PFL Academy

Teacher Guide: Chapter 64 — Risk and Return in Investing

OVERVIEW

TIME	MATERIALS	PREREQUISITES
45-50 Minutes	Student Activity Packet	L-47: Introduction to Investment Types

LESSON FLOW

5 min — **THE CHALLENGE**

- Read Marcus's biotech story. Emphasize: 74% loss from concentration, not market decline.
- Discussion: "What's the difference between investing and gambling?"
- Key insight: Single-stock risk can wipe out years of savings in one day.

10 min — **CORE CONCEPTS**

- Distinguish systematic (market) vs. unsystematic (company) risk clearly.
- Explain standard deviation with real example: 10% ± 18% = range of -8% to +28%.
- Quick check: "Which risk type can diversification eliminate?"

25-30 min — **APPLY IT**

- **Part A (10 min):** Match investors to investments based on time horizon and risk tolerance.
- **Part B (10 min):** Standard deviation calculations. Walk through first one together.
- **Part C (10 min):** Long-term wealth calculation. This motivates accepting appropriate risk.

10 min — **CHECK YOUR UNDERSTANDING**

- Sharpe ratio calculation (Q3) is challenging but important for comparing investments.
- Q5 reflection on actual vs. theoretical risk tolerance is crucial for self-awareness.

DIFFERENTIATION

Support

- Focus on systematic vs. unsystematic distinction before metrics.
- Provide Sharpe ratio formula with worked example.
- Skip standard deviation calculation; focus on interpretation.

Extension

- Calculate expected portfolio risk with multiple assets.
- Research actual betas of familiar companies (Apple, Tesla, Walmart).
- Analyze historical returns through different market cycles.

ANSWER KEY

Part A: Risk-Return Analysis

Scenario 1 (Emma): Stock Index Fund or Small-Cap Stocks. With 40 years, she can weather volatility. The higher long-term returns will compound significantly.

Scenario 2 (Robert): Bond Fund (or mix of Bonds/Savings). Cannot afford 30% loss right before retirement. Stability more important than growth at this stage.

Part B: Understanding Standard Deviation

3. 10% - 18% = **-8%** to 10% + 18% = **+28%**. In ~68% of years, returns fall between -8% and +28%.

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4. Small-Cap: 12% avg ± 25% std dev
$10,000 × (1 - 0.13) = $8,700 (low end: 12% - 25% = -13%)
$10,000 × (1 + 0.37) = $13,700 (high end: 12% + 25% = 37%)
Range: $8,700 to $13,700
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Part C: The Power of Time

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5. $300/month for 40 years:
At 2%: ~$220,000
At 10%: ~$1,580,000
Difference: ~$1,360,000

This massive difference illustrates why young investors should accept volatility for higher long-term
returns.
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Check Your Understanding

1. B (Systematic risk)

2. Marcus exposed himself to massive unsystematic risk (company-specific). A drug trial failure is unsystematic—it only affects that company. With a diversified portfolio, one company's failure barely registers. Marcus could have eliminated this risk through diversification but chose concentration instead.

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3. Fund A: (14% - 2%) / 28% = 0.43
Fund B: (10% - 2%) / 15% = 0.53
Fund B has better risk-adjusted returns (higher Sharpe ratio)
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4. Jasmine chose Fund B because: (1) Better Sharpe means more return per unit of risk. (2) Fund A's volatility might cause panic-selling during downturns. (3) A conservative fund you stick with beats an aggressive fund you abandon. (4) Extreme volatility makes staying invested psychologically harder.

COMMON MISCONCEPTIONS

Misconception	Clarification
"Higher risk always means higher returns."	Higher risk means higher POTENTIAL returns, not guaranteed. You can take high risk and still lose money. The relationship is about probability, not certainty.
"I can eliminate all risk through diversification."	Diversification only eliminates unsystematic (company-specific) risk. Systematic (market) risk affects all investments and cannot be diversified away.

"Young people should take maximum risk."	Time horizon allows more risk, but only up to what you can psychologically handle. If volatility causes you to panic-sell, you shouldn't take that risk.