

## 23.3 HOW TO ACCUMULATE PERSONAL WEALTH

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### LEARNING OBJECTIVES

By the end of this section, you will be able to:

- Explain the random walk theory
- Calculate simple and compound interest
- Evaluate how capital markets transform financial capital

**G**etting rich may seem straightforward enough. Figure out what companies are going to grow and earn high profits in the future, or figure out what companies are going to become popular for everyone else to buy. Those companies are the ones that will pay high dividends or whose stock price will climb in the future. Then, buy stock in those companies. Presto! Multiply your money!

Why is this path to riches not as easy as it sounds? This module first discusses the problems with picking stocks, and then discusses a more reliable but undeniably duller method of accumulating personal wealth.

### WHY IT IS HARD TO GET RICH QUICK: THE RANDOM WALK THEORY

The chief problem with attempting to buy **stock** in companies that will have higher prices in the future is that many other financial investors are trying to do the same thing. Thus, in attempting to get rich in the stock market, it is no help to identify a company that is going to earn high profits if many other investors have already reached the same conclusion, because the stock price will already be high, based on the expected high level of future profits.

The idea that stock prices are based on expectations about the future has a powerful and unexpected implication. If expectations determine stock price, then shifts in expectations will determine shifts in the stock price. Thus, what matters for predicting whether the stock price of a company will do well is not whether the company will actually earn profits in the future. Instead, you must find a company that is widely believed at present to have poor prospects, but that will actually turn out to be a shining star. Brigades of stock market analysts and individual investors are carrying out such research 24 hours a day.

The fundamental problem with predicting future stock winners is that, by definition, no one can predict the future news that alters expectations about profits. Because stock prices will shift in response to unpredictable future news, these prices will tend to follow what mathematicians call a “random

walk with a trend.” The “random walk” part means that, on any given day, stock prices are just as likely to rise as to fall. “With a trend” means that over time, the upward steps tend to be larger than the downward steps, so stocks do gradually climb.

If stocks follow a random walk, then not even financial professionals will be able to choose those that will beat the average consistently. While some investment advisers are better than average in any given year, and some even succeed for a number of years in a row, the majority of financial investors do not outguess the market. If we look back over time, it is typically true that half or two-thirds of the mutual funds that attempted to pick stocks which would rise more than the market average actually ended up doing worse than the market average. For the average investor who reads the business pages of the newspaper over a cup of coffee in the morning, the odds of doing better than full-time professionals is not very good at all. Trying to pick the stocks that will gain a great deal in the future is a risky and unlikely way to become rich.

### GETTING RICH THE SLOW, BORING WAY

Many U.S. citizens can accumulate a large amount of wealth during their lifetimes, if they make two key choices. The first is to complete additional education and training. In 2014, the U.S. Census Bureau reported median earnings for households where the main earner had only a high school degree of \$33,124; for those with a two-year associate degree, median earnings were \$40,560 and for those with a four-year bachelor’s degree, median income was \$54,340. Learning is not only good for you, but it pays off financially, too.

The second key choice is to start saving money early in life, and to give the power of compound interest a chance. Imagine that at age 25, you save \$3,000 and place that money into an account that you do not touch. In the long run, it is not unreasonable to assume a 7% real annual rate of return (that is, 7% above the rate of inflation) on money invested in a well-diversified stock portfolio. After 40 years, using the formula for compound interest, the original \$3,000 investment will have multiplied nearly fifteen fold:

$$3,000(1 + .07)^{40} = \$44,923$$

Having \$45,000 does not make you a millionaire. Notice, however, that this tidy sum is the result of saving \$3,000 exactly once. Saving that amount every year for several decades—or saving more as income rises—will multiply the total considerably. This type of wealth will not rival the riches of Microsoft CEO Bill Gates, but remember that only half of Americans have any money in mutual funds at all. Accumulating hundreds of thousands of dollars by retirement is a perfectly achievable goal for a well-educated person who starts saving early in life—and that amount of accumulated wealth will put you at or near the top 10% of all American households. The following Work It Out feature shows the difference between simple and compound interest, and the power of compound interest.

#### SIMPLE AND COMPOUND INTEREST

**Simple interest** is an interest rate calculation only on the principal amount.

Step 1. Learn the formula for simple interest:

$$\text{Principal} \times \text{Rate} \times \text{Time} = \text{Interest}$$

Step 2. Practice using the simple interest formula.

Example 1: \$100 Deposit at a simple interest rate of 5% held for one year is:

$$\$100 \times 0.05 \times 1 = \$5$$

Simple interest in this example is \$5.

Example 2: \$100 Deposit at a simple interest rate of 5% held for three years is:

$$\$100 \times 0.05 \times 3 = \$15$$

Simple interest in this example is \$15.

Step 3. Calculate the total future amount using this formula:

$$\text{Total future amount} = \text{principal} + \text{interest}$$

Step 4. Put the two simple interest formulas together.

$$\text{Total future amount (with simple interest)} = \text{Principal} + (\text{Principal} \times \text{Rate} \times \text{Time})$$

Step 5. Apply the simple interest formula to our three year example.

$$\text{Total future amount (with simple interest)} = \$100 + (\$100 \times 0.05 \times 3) = \$115$$

**Compound interest** is an interest rate calculation on the principal plus the accumulated interest.

Step 6. To find the compound interest, we determine the difference between the future value and the present value of the principal. This is accomplished as follows:

$$\text{Future Value} = \text{Principal} \times (1 + \text{interest rate})^{\text{time}}$$

$$\text{Compound interest} = \text{Future Value} - \text{Present Value}$$

Step 7. Apply this formula to our three-year scenario. Follow the calculations in Table 4.

<b>Year 1</b>	
Amount in Bank	\$100
Bank Interest Rate	5%
Total	\$105
	$\$100 + (\$100 \times 0.05)$
<b>Year 2</b>	
Amount in Bank	\$105
Bank Interest Rate	5%
Total	\$110.25
	$\$105 + (\$105 \times .05)$
<b>Year 3</b>	
Amount in Bank	\$110.25
Bank Interest Rate	5%
Total	\$115.75
	$\$110.25 + (\$110.25 \times .05)$
Compound interest	$\$115.75 - \$100 = \$15.75$

**Table 4.**

Step 8. Note that, after three years, the total is \$115.75. Therefore the total compound interest is \$15.75. This is \$0.75 more than was obtained with simple interest. While this may not seem like much, keep in mind that we were only working with \$100 and over a relatively short time period. Compound interest can make a huge difference with larger sums of money and over longer periods of time.

Getting additional education and saving money early in life obviously will not make you rich

overnight. Additional education typically means putting off earning income and living as a student for more years. Saving money often requires choices like driving an older or less expensive car, living in a smaller apartment or buying a smaller house, and making other day-to-day sacrifices. For most people, the tradeoffs for achieving substantial personal wealth will require effort, patience, and sacrifice.

### HOW CAPITAL MARKETS TRANSFORM FINANCIAL FLOWS

Financial capital markets have the power to repackage money as it moves from those who supply financial capital to those who demand it. Banks accept checking account deposits and turn them into long-term loans to companies. Individual firms sell shares of stock and issue bonds to raise capital. Firms make and sell an astonishing array of goods and services, but an investor can receive a return on the company's decisions by buying stock in that company. Stocks and bonds are sold and resold by financial investors to one another. Venture capitalists and angel investors search for promising small companies. Mutual funds combine the stocks and bonds—and thus, indirectly, the products and investments—of many different companies.

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In this chapter, we discussed the basic mechanisms of financial markets. (A more advanced course in economics or finance will consider more sophisticated tools.) The fundamentals of those financial capital markets remain the same: Firms are trying to raise financial capital and households are looking for a desirable combination of rate of return, risk, and liquidity. Financial markets are society's mechanisms for bringing together these forces of demand and supply.

#### THE HOUSING BUBBLE AND THE FINANCIAL CRISIS OF 2007

The housing boom and bust in the United States, and the resulting multi-trillion-dollar decline in home equity, started with the fall of home prices starting in 2007. As home values fell, many home prices fell below the amount owed on the mortgage and owners stopped paying and defaulted on their loan. Banks found that their assets (loans) became worthless. Many financial institutions around the world had invested in mortgage-backed securities, or had purchased insurance on mortgage-backed securities. When housing prices collapsed, the value of those financial assets collapsed as well. The asset side of the banks' balance sheets dropped, causing bank failures and bank runs. Around the globe, financial institutions were bankrupted or nearly so. The result was a large decrease in lending and borrowing, referred to as a freezing up of available credit. When credit dries up, the economy is on its knees. The crisis was not limited to the United States. Iceland, Ireland, the United Kingdom, Spain, Portugal, and Greece all had similar housing boom and bust cycles, and similar credit freezes.

If businesses cannot access financial capital, they cannot make physical capital investments. Those investments ultimately

lead to job creation. So when credit dried up, businesses invested less, and they ultimately laid off millions of workers. This caused incomes to drop, which caused demand to drop. In turn businesses sold less, so they laid off more workers. Compounding these events, as economic conditions worsened, financial institutions were even less likely to make loans.

To make matters even worse, as businesses sold less, their expected future profit decreased, and this led to a drop in stock prices. Combining all these effects led to major decreases in incomes, demand, consumption, and employment, and to the Great Recession, which in the United States officially lasted from December 2007 to June 2009. During this time, the unemployment rate rose from 5% to a peak of 10.1%. Four years after the recession officially ended, unemployment was still stubbornly high, at 7.6%, and 11.8 million people were still unemployed.

As the world's leading consumer, if the United States goes into recession, it usually drags other countries down with it. The Great Recession was no exception. With few exceptions, U.S. trading partners also entered into recessions of their own, of varying lengths, or suffered slower economic growth. Like the United States, many European countries also gave direct financial assistance, so-called bailouts, to the institutions that make up their financial markets. There was good reason to do this. Financial markets bridge the gap between demanders and suppliers of financial capital. These institutions and markets need to function in order for an economy to invest in new financial capital.

However, much of this bailout money was borrowed, and this borrowed money contributed to another crisis in Europe. Because of the impact on their budgets of the financial crisis and the resulting bailouts, many countries found themselves with unsustainably high deficits. They chose to undertake austerity measures, large decreases in government spending and large tax increases, in order to reduce their deficits. Greece, Ireland, Spain, and Portugal have all had to undertake relatively severe austerity measures. The ramifications of this crisis have spread; the viability of the euro has even been called into question.

## KEY CONCEPTS AND SUMMARY

It is extremely difficult, even for financial professionals, to predict changes in future expectations and thus to choose the stocks whose price is going to rise in the future. Most Americans can accumulate considerable financial wealth if they follow two rules: complete significant additional education and training after graduating from high school and start saving money early in life.

### SELF-CHECK QUESTIONS

1. What is the total amount of interest collected from a \$5,000 loan after three years with a simple interest rate of 6%?
2. If you receive \$500 in simple interest on a loan that you made for \$10,000 for 5 years, what was the interest rate you charged?
3. You open a 5-year CD for \$1,000 that pays 2% interest, compounded annually. What is the value of that CD at the end of the 5 years?

### REVIEW QUESTIONS

1. What are the two key choices U.S. citizens need to make that determines their relative wealth?
2. Is investing in housing always a very safe investment?

## CRITICAL THINKING QUESTIONS

1. Explain what happens in an economy when the financial markets limit access to capital. How does this affect economic growth and employment?
2. You and your friend have opened an account on E-Trade and have each decided to select five similar companies in which to invest. You are diligent in monitoring your selections, tracking prices, current events, and actions taken by the company. Your friend chooses his companies randomly, pays no attention to the financial news, and spends his leisure time focused on everything besides his investments. Explain what might be the performance for each of your portfolios at the end of the year.
3. How do bank failures cause the economy to go into recession?

## PROBLEMS

1. How much money do you have to put into a bank account that pays 10% interest compounded annually to have \$10,000 in ten years?
2. Many retirement funds charge an administrative fee each year equal to 0.25% on managed assets. Suppose that Alexx and Spenser each invest \$5,000 in the same stock this year. Alexx invests directly and earns 5% a year. Spenser uses a retirement fund and earns 4.75%. After 30 years, how much more will Alexx have than Spenser?

## REFERENCES

U.S. Department of Commerce: United States Census Bureau. "Income: Table H-13. Educational Attainment of Householder—Households with Householder 25 Years Old and Over by Median and Mean Income." <http://www.census.gov/hhes/www/income/data/historical/household/>.

United States Department of Labor. Bureau of Labor Statistics. 2015. "Table 9. Quartiles and Selected Deciles of Usual Weekly Earnings of Full-Time Wage and Salary Workers by Selected Characteristics, 2014 Annual Averages." Accessed April 1, 2015. <http://www.bls.gov/news.release/wkyeng.t09.htm>.

## GLOSSARY

**compound interest** an interest rate calculation on the principal plus the accumulated interest  
**simple interest** an interest rate calculation only on the principal amount

## SOLUTIONS

## Answers to Self-Check Questions

$$\begin{aligned}1. \text{ } & \text{Principal} + (\text{principal} \times \text{rate} \times \text{time}) \\& \$5,000 + (\$5,000 \times 0.06 \times 3) = \$5,900\end{aligned}$$

$$2. \text{ Principal} + (\text{principal} \times \text{rate} \times \text{time})$$

$$\text{Interest} = \text{Principal} \times \text{rate} \times \text{time}$$

$$\$500 = \$10,000 \times \text{rate} \times 5 \text{ years}$$

$$\$500 = \$50,000 \times \text{rate}$$

$$\$500/\$50,000 = \text{rate}$$

$$\text{Rate} = 1\%$$

$$\text{Principal}(1 + \text{interest rate})^{\text{time}} = \$1,000(1 + 0.02)^5$$

$$3. \quad \quad \quad = \$1,104.08$$