# MEASURING PORTFOLIO EXPECTED RETURN

## WHAT WILL YOU LEARN?

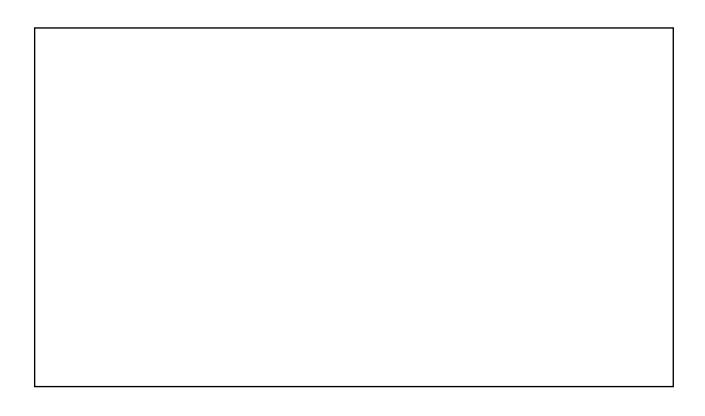
▶ What is the expected return on a portfolio?

#### **REVIEW: MEASURING EXPECTED RETURN**

- ► We use the central tendency or the average as a measure of the expected value.
- ► The expected return is a probability weighted average of the possible outcomes.

### **EXPECTED RETURNS**

State of the economy	Prob.	Toyota	Walmart	Pfizer
Expansion	0.10	6.0%	4.5%	2.5%
Normal	0.40	7.5	5.5	-0.5
Recession	0.30	2.0	4.0	1.0
Depression	0.20	-3.0	-1.0	13.0
Expected return E(R)				



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Expected return E(R)		3.60%	3.65%	2.95%

#### **PORTFOLIOS**

- ► A portfolio is a collection of different assets treated as a single asset.
- ► For example, let's consider a portfolio of just two securities from the table above. Say 50% Toyota and 50% Pfizer.
- ► Let's look at the return to this portfolio in each state of the world, and find the expected return of the portfolio.

# PORTFOLIO EXPECTED RETURN: ½ TOYOTA + ½ PFIZER

State of the economy	Prob.	Toyota	Pfizer	½ Toyota + ½ Pfizer
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## **PORTFOLIOS**

► What if we form a portfolio that consists of 50% Pfizer and 50% Walmart?

# PORTFOLIO EXPECTED RETURN: 1/2 WALMART + 1/2 PFIZER

State of the economy	Prob.	Walmart	Pfizer	1/2 Walmart + 1/2 Pfizer
Expansion	0.10	4.5%	2.5%	
Normal	0.40	5.5	-0.5	
Recession	0.30	4.0	1.0	
Depression	0.20	-1.0	13.0	
Expected return E(R)		3.65%	2.95%	

### PORTFOLIO EXPECTED RETURN

► Expected return to portfolio = weighted average of expected (mean) returns to each asset.

### PORTFOLIO EXPECTED RETURNS

	Walmart	Pfizer	½ Walmart + ½ Pfizer	
Expected return E(R)	3.65%	2.95%	3.30%	
	Toyota	Pfizer	½ Toyota + ½ Pfizer	
Expected return E(R)	3.60%	2.95%	3.275%	
	Toyota	Walmart	Pfizer	1/3 Toyota+ 1/3 Walmart + 1/3 Pfizer
Expected return E(R)	3.60%	3.65%	2.95%	3.40%

## **SUMMARY**

▶ Portfolio expected return is simply a weighted average of the expected returns of the individual assets.