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Chapter 12

# Asset management

# Outline

# Delegated portfolio management

- Investment banks also manage funds on behalf of clients
- They do not only give advice on investments, but instead make investment decisions themselves
- Clients delegate the decision-making to the investment bank
- The reason for delegation is the superior information and skills investment banks have

# Value of asset management

- Asset management provides a stable source of income to investment banks
- Can be used to maintain personal contacts to key decision-makers in companies
- The market is fiercely competitive with private banks and investment consultancies seeking access to the same investors

# Investment banking fees

- Investment banks are rewarded by a management fee $f_0$ on the wealth invested
- They also charge a performance fee $f_1$ on the profits above a benchmark return $r$
- They invest a fraction $\omega$ in a risky asset and the remainder in an asset yielding the benchmark return
- Fee income: $F = f_0 W_0 + f_1 \omega (R - r) W_0$

- Problem and model assumptions
- Clients investing directly
- Delegated investment
- Clients with equal information
- Summary

# Investment returns and risks

- The information clients have, suggests the expected return of the risky asset is $\mu_C$ and its variance $\sigma_C^2$
- After investing, the wealth will be the return on the amount invested in the benchmark asset and the return on the risky asset
- $W_1 = (1-\omega)(1+r)W_0 + \omega(1+R)W_0$
- Expected value: $E[W_1] = (1+r)W_0 + \omega(\mu_C - r)W_0$
- Variance: $Var[W_1] = \omega^2\sigma_C^2 W_0^2$

# Optimal portfolio

- Clients maximize expected utility $U_C = E[W_1] - \frac{1}{2} z Var[W_1]$ and the first order condition $\frac{\partial U_C}{\partial \omega} = 0$ gives
- $\omega^* = \frac{\mu_C - r}{z \sigma_C^2 W_0}$
- Utility is then $U_C = (1 + r) W_0 + \frac{(\mu_C - r)^2}{2 z \sigma_C^2}$

# Maximizing fee income

- Investment banks have different information and assess the asset as having expected return $\mu_B$ and variance $\sigma_B < \sigma_C$
- Investment banks maximize fee income
- Expected fees: $E[F] = f_0 W_0 + f_1 \omega (\mu_B - r) W_0$
- Variance: $Var[F] = f_1^2 \omega^2 \sigma_B^2 W_0^2$

# Optimal delegated portfolio

- Investment banks maximize expected utility $U_B = E[F] - \frac{1}{2} z Var[F]$ and the first order condition $\frac{\partial U_B}{\partial \omega} = 0$ gives
- $\omega^{**} = \frac{\mu_B - r}{z f_1 \sigma_B^2 W_0}$
- Investment bank utility: $U_B = f_0 W_0 + \frac{(\mu_B - r)^2}{2 z \sigma_B^2}$
- Perfect competition sets management fee such that $U_B = 0$, hence $f_0 = -\frac{(\mu_B - r)^2}{2 z \sigma_B^2 W_0} < 0$
- Investment banks charge a negative management fee

# Optimal performance fee

- Client wealth: $W_1 = (1+r)\,W_0 + \omega^{**}\,(R-r)\,W_0 - F$
- Client utility: $\hat{U}_C = (1+r)\,W_0 + 2\frac{(\mu_B - r)^2}{2z\sigma_B^2} - \frac{(\mu_B - r)^2}{2z\sigma_B^2}\left(\frac{1-2f_1}{f_1}\right)^2$
- Investment banks extract all surplus from clients and set the performance fee such that $\hat{U}_C = U_C$
- $f_1 = \frac{1}{2+\sqrt{2-\frac{\sigma_B^2}{\sigma_C^2}\left(\frac{\mu_C - r}{\mu_B - r}\right)^2}} < \frac{1}{2}$

# Optimal portfolio

- To compare the optimal portfolios, assume that $\mu_B = \mu_C$ and $\sigma_B^2 = \sigma_C^2$, clients and investment banks have the same information
- Client utility:
  $\hat{U}_C = (1 + r - f_0) W_0 + (1 - f_1) \omega (\mu_B - r) W_0 - \frac{1}{2} (1 - f_1)^2 \omega^2 \sigma_B^2 W_0^2$
- First order condition for the optimal portfolio is then $\frac{\partial \hat{U}_C}{\partial \omega} = 0$
- $\omega^{***} = \frac{\mu_B - r}{z(1-f_1)\sigma_B^2 W_0}$

# Excess risks taken

- As $f_1 = \frac{1}{3}$, we have $\omega^{**} = 2\omega^{***}$
- Investment banks invest a too high fraction into the risky asset
- The reliance on the performance fee drives this result
- As only the fee is exposed to risk, not their investment, investment banks seek higher risks

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# Distorted asset allocation

- Investment decisions being delegated to investment banks lead to more risky portfolios than is optimal
- This may seem even more risky to clients if they assess the risk based on their own information
- The informational advantage of investment banks may, however, increase the utility of clients, despite the distorted allocation into risky assets

# Consequences of biased asset allocation

- Larger exposure of clients to more risky assets makes the portfolio performance more sensitive to the assessment of the investment bank
- This makes the skills of the investment bank more apparent
- Investment banks have to invest more into these skills to remain competitive

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