# Risk vs Uncertainty

- Two fundamentally different concepts
- Often confused but require different strategies
- Understanding the difference is critical for financial decision-making

# What is Risk?

- **Measurable uncertainty** with known probabilities
- Can be quantified using historical data or models
- Examples:
  - Rolling dice (known probabilities: 1/6 for each outcome)
  - Insurance actuarial tables (historical claim rates)
  - Corporate bond defaults (historical default rates ~2-3% for investment grade)
  - Portfolio volatility (calculable from past returns)

# What is Uncertainty?

- **Unmeasurable** - probabilities are unknown or unknowable
- No historical precedent to model from
- "Unknown unknowns" - we don't know what we don't know
- Examples:
  - COVID-19 pandemic (unprecedented global event)
  - Technological disruption (impact of AI on economy)
  - Political regime changes
  - Black Swan events (Nassim Taleb)

# Key Distinction: Knight (1921)

- Frank Knight formalized this distinction in *Risk, Uncertainty and Profit*
- **Risk:** Randomness with knowable probabilities
  - Can be insured against
  - Can be hedged
  - Can be diversified away (partially)
- **Uncertainty:** Randomness with unknowable probabilities
  - Cannot be insured
  - Cannot be hedged traditionally
  - Requires robust strategies

# Keynes on Uncertainty (1936)

- John Maynard Keynes, *The General Theory*, Chapter 12:

*"About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know."*

- Key insight: Some situations have **no** probability distribution
- Traditional models assume everything is risk (measurable)
- This assumption fails during crises

# Why This Matters

- **Treating uncertainty as risk leads to false confidence**
  - Example: 2008 financial crisis
  - Risk models (VaR) assumed normal distributions
  - Failed to account for correlated defaults (uncertainty)
- **Different strategies required:**
  - Risk: Diversification, hedging, insurance
  - Uncertainty: Robustness, optionality, adaptive strategies
- Investors must recognize which they face

# Black Swan Events

- Nassim Taleb's concept (2007)
- Three characteristics:
  - 1. Outlier - lies outside normal expectations
  - 2. Extreme impact - massive consequences
  - 3. Retrospective predictability - seems obvious after the fact
- Examples:
  - September 11, 2001 attacks
  - 2008 financial crisis
  - Internet revolution
  - COVID-19 pandemic

# Summary

- **Risk** = measurable uncertainty (known probabilities)
  - Can model, hedge, insure
- **Uncertainty** = unmeasurable (unknown probabilities)
  - Cannot model - need robust strategies
- **Black Swans** = extreme uncertainty events
  - High impact, low probability, retrospectively predictable
- Understanding this distinction is fundamental to financial decision-making
- Key thinkers: Knight (1921), Keynes (1936), Taleb (2007)