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Portfolio selection

Selecting portfolios

- Individuals do not only invest into a single asset, but several assets at the same time, called a portfolio
- The assets will be interacting with each other and the total risk and return of a portfolio will depend on all assets chosen
- Portfolio selection addresses the optimal weights of assets in the portfolio
- The optimal portfolio will depend on the asset characteristics and the preferences for risks of individual investors

Decision criteria

- Individuals will choose a portfolio that maximizes their expected utility
- Expected utility is driven by the outcomes (expected return) and (co-)variances (risk)
- Preferences of individuals are difficult to assess and we can use the general property of risk aversion
- Using risk aversion we can exclude a wide range of portfolios

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Mean-Variance criterion

Establishing efficient frontiers

- We can reduce the possible choices to an efficient frontier that shows a positive relationship between risk and return
- The optimal choice on the efficient frontier will have to use the utility function
- The more risk averse the individual is, the less risk is taken

Application of decision-criterion

- We now apply the mean-variance criterion to portfolio selection using a graphical approach
- As far as possible, we will seek to base the selection of portfolios on asset properties and not preferences
- This allows us to obtain generic results that are applicable to all investors

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Optimal portfolios

Combining a risky portfolio and risk-free asset

- The optimal portfolio consists of combination of a risky portfolio and the risk-free asset
- Only the combination depends on preferences, not the composition of the optimal risky portfolio

? Will all individuals hold the same optimal risky portfolio?

! The optimal risky portfolio is dependent on the asset characteristics, if individuals disagree on these characteristics, they will have different optimal risky portfolios

Summary

- Portfolio selection consists of determining a preference-free optimal risky portfolio and then combining this with a risk-free asset
- Only this final combination depends on the risk aversion of the individual
- Diversification reduces risk and increases the utility of the portfolio

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