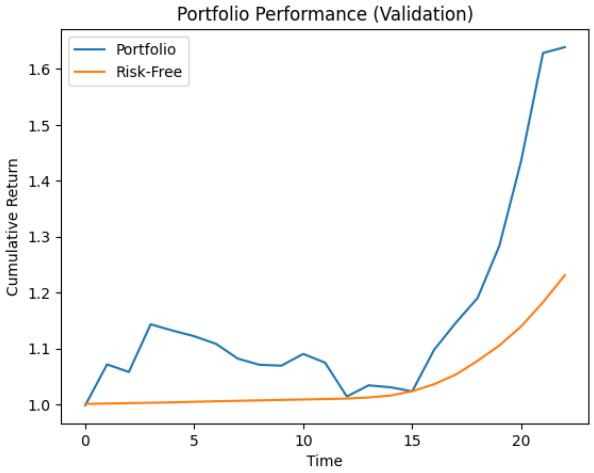

Fig. 4. Our estimate of the tangent portfolio outperforms a risk-free investment with Sharpe Ratio 0.33.

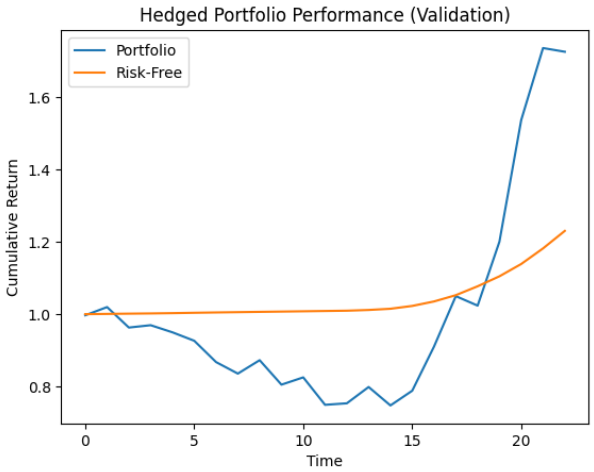

Fig. 5. Our estimate of the tangent portfolio hedged against sector indices has more drawdown and a lower Sharpe Ratio (0.22) than our unhedged portfolio.

weights λ. This curve shows a general trend with average Sharpe Ratio decreasing as λ increases, though portfolios calculated with low regularization have significantly wider ranges of Sharpe Ratios (comparing locally in λ). The lack of monotonicity in this curve is particularly interesting. This suggests that small changes in regularization cause significant changes in the factor weights, which have rather unpredictable effects on performance in our test period. This could be a result of failing to capture returns during outlier events in the test period, suggesting that our model might be overfit.

Although we can observe a general relationship between the strategy's Sharpe Ratio and the value of λ, the lack of monotonicity in the curve makes it very difficult to use these results to choose an optimal λ. For example, if we choose $\lambda = 45$, we find a Sharpe Ratio of approximately 0.32. Changing this λ by just 1 in either direction, however, results in a Sharpe Ratio decrease of more than .1 units.

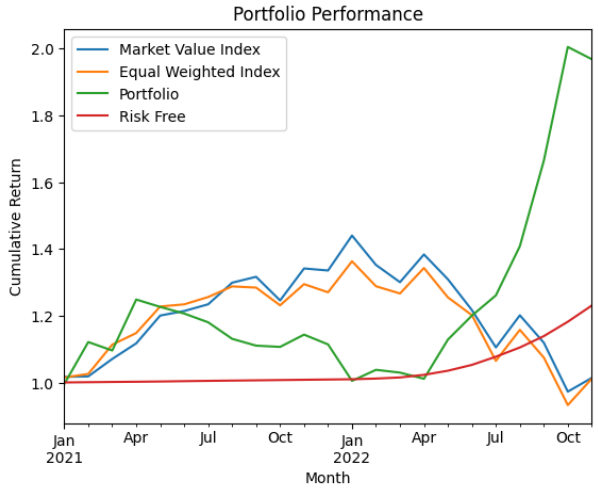

Fig. 6. Our estimate of the tangent portfolio outperforms the risk-free investment and sector indices over out test period.

VI. Conclusion

Using a linear model, we estimate the stochastic discount factor as a function of several macroeconomic and company fundamental variables. Taking advantage of the relationship between the SDF and the mean-variance efficient tangent portfolio, we define an implied investment strategy. To examine our estimation, we backtest this strategy, finding that it outperforms universe indices on a risk-adjusted basis.

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