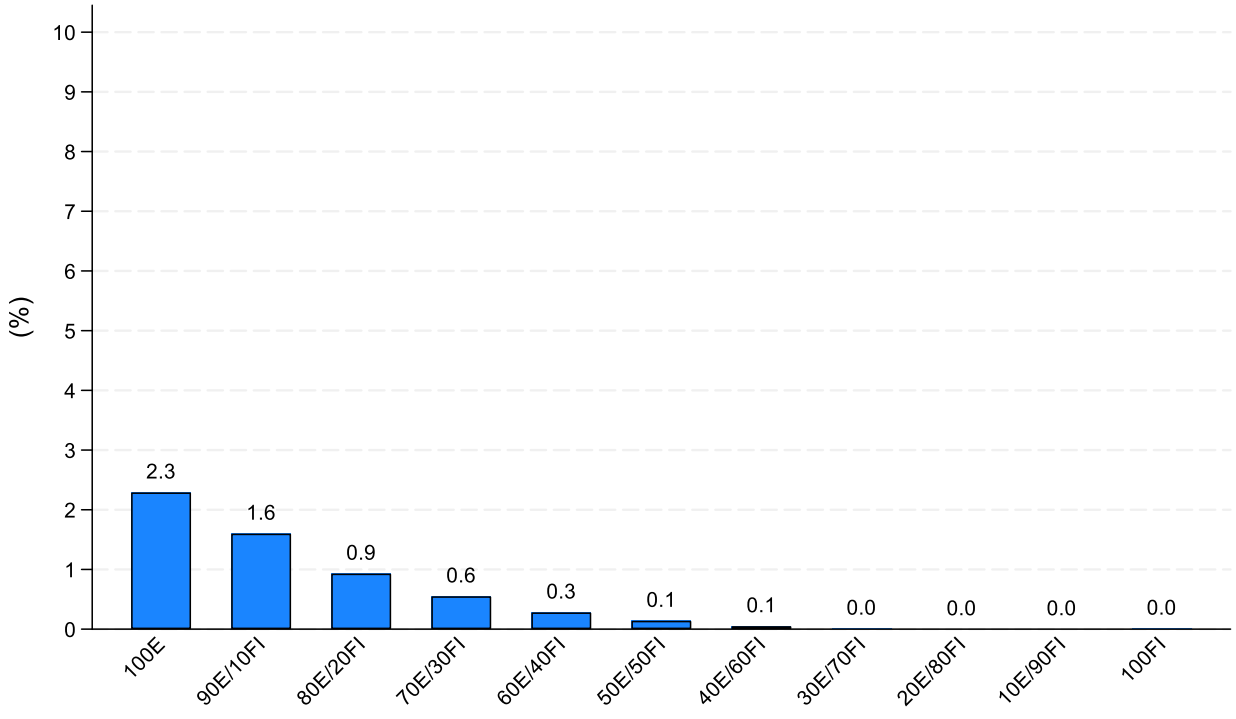

Figure 3: Probability of negative investment returns

MEASURING PAIN: MAXIMUM DRAWDOWNS

Understanding whether a portfolio might lose money is one aspect; assessing how deep the losses could go at their worst point is another. We examine the distributions of maximum drawdown (MDD) for each portfolio over the 10-year horizon. MDD measures the worst peak-to-trough decline in portfolio value during the period – a key indicator of downside pain an investor might experience.

High-equity portfolios (e.g., 100E, 90E/10FI, 80E/20FI) face not only the greatest downside risk, but also the largest drawdowns of 60-74%. Balanced portfolios (e.g., 60E/40FI, 50E/50FI, and 40E/60FI) experience smaller declines, around 32-45%, reflecting the stabilising role of bonds. Bond-heavy portfolios (e.g., 20E/80FI, 10E/90FI, and 100FI) show the lowest drawdowns, with worst-case losses around 22-24%, though this comes at the expense of lower long-term return potential.

The probability of experiencing extremely severe drawdowns also increases with equity exposure. The 100E portfolio has a 0.37% probability of drawdowns exceeding 50% (equivalent to 37 out of 10,000 simulations), while the 70E/30FI portfolio shows a lower probability of 0.02% (2 out of 10,000 simulations). Once fixed-income allocations reach 40% or more, the probability of drawdowns above 50% effectively falls to zero. These results highlight the role of diversification in reducing the likelihood of severe portfolio losses.

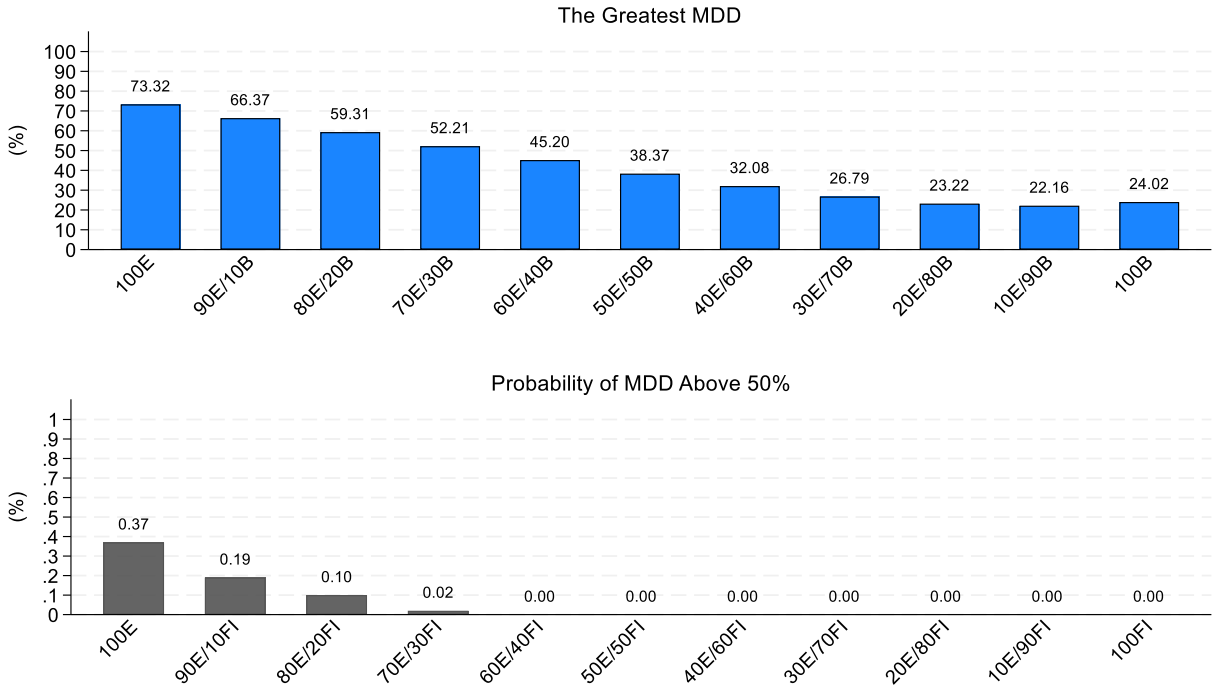

Figure 4: Maximum drawdown

CASH VS RISKY ASSETS: IS TAKING RISK WORTH IT WHEN CASH YIELDS ARE HIGH?

When cash yields approach 4.47%, taking risk can seem unnecessary. Why endure volatility when "safe" returns look attractive? The answer lies in what cash can't do: grow meaningfully over time.

Figure 5 shows the probability that portfolios underperform the expected cash rate over a 10-year horizon. The fully defensive portfolio (100FI) portfolio exhibits the highest risk of falling short of cash, with a failure probability of approximately 34%. In contrast, portfolios with equity exposure are less likely to lag cash. Even the 100E portfolio underperforms cash in about 23% of outcomes – but importantly, this risk remains lower than for bond-heavy portfolios. Balanced portfolios such as 50E/50FI, 40E/60FI, and 30E/70FI stand out, offering the lowest probabilities of underperforming cash.

Overall, growth assets, while volatile, offer a better chance of staying ahead of elevated cash rates.

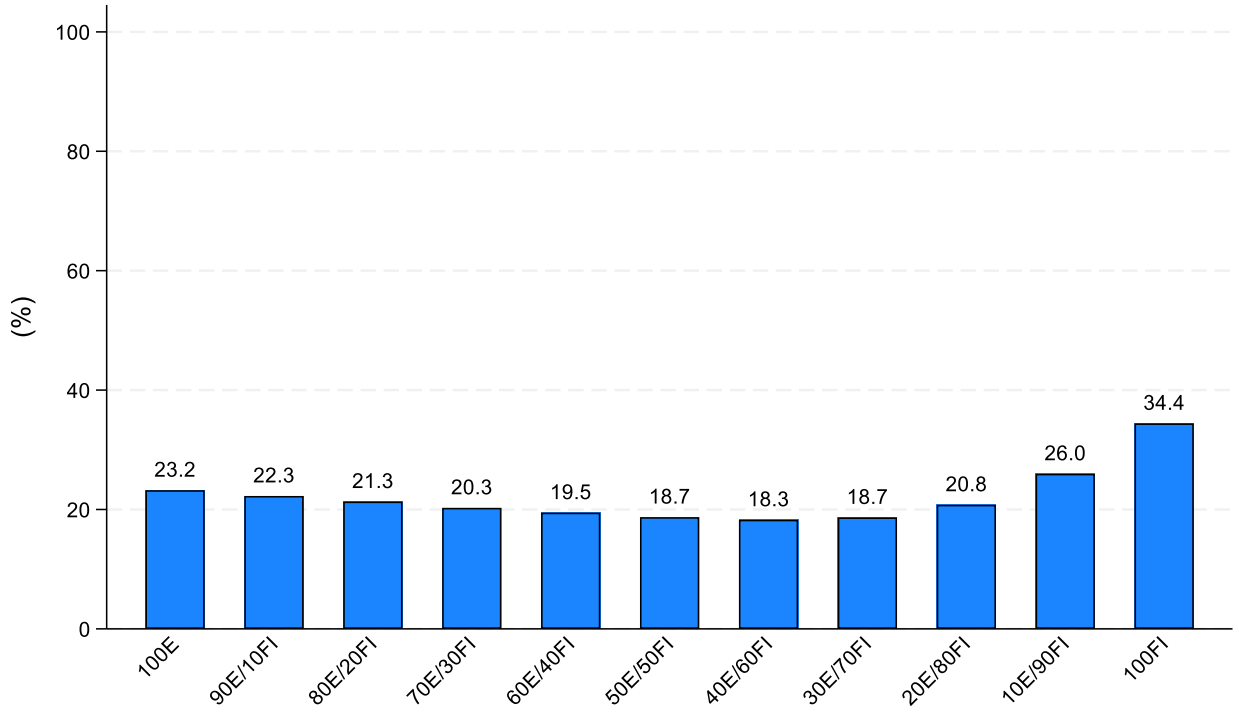

Figure 5: Probability of underperforming cash return

INFLATION RISK: CAN YOUR PORTFOLIO OUTPACE INFLATION?

Strong returns mean little if inflation erodes purchasing power. We assess the likelihood that portfolios' nominal returns exceed inflation over a 10-year horizon.

Figure 6 shows the likelihood of beating inflation (3.34%) across asset allocations. Equity-dominant portfolios offer strong growth potential, with around 85-87% probability of outpacing inflation, though they still carry a relatively higher chance of falling short compared to more diversified mixes. As portfolios become more balanced, the probability of exceeding inflation rises steadily to around 91-95%.

While the 50E/50FI and 40E/60FI portfolios offer the highest Sharpe ratios, allocations such as 30E/70FI and 20E/80FI provide the strongest inflation protection. Beyond this range, the probability begins to decline slightly, with the fully defensive portfolio (100FI) showing around a 91% likelihood of outpacing inflation over 10 years – still higher than the fully growth-oriented portfolio (100E).

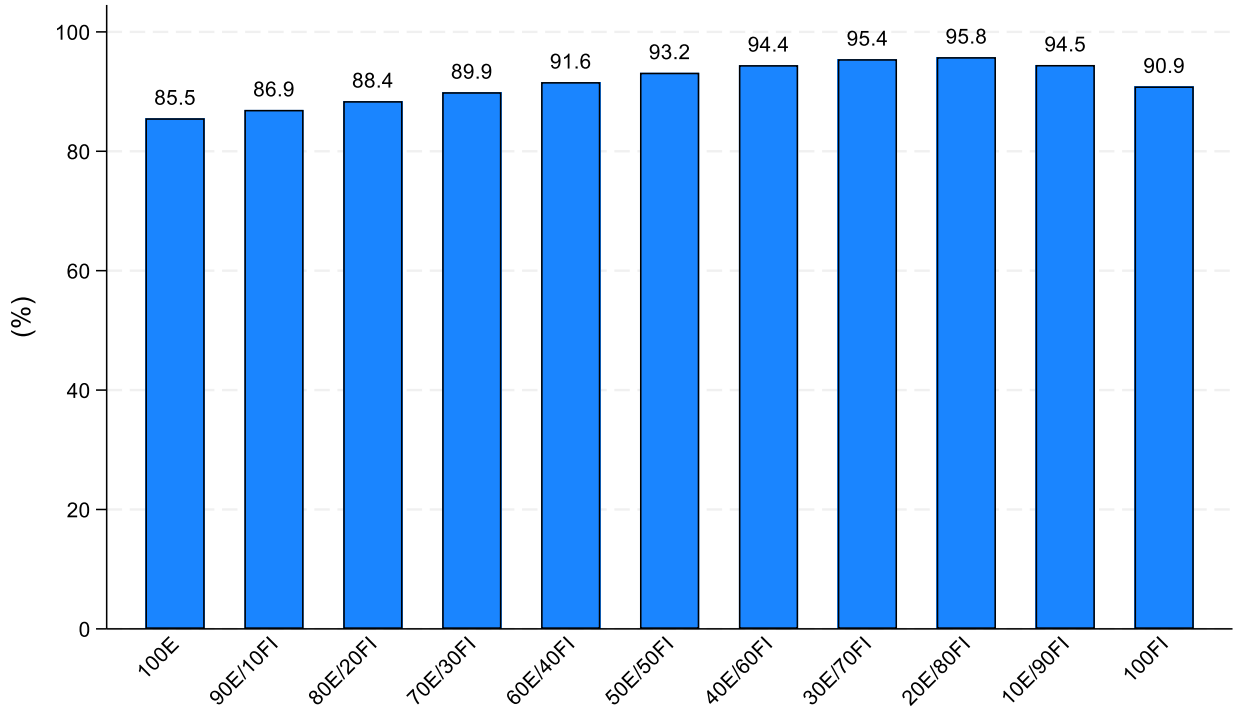

Figure 6: Probability of beating inflation (3.34%)

TARGET RETURNS: CAN PORTFOLIOS DELIVER REQUIRED OUTCOMES?

For many investors, the goal is not just to beat inflation growth, but to achieve a specific outcome – whether it is saving for retirement, meeting liabilities, or funding retirement. We examine the likelihood that different portfolios achieve annualised returns within the range of CPI+1%, CPI+2%, CPI+3% and CPI+4%.

Over a 10-year horizon, the probability of achieving target returns generally rises alongside equity exposure, though the optimal allocation depends heavily on the specific target. For a CPI+1% objective, portfolios within the 30-50% equity range exhibit the highest likelihood of success – exceeding 83% – as they strike a more effective balance between growth and stability than either the 100FI or 100E extremes.

However, as the targets increase to CPI+2%, CPI+3%, and CPI+4%, the strategic outlook shifts. In these higher-threshold scenarios, increased equity exposure becomes the primary driver of success. The 100E portfolio meets these targets in approximately 46-67% of outcomes, whereas balanced portfolios reach them far less frequently and bond-heavy allocations rarely achieve them at all.

The implication is clear: portfolios that maximise the likelihood of meeting a target are not those that maximise the chance of exceeding it. While balanced portfolios offer more consistent, target-aligned outcomes, equity-heavy portfolios provide greater upside at the cost of higher volatility.

Ultimately, the appropriate allocation depends on the objective – whether the priority is consistency in achieving a required return or the opportunity to outperform it.

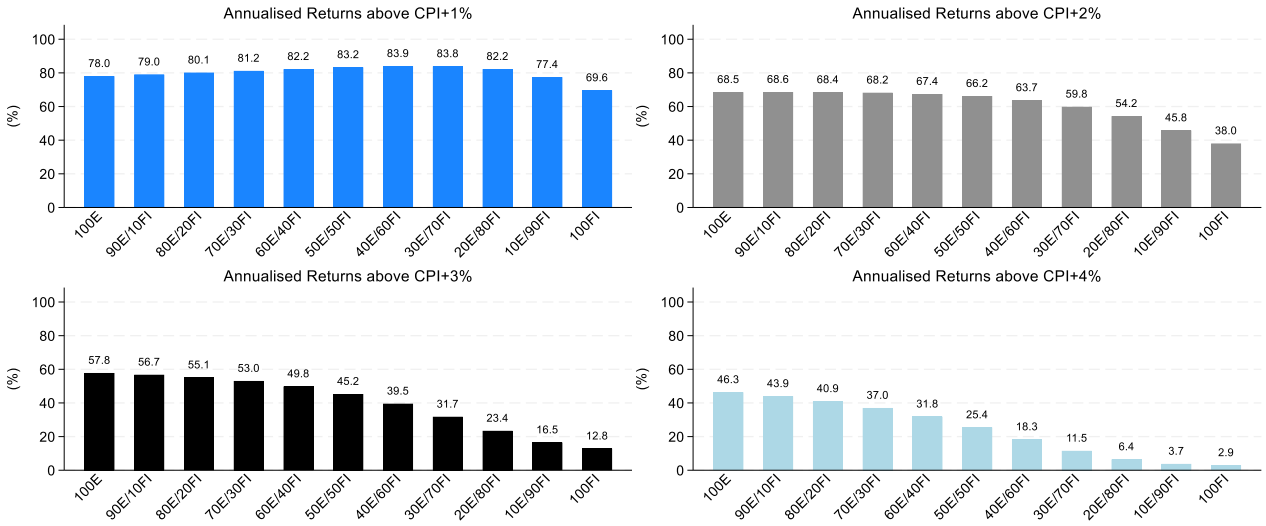

Figure 7: Probability of meeting target returns

COMPARATIVE PORTFOLIO PERFORMANCE ASSESSMENT

The preceding results highlight the trade-offs between return potential and downside risk across the different portfolio allocations. To synthesise these findings, we conduct a comparative assessment based on the key criteria discussed throughout the report: risk-adjusted performance, downside risk, maximum drawdown, inflation protection, cash outperformance, and target-return success.

The assessment framework is summarised below, where a ranking of 1 represents the best-performing portfolio under a given criterion, while a ranking of 11 represents the weakest performer.

Criterion	Metric used	Ranking rule
Risk-adjusted performance	Sharpe ratio	Higher is better
Downside risk	Probability of negative returns	Lower is better
Maximum drawdown	Greatest maximum drawdown	Lower is better
	Probability of maximum drawdown above 50%	Lower is better
Cash outperformance	Probability of underperforming cash	Lower is better
Inflation protection	Probability of beating inflation	Higher is better
Target-return success	Probability of meeting CPI+1%, CPI+2%, CPI+3%, and CPI+4% targets	Higher is better

Table 1: Assessment framework

Table 2 presents the comparative portfolio performance results. The overall ranking indicates that balanced portfolios achieve the most balanced outcomes. In particular, the 50E/50FI, 40E/60FI, and 30E/70FI portfolios rank most favourably because they combine relatively strong risk-adjusted performance, inflation protection, cash outperformance with reasonable downside exposure and probabilities of achieving return targets. By comparison, portfolios heavily concentrated in either equities or fixed income tend to perform less favourably overall.

Portfolio	Risk-adjusted performance	Downside risk	Greatest MMD	MMD above 50%	Cash outperformance	Inflation protection	CPI+1% target	CPI+2% target	CPI+3% target	CPI+4% target	Overall average score	Overall ranking
100E	8	11	11	11	9	11	9	2	1	1	7.4	10
90E/10FI	7	10	10	10	8	10	8	1	2	2	6.8	8
80E/20FI	6	9	9	9	7	9	7	3	3	3	6.5	7
70E/30FI	5	8	8	8	5	8	6	4	4	4	6	6
60E/40FI	3	7	7	4	4	6	4.5	5	5	5	5.05	4
50E/50FI	2	5.5	6	4	2.5	5	3	6	6	6	4.6	3
40E/60FI	1	5.5	5	4	1	4	1	7	7	7	4.25	1
30E/70FI	4	2.5	4	4	2.5	2	2	8	8	8	4.5	2
20E/80FI	9	2.5	2	4	6	1	4.5	9	9	9	5.6	5
10E/90FI	10	2.5	1	4	10	3	10	10	10	10	7.05	9
100FI	11	2.5	3	4	11	7	11	11	11	11	8.25	11

Table 2: Portfolio performance rank

CONCLUSION

An investment decision is not solely guided by expected returns but also by how the portfolio behaves over time and whether it achieves its intended objectives.

Diversification plays a crucial role in reducing downside risk, lowering the chance of underperforming cash, and improving inflation protection. In contrast, extreme allocations are less effective – the fully defensive portfolio struggles to deliver sufficient returns, while the fully equity portfolio offers less consistent outcomes.

Across all metrics – risk-adjusted returns, downside risk, maximum drawdown, performance over cash, inflation protection, and the ability to meet target returns – portfolios in the 30-50% equity range consistently emerge as the most effective. They offer a compelling combination of growth and stability, capturing much of the equity upside while mitigating downside risks.

Ultimately, there is no one-size-fits-all allocation. The appropriate portfolio depends on investor objectives – whether prioritising capital preservation, inflation protection, or return targets. However, the evidence suggests that maintaining a meaningful allocation to growth assets, combined with diversification, is critical for achieving robust long-term outcomes.

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APPENDIX A

A.1 Expected risk and returns by asset class (as of 31 March 2026)

All geometric returns are in AUD. Equity market returns are unhedged, while Fixed Income returns are hedged in AUD. The methodology integrates valuation, growth, inflation, and currency forecasts (see MCFS working papers for details).

Asset class	Nominal		Real		10Y expected inflation rate (%)
	Return (%)	Volatility (%)	Return (%)	Volatility (%)	
Australia Equity	8.72	13.61	5.38	13.65	
Global Equity	6.30	11.01	2.96	11.07	
AU Composite	5.38	3.40	2.04	3.55	
Global Aggregate	4.68	5.70	1.27	5.89	
Australia T-Bills	4.47	0.37	1.13	0.68	
Australia Inflation					3.34

A.2 Correlation matrix

Criterion	Australia Equity	Global Equity	AU Composite	Global Aggregate
Australia Equity	1	0.584	-0.052	0.211
Global Equity	0.584	1	0.057	-0.108
AU Composite	-0.052	0.057	1	0.422
Global Aggregate	0.211	-0.108	0.422	1

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