Dynamic Portfolio Optimization and Risk Analysis for Evolving Financial Goals

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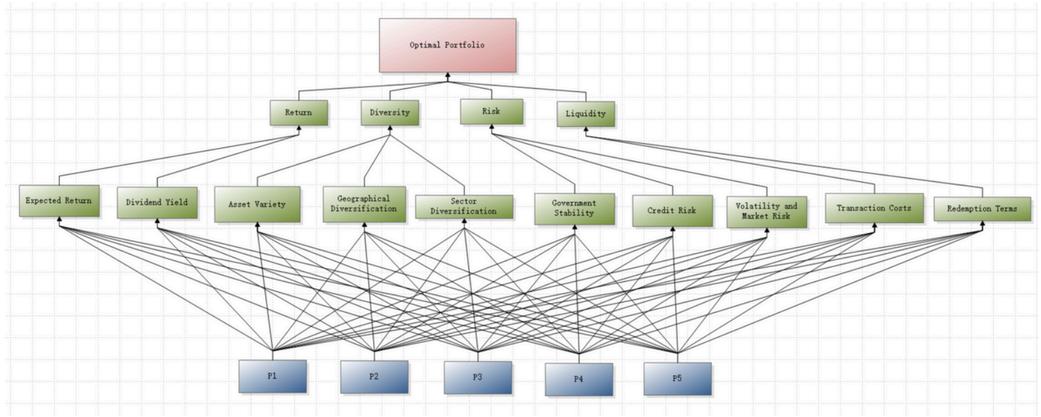
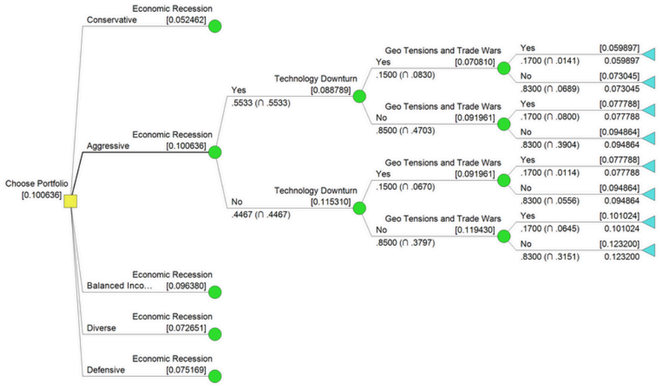
Problem Description

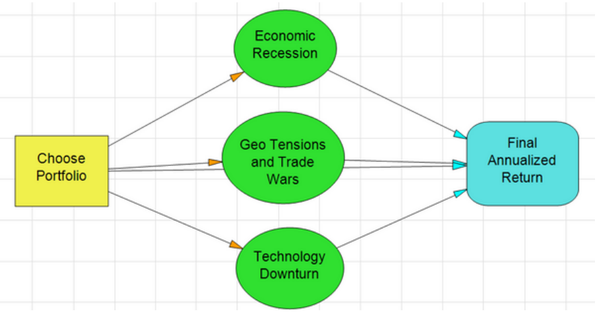
Jessica, a financial analyst in the early stages of her career, is preparing for retirement and seeks to optimize her investment portfolio for both short and long-term financial goals. Our task was to develop a portfolio strategy that balances risk and return, tailored to her evolving needs and preferences. This report presents five diversified portfolios and analyzes their performance under various economic and geopolitical scenarios to provide Jessica with a robust investment strategy.

AHP Model



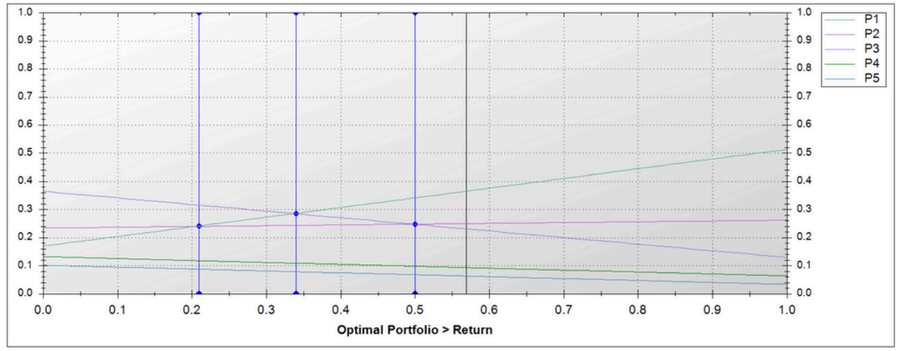
Decision Tree



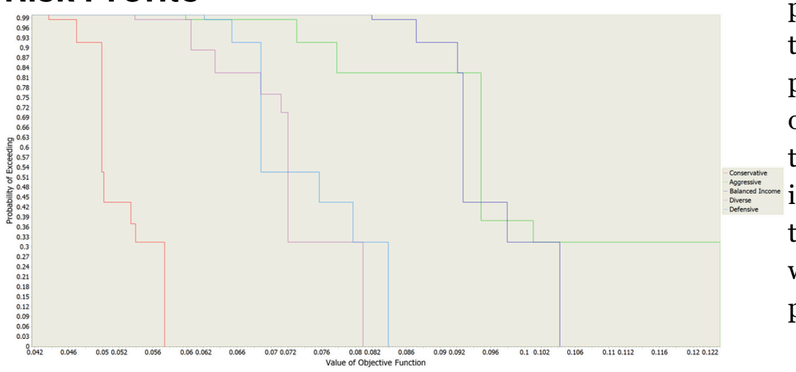


Based on the decision tree analysis, the optimal choice for Jessica, who is currently risk-seeking, is the Aggressive Growth portfolio. The expected annual return for this portfolio is 10.06%, aligning with her preference for high returns. The analysis also shows that the Aggressive Growth and Balanced Income portfolios have first-order dominance over the other options, offering higher returns for the level of risk taken. We recommend the Aggressive Growth portfolio initially, but as Jessica's risk tolerance decreases over time, transitioning to a Balanced Income portfolio would be prudent to manage return variability and preserve capital.

Sensitivity Analysis



Risk Profile



Conclusion

Jessica's investment strategy should prioritize a diversified portfolio aligned with her risk tolerance and investment horizon. Currently, the Aggressive Growth Portfolio is optimal given her risk appetite and growth goals. However, as Jessica's circumstances evolve, a shift towards a more conservative Defensive Strategy portfolio will likely be necessary to safeguard her assets and provide reliable income in retirement.