



Universidad del Desarrollo
Universidad de Excelencia

Finance I

Fall 2012

Session 6:

Portfolio Risk and Return



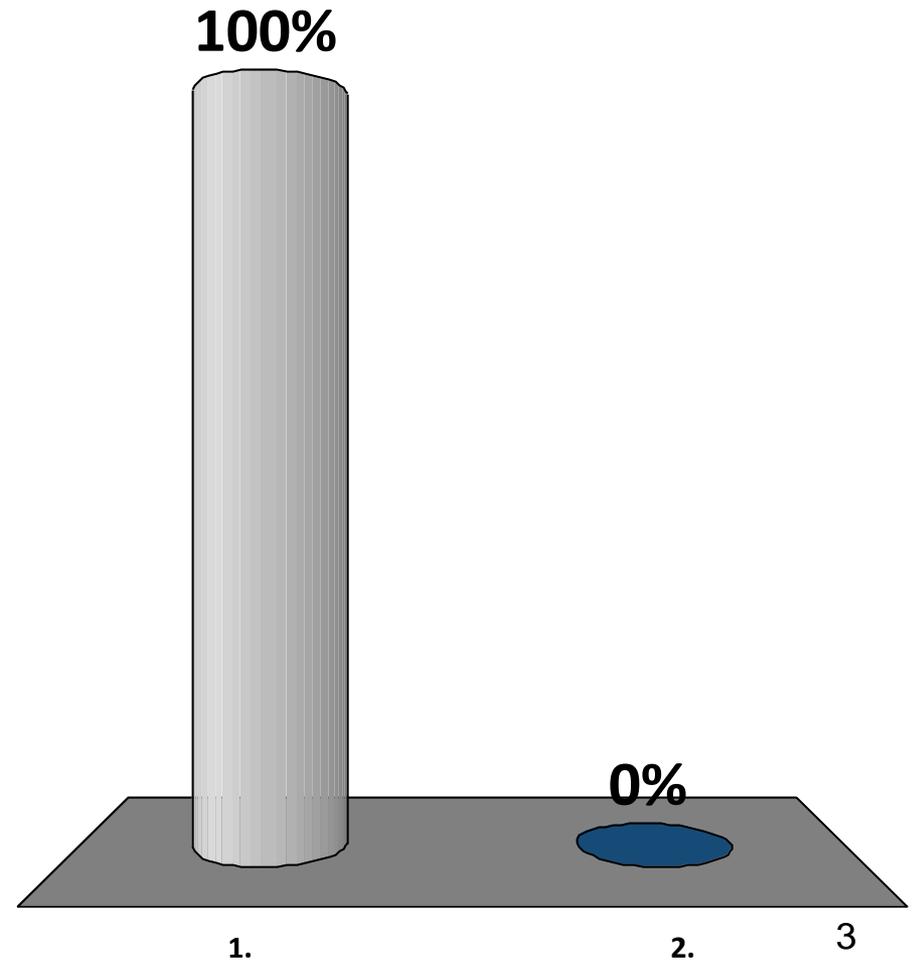
1. Recap

2. Portfolio Risk and Return

3. Closing

Are you paying attention?

- ✓ 1. Yes
- 2. No



- ▶ **Diversification reduces diversifiable risk (specific risk)**
- ▶ **Diversification doesn't reduce non diversifiable risk (market risk)**
- ▶ **Diversification doesn't impact the expected profitability**
- ▶ **Only non diversifiable risk should be considered when determining the opportunity cost**
- ▶ **The opportunity cost is usually determined by comparing the non diversifiable risk of an asset to the market risk**

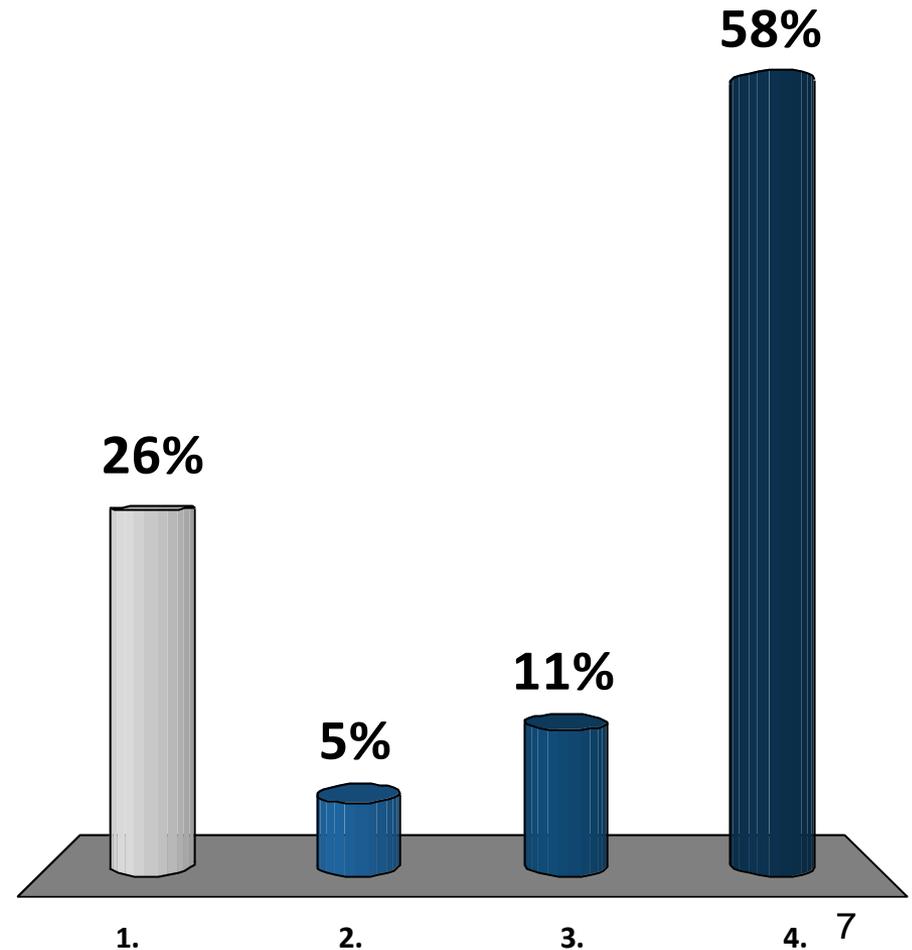
1. Recap

2. Risk, Portfolio Risk and Opportunity Cost

3. Closing

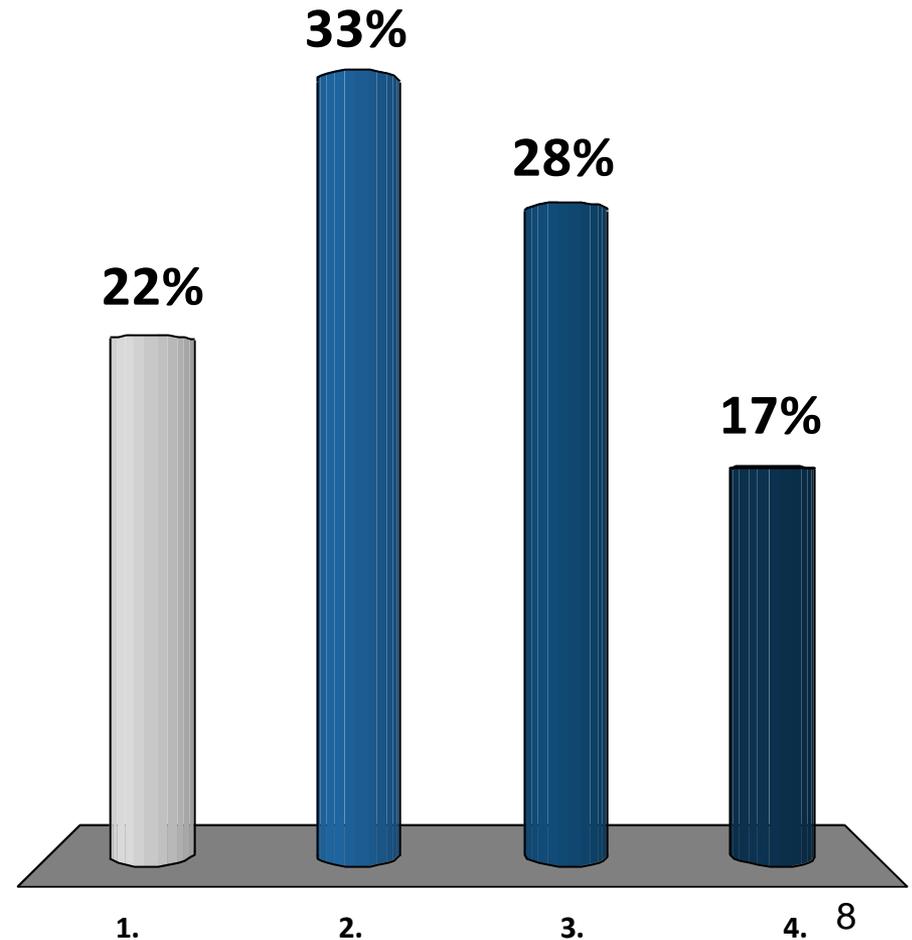
The risk of a portfolio is determined by:

1. Its assets' variance
2. Its assets' weight
3. Its assets' covariance
- ✓ 4. All of the above



The risk of a portfolio with many assets is mostly determined by:

1. Its assets' variance
2. Its assets' weight
- ✓ 3. Its assets' covariance
4. All of the above

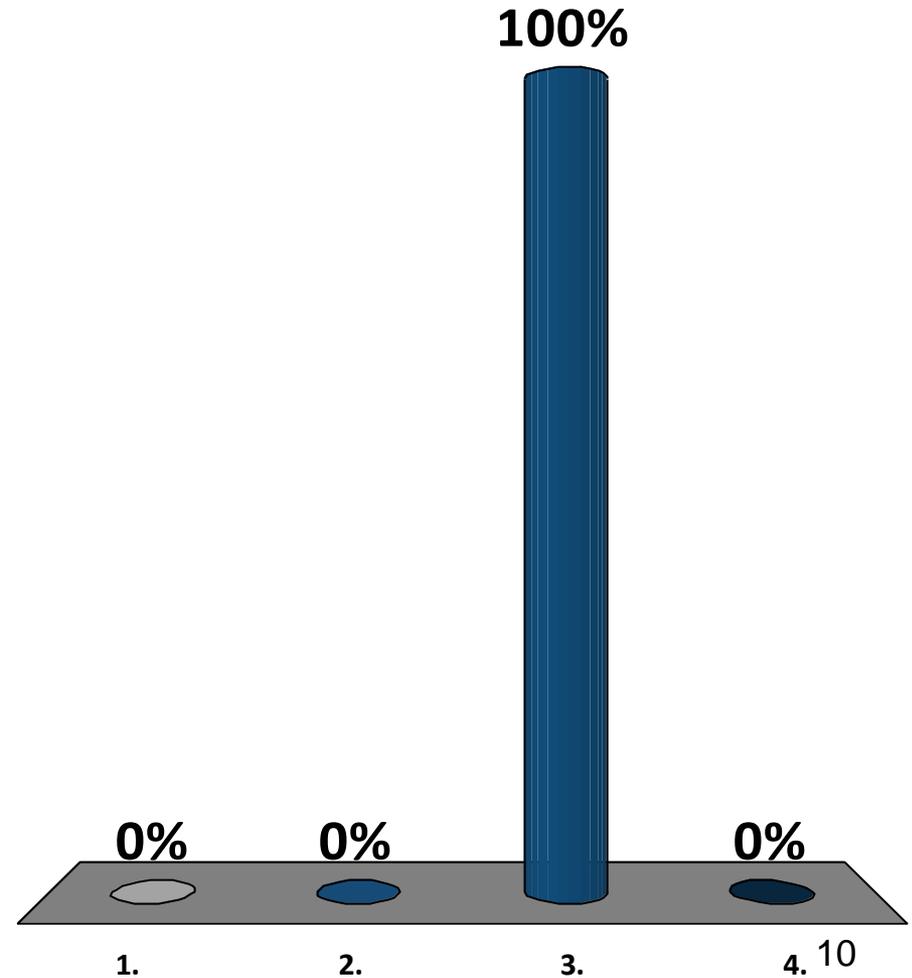


2. Portfolio Risk and Return

- ▶ **With each assets' standard deviation, correlation coefficient and expected return, we can graph the expected return and risk of any portfolio holding those assets**
 - The expected return of the portfolio is the weighted average of the assets expected return
 - The risk (standard deviation= σ) is the weighted average of the assets risk ONLY if $\rho= 1$

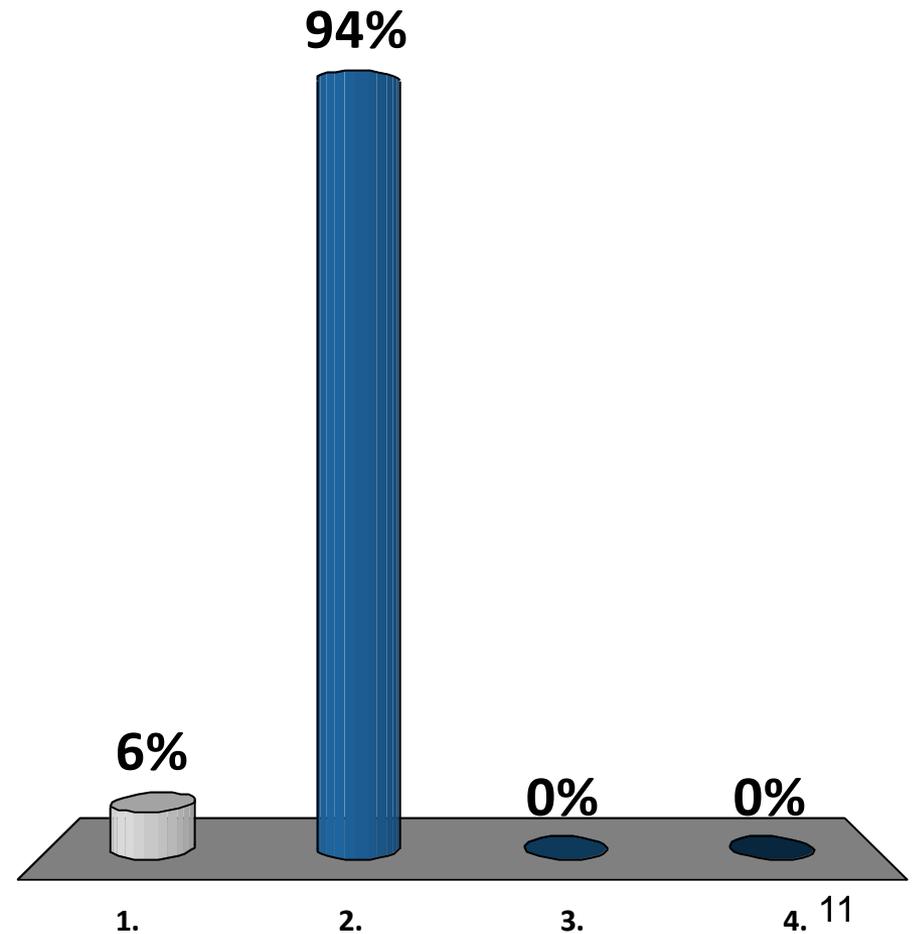
The std. dev. of the portfolio, assuming $\rho = 0$ is closest to

1. 0%
2. 10%
- ✓ 3. 15%
4. 25%



The std. dev. of the portfolio, assuming $\rho = -1$ is closest to

- 1. 0%
- ✓ 2. 3%
- 3. 11%
- 4. 16%



2. Portfolio Risk and Return

- ▶ **With each assets' standard deviation, correlation coefficient and expected return, we can graph the expected return and risk of any portfolio holding those assets**
 - The expected return of the portfolio is the weighted average of the assets expected return
 - The risk (standard deviation= σ) is the weighted average of the assets risk ONLY if $\rho= 1$
 - As ρ decreases, the portfolio curve moves farther to the left of the lineal combination of assets (as when $\rho= 1$)
 - There exists 1 point of minimum risk
 - If $\rho= -1$ (negative one), there is a portfolio with zero risk
 - The frontier of efficient portfolios or Markowitz's frontier shows the different combinations of assets with maximum expected return for a given risk level (to the right of the minimum risk portfolio)

2. Portfolio Risk and Return

▶ What if we have more than 2 assets?

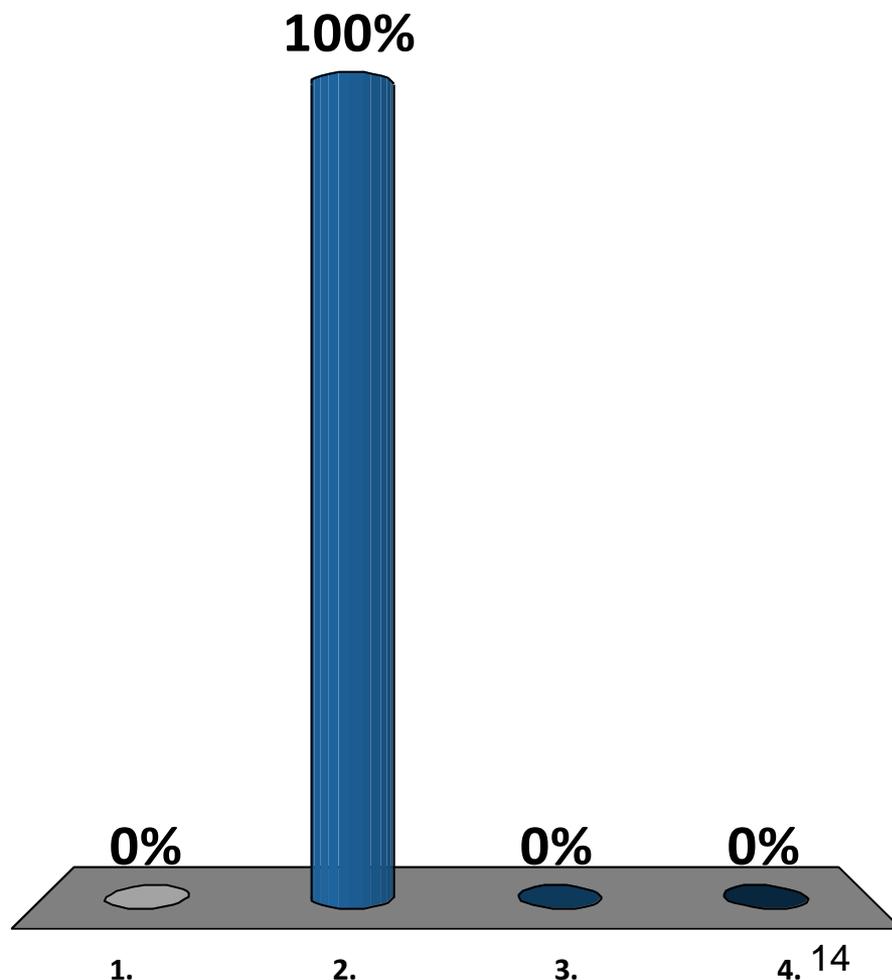
- We change the axis of the graph

▶ How do we choose between portfolios?

- Depending on each person indifference curves (influenced by risk aversion)

If the risk aversion of a person increases, the person should choose

1. A portfolio with higher risk
- ✓ 2. A portfolio with higher return
3. Safer assets
4. A portfolio with lower risk and return



► What if we can invest in a risk free asset

- Portfolio expected return?
- Portfolio variance?

► The combination of the risk free asset and the efficient frontier of portfolios generates a new set of possible investments

- Are these new investment possibilities more efficient than the Markowitz's efficient frontier?
- Yes, it's more efficient. This line is called Capital Market Line
- It represents the optimal (most efficient combinations) of a risk free asset and the market portfolio
- Every one, regardless of risk aversion should have a portfolio combining the risk free asset and the market portfolio. NO OTHER PORTFOLIO may have a higher return/risk ratio (Sharpe ratio)
- This is the "separation" mentioned in the book. The decision of the market portfolio is separated from the decisions made considering risk aversion

1. Recap

2. Portfolio Risk and Return

3. Closing

- ▶ **There is an efficient frontier on assets**
- ▶ **There is an efficient frontier on portfolios**
- ▶ **IS you can lend and borrow at a risk free rate, the Market Capital Line represents the optimal combination of the market portfolio and a risk free asset**
- ▶ **The market portfolio doesn't depend on the risk preferences of individuals, only the risk free rate and the Sharpe ratio**
- ▶ **All investors will choose the same risky portfolio, but they will combine it with the risk free asset in a different proportion**

- ▶ **Study chapter 9 BMA**
- ▶ **Tonight you will receive a link in your email**
- ▶ **You must answer BEFORE Wednesday 28th at 16:00**
- ▶ **Next class we'll have our second quiz**

