Entrepreneurial Finance

SIXTH EDITION

Philip J. Adelman | Alan M. Marks

EDITION 6

Entrepreneurial Finance

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To my wife, Hannah B. Adelman,
for her support and continued belief in my abilities;
and to my children, Eddie, Danny, and Tova; my daughters-in-law,
Connie and Cherie; my son-in-law, Jason Gilbert; and my wonderful grandchildren,
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Alan M. Marks

To DeVry University, who gave us the
opportunity to use our creative talents to teach.

In memory of Philip Pomerantz whose story gave us
the inspiration to pursue small business case studies.

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Preface

New to the Sixth Edition

In this edition, we include short case studies of small businesses at the end of each chapter. We have also added some additional case studies at the end of the textbook. Chapter 2 has updated material on the Small Business Administration (SBA), with a discussion of new programs including loans and grants that have been developed to assist veterans and severely disabled veterans. We also added updated sources of financing, the requirements for obtaining federal contracts, and the need for businesses to develop succession plans. Chapter 4 has updated financial ratios that include averaging information from two balance sheets when data for the ratio is taken from both the income statement and balance sheet (statement of financial position). Chapter 8 introduces fixed interest loans to include both fixed principal commercial loans and bridge loans. New to this edition are examples of Time Value of Money problems using both Microsoft Excel and the TI (Texas Instruments) BA II Plus calculator. We include step-by-step diagrams for the solution to TVM problems. Chapter 9 includes a discussion of adjustable rate mortgages (ARMs) and illustrates the problem with an upside-down mortgage when real estate values decline. We also include step-by-step diagrams for the solution to TVM annuity problems using the TI BA II Plus calculator. Chapter 11 is updated to show changes in retirement programs and now includes a discussion of Medicare insurance and an explanation of the new Medicare Prescription Drug Plan and income replacement insurance policies. Chapter 11 also includes the requirements for an annual financial tuneup. Appendix A has been updated to show solutions to typical financial problems using both Microsoft Excel and the TI BA II plus calculator. We include screenshots of Microsoft Excel spreadsheets. We also include screenshots of how to enter time-value-of-money formulas using the function wizard f_x. Appendix A also includes step-by-step solutions to sample problems using the TI BA II Plus financial calculator.

We have written this textbook for the more than 99 percent of business owners and managers in the United States who manage sole proprietorships, partnerships,

limited liability companies, or small non-public corporations. We are targeting those individuals and students who wish to learn more about the financial aspects of business entrepreneurship. We make complex theory easy to understand and discuss vital issues with a direct and clear delivery of material. We apply many of the techniques that are found in traditional corporate finance texts to businesses at an understandable level.

Most people who want to start a business come from all types of occupations (e.g., blue collar, trade, professional, technical, engineering). Their formal education may be in something other than business. This book is written primarily as a textbook for the education institution that caters to the concerns of individuals wishing to enhance their abilities in those areas of business that lead to successful entrepreneurship. This text can also be used by universities, community colleges, and technical colleges offering programs in finance and entrepreneurship. Of the more than 31 million businesses in the United States, approximately 72 percent are sole proprietorships, 10 percent are partnerships, 6 percent are C corporations, and 13 percent are Subchapter S corporations; less than 1 percent are publicly traded corporations. However, almost all financial textbooks are written for the large corporation and do not address the needs of more than 99 percent of all business. In addition, the majority of these business establishments have fewer than 20 employees.[1] For these businesses, the owner is pretty much the chief financial officer, the chief executive officer, and the chief operating officer. Such a business owner needs a working knowledge of finance, because he or she has no staff support on a full-time basis to assist in planning.

Our textbook differs from the typical financial textbook. Traditional financial texts are written for college juniors, seniors, or graduate students with the assumption that the student has had several courses in accounting and that this student will be working for a major corporation. This is not usually the case. Our textbook provides the critical financial information required for the majority of students and entrepreneurs entering the business world today. The resources used in writing a business plan often omit many of the financial aspects that the owner may need to determine the financial health of an existing or future business. Because many students may come from a non-business background rather than having a prior formal business education, we begin our text by outlining the basic economic factors affecting finance. We then discuss the advantages and disadvantages of various forms of business ownership. The text provides examples of financial statements for each type of business ownership. We devote more time than most financial texts discussing working capital and inventory management, because even though the sales may increase, a new business may fail because of poor working capital and inventory management techniques.

[1]Internal Revenue Service, *Statistics of Income Bulletin, Historical Table,* Winter 2011. U.S. Securities and Exchange Commission filings. Retrieved July 25, 2012, from http://www.irs.gov/newsroom/article/0,,id=238252,00.html

Most business managers have been trained to judge the profitability of a project in terms of payback and break-even analysis. We have taken corporate capital budgeting techniques and adapted them by showing the weighted average cost of capital as it exists for most business owners. We also demonstrate the importance of the time value of money as a tool in both business planning and personal financial planning, and we simplify the use of this tool. We provide the reader with specific examples in which each of the six time-value-of-money formulas is actually used by individuals and businesses.

All individuals, regardless of whether they work for the traditional publicly traded corporation, must make decisions about their retirement plans. Traditional financial textbooks do not cover personal financial planning. Because of this, we devote all of Chapter 11 to this vital topic, which includes an in-depth discussion of risk management as well as those investment vehicles that enable the entrepreneur to plan for personal financial goals. We believe that it is imperative for business managers not only to run their business successfully on a day-to-day basis, but to have those skills that enable them to plan for their personal and family's future as well.

Thanks to Timothy Ackley and Joyce Barden at DeVry University, Phoenix, Arizona, for their expert assistance and advice. Special thanks to the reviewers of this text: Craig Armstrong, University of Alabama Tuscaloosa; Thomas Bilyeu, Southwestern Illinois College; Josh Detre, Louisiana State University.

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CHAPTER 1

Financial and Economic Concepts

Learning Objectives

When you have completed this chapter, you should be able to:

- ♦ Understand the basic concept and importance of finance as it relates to individuals and business.
- ♦ Understand the basic economic concepts of finance.
- ♦ Distinguish between marginal revenue and marginal cost.
- ♦ Distinguish between economic capital and financial capital.
- ♦ Determine the opportunity cost of making decisions.
- ♦ Identify the relationships among savings, income, expenditures, and taxes.
- ♦ Identify the factors that affect interest rates.
- ♦ Understand the relationships between supply and demand for money and prevailing market interest rates.
- ♦ Describe the role of the Federal Reserve and the tools used to achieve the goals of economic growth, price stability, and full employment.
- ♦ Understand the relationship between risk and return on investment.
- ♦ Compare systematic risk to unsystematic risk and discuss their impact on business.

This book is written to give the individual who has no formal education in finance a brief overview of finance from both personal and business perspectives. The book is primarily for people who want to start their own business or those who want to analyze companies and investments but who do not have the time to pursue a formal course of study in a traditional business

college setting. This book can be used as a supplementary text in any college business course, as well as in a traditional college finance course. In the United States, approximately 31 percent of all employer-established businesses close within the first two years and 51 percent close within the first five years.[1] Usually, this is not because the businesses offer poor products or services, but because of poor financial management or a lack of adequate financial capital.

BASIC FINANCIAL CONCEPTS

Finance is essentially any transaction in which money or a money-like instrument is exchanged for another money or money-like instrument. An individual who finances a car typically has a specific amount of money set aside for a down payment. That individual must obtain the balance of the sale price to purchase the car. He or she can finance the car by signing a *promissory note* (a loan agreement) for the cash needed to pay the car dealer. The financial part of purchasing the car involves the money used for the down payment and the signing of a promissory note. The actual sale of the car is an exchange process that can be associated with marketing: The seller exchanges the car for the buyer's money; however, the car has been financed by the exchange of a promissory note for money. It is important to note that in any financial transaction there are suppliers and users of funds. In purchasing a car, the down payment is funds supplied by the buyer of the car, whereas the funds for the promissory note are supplied by the lender. The buyer is the user of the lender's funds.

For the business manager who wants to build a new plant, methods of financing may include using cash generated from current sales, borrowing funds from financial institutions such as banks or insurance companies, borrowing funds from select individuals, selling stocks, or using personal savings. Bonds, which are discussed in Chapter 11, are not really a viable source of financial capital for the majority of businesses. Bonds are normally available only to large corporations. Therefore, business entrepreneurs rely predominantly on lending institutions or their own funds to satisfy their needs for additional financial capital.

Businesses acquire capital assets through the use of financial capital. A plant, facility, or factory is a *fixed,* or *capital,* asset, and include buildings, machinery, and equipment. Capital assets are used by businesses to increase revenue or sales. Financial assets such as stocks, bonds, or savings may also be used to increase revenue, because they can be used to acquire capital assets.

For most individuals and businesses, financial transactions are undertaken for the purpose of exchanging a sum of money today for the expectation of

[1]SBA Office of Advocacy, Frequently Asked Questions, U.S. Small Business Administration. Retrieved June 14, 2012, from http://www.sba.gov/sites/default/files/sbfaq.pdf.

obtaining more money in the future. We buy stock at today's price because we believe that the stock will increase in value or that the corporation will generate a profit and provide us with cash or stock dividends in the future. A *dividend* is an after-tax payment that may be made by a corporation to a stockholder. However, dividend payments are not guaranteed. We can sell the stock after it *appreciates* (goes up in value), or not sell and possibly receive dividends. Similarly, we invest money in a business today because we expect greater returns for our money in the future. We can stay with the business and pay ourselves from our profits, or wait for the business to appreciate and sell it to another business owner.

IMPORTANCE OF FINANCE

Any individual who starts or manages a business must have a basic understanding of finance—a fact which is especially true in today's volatile market. *Prime interest rates* (the rate of interest that banks charge their best business customers) have been as low as 1.5 percent (December 1934) and as high as 21.5 percent (December 1980).[2] If we expect to obtain greater returns from our investments in the future, we must understand finance, its relationship to interest rates, and how to obtain proper financing. Without this understanding, our individual and business efforts may fail. However, before we can develop more of an understanding of finance, we must begin by understanding the basic economic concepts that relate to finance.

ECONOMIC CONCEPTS OF FINANCE

The U.S. economy operates on the basic principle that within the confines of the market, all individuals can achieve their own objectives in a free-enterprise system. Such a system is known as a *market economy*. A market economy such as in the United States consists of several markets. A **market** is any organized effort through which buyers and sellers freely exchange goods and services. Some of these markets in our economy include real estate markets, in which property is exchanged; retail markets, in which final goods and services are exchanged; the Internet, in which information is exchanged; and the commodity market, in which *basic commodities* (raw materials such as agricultural products, precious metals, and oil) are exchanged. The *financial market* is the one that deals with finance. The three primary participants in this financial market

[2]Federal Reserve Bank of St. Louis, Historical Prime Rate Table, Retrieved December 5, 2012, from http://research.stlouisfed.org/fed2/data/PRIM.txt.

are individual households, businesses, and government. In our free-enterprise financial-market system, the primary savers of funds are households. They are the suppliers of funds to other individuals, businesses, and government, who are the users of funds.

Scarce Resources

The central theme of economics is one of scarcity. Items are scarce because normal people want more than they currently have. Humans have unlimited desires for goods and services. We live in a world of scarce resources, so we are willing to pay a positive price to obtain goods and services. For the individual, financial means and time are limited resources. Because individuals have limited financial means, they must make choices about which resources they want to obtain and in what time period they want to obtain them. The four types of scarce resources of typical concern in both business and economics are natural resources, human resources, capital resources, and entrepreneurial resources.

Natural Resources

Natural resources consist of natural products such as minerals, land, and wildlife. They exist in nature and have not been modified by human activity. In economic terms, we consider the payment made for natural resources to be rent. Natural resources are referred to in some economic textbooks as **land**.

Human Resources

Human resources are the mental and physical talents of people. Human resources are also referred to by economists as **labor**. The economic payment for human labor is wages. There are, of course, different levels of wages. Wages are paid by business owners and are based on the marginal revenue product of the human resource and the availability of the human resource. We have heard many arguments about the value of professional athletes and their high salaries, but the fact remains that based on marginal revenue product, these people are paid a fair salary.

Before continuing our discussion of scarce resources, we must define some terms. The word **marginal**, as we use it here, is related to the addition of one more unit of measurement. It is an incremental change. **Marginal revenue product** is the additional revenue we obtain by selling one more unit of product to create an incremental increase in revenue. **Marginal physical product** is the additional product that results from hiring one more unit of labor. **Marginal cost** is the incremental cost of hiring that one more unit of labor or the incremental cost of producing one more unit of output.

For example, say that you own a professional basketball team. Your team is average, and for the past two years you have averaged 16,000 ticket sales per game for an arena that seats 20,000 people. However, you have noticed that when the Oklahoma Thunder comes to town, you sell all 20,000 seats. You determine that the additional seats are sold because the Thunder have a player, Kevin Durant, who people are willing to pay to see. Therefore, you seek to hire someone like Kevin. How much would you be willing to pay this basketball player?

You estimate that if you hired Kevin Durant, who would then become your marginal physical product, you would sell out the arena every game. The average price of a ticket is $89. You could sell 4,000 more tickets for each game and bring in extra revenue of $356,000 ($89 a seat times 4,000 seats) for each home game. Because there are 41 home games, you would make an additional $14.596 million in ticket sales. The $14.596 million in ticket sales is your marginal revenue product. This figure does not include additional television revenue or sales of food, beverages, team sports memorabilia, or other endorsements. Based on the marginal revenue product of a player like Kevin Durant, you would be willing to pay a marginal cost of up to $14.596 million to hire this basketball player. If you owned this team and could get a player like Kevin for $13 million a year, would you hire him? Of course you would, because you would clear a profit of $1.596 million (14.596 million revenue – $13 million salary).[3]

These athletes are obviously a scarce resource. If you advertise in the paper, how many people with the talents of this basketball player will apply for the job? Conversely, if you own a pizza parlor and advertise for a delivery driver, how many people with the mental and physical talent to deliver pizza will apply for the job? You will probably have several applicants, because there are hundreds of people in your community who have pizza-delivery skills. What is the marginal revenue product of pizza delivery? If your average pizza sells for $14 and the average driver can deliver 4 pizzas an hour, then the marginal revenue product is $56 per hour. Therefore, the absolute maximum amount you would be willing to pay a driver is $56 per hour; however, considering both marginal revenue product and the availability of pizza-delivery people, you may be able to hire a new driver for a minimum wage of $7.25 per hour. On May 25, 2007, the Fair Labor Standards Act (FLSA) was amended to increase the federal minimum wage in three steps: to $5.85 per hour effective July 24, 2007; to $6.55 per hour effective July 24, 2008; and to $7.25 per hour effective July 24, 2009.[4]

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[3]NBA Ticket Prices have fallen for second straight season. Associated Press, November 24, 2010. Retrieved January 7, 2012, from http://sports.espn.go.com/nba/news/story?id=5846998.

[4]U.S. Department of Labor, Employment Law Guide. Retrieved January 12, 2012, from http://www.dol.gov/compliance/guide/minwage.htm.

Capital Resources

Capital resources are grouped into two categories: economic capital and financial capital. **Economic capital** consists of those items that people manufacture by combining natural and human resources. Examples include buildings and equipment of business and government enterprises, such as roads and bridges. The economic payment for capital, which includes both economic and financial capital, is interest. It is absolutely essential that we distinguish between economic capital and financial capital. Economic capital is interchangeable with the terms **physical capital** and **fixed assets**—those capital resources that are used to make more items. **Financial capital** is a dollar-value claim on economic capital and, therefore, it may include several types of assets, such as cash, accounts receivable, stocks, and bonds. When a provider of funds holds financial capital, the provider has a dollar-value legal claim on the economic asset. For example, if you borrowed money from a bank to finance a new delivery truck for your business, the bank supplied you with financial capital. The title to your vehicle is actually in the name of the bank. The promissory note that you signed with the bank is the dollar-value claim that the bank has on your fixed asset (vehicle). A *promissory note* is an account payable that has in it a written promise to pay a sum of money by one party, the maker or payer, to the payee. The payer pays interest to the payee at an interest rate for a specific amount of time (e.g., 90 days). The *maturity value* of the note is the principal plus interest that is paid to the payee.

Entrepreneurial Resources

Entrepreneurial resources are the individuals who assume risk and begin business enterprises. The entrepreneur combines land, labor, and capital to produce a good or service that we value more than the sum of the individual parts. Without the entrepreneur, resources would not normally be combined, except as needed for *subsistence,* or just enough to sustain life. The economic payment made to the entrepreneur is *profit*. The entrepreneur seeks to make as much profit as possible. Therefore, when entrepreneurs form businesses, they try to make profits that exceed the wages paid to labor. The owner of a professional sports team—the entrepreneur—normally makes more than any player on that team. The owner of the pizza shop should make more in profit than any employee makes in wages.

Opportunity Costs

In any market transaction, both the buyer and the seller usually believe that they obtained the best use of their scarce resources. The economic basis for this belief revolves around the concept of **opportunity costs**, which is the highest value surrendered when a decision to invest funds is made. *Opportunity*

cost is a quantifiable term. For example, an individual who has $20,000 may decide to invest in stocks or bonds, place the money in savings, buy a new car, or place a down payment on a house. The individual investor determines what annual return can be expected from these choices and constructs a table based on expected financial return. Table 1–1 lists the investment opportunities mentioned here and the expected annual gain or loss from each alternative. The investor naturally takes other factors into consideration, such as the risk associated with investing in the stock market or the pleasure received from driving a new car.

TABLE 1–1 Expected Financial Returns of Investment Opportunity

Investment Opportunity	*Expected Annual Return (%)*
Purchase stock	11
Purchase home	9
Purchase bonds	6
Place money in bank savings account	2
Purchase new car	−15

In looking at Table 1–1, we see that the car actually *depreciates* (loses economic value) over time, whereas all other assets increase in value. Nevertheless, the investor decides to buy the car. As mentioned, factors other than pure finance, such as a requirement for transportation or the enjoyment that can be obtained from driving a car, go into the decision. When the decision is made to purchase the car, the purchaser spends $20,000. He loses the opportunity to purchase the 11-percent yielding stock for $20,000. This percentage is the return that the investor can expect to realize if he invested in stock, and it is also the highest value surrendered when the car is purchased, because he bought the car instead of the stock. For example, if we had decided to purchase stock, then the opportunity cost would have been the return from the purchase of a home, or 9 percent. The return from the home purchase would have been the highest value surrendered when we chose stock. Once again, choosing to purchase an asset is the actual decision. The highest value that we surrender in purchasing the stock is the return from the home, so its return of 9 percent is the opportunity cost of the decision. In other words, we surrender the opportunity to purchase a home, which would appreciate in value at 9 percent, if we chose to invest in stocks at an 11 percent return. Any purchase decision from the choices in Table 1–1 other than stock results in an opportunity cost of 11 percent.

One economic concept of finance central to any market transaction is that every party to the transaction has the expectation of gain from the transaction. In the case of the car purchase, the buyer obviously valued the car more than the $20,000. To the buyer, surrendering the $20,000 to buy the car resulted in

a greater benefit than would have been obtained by picking some other item. Otherwise, the car would not have been purchased. The car dealer, however, valued the $20,000 more than the car. Otherwise, the dealer would not have sold the car. This win–win situation is central to all free-enterprise market transactions. Both the buyer and the seller believe that they stand to gain from a transaction.

Savings, Income, Expenditures, and Taxes

Let us look at how the $20,000 was made available to purchase the car in the previous example. Most people generate savings to make large market transactions. Savings can only be achieved if all expenditures are less than total income. Therefore, it is essential to determine exactly where savings originate. We begin with the concept of gross income.

Gross income for the individual is the total money received from all sources during a year, including wages, tips, interest earned on savings and bonds, income from rental property, and profits to entrepreneurs. Gross income is subject to taxation by the government. One reason for taxation is that there are items that we consume or have available to us that we do not pay for directly—examples include public education, good roads, safe drinking water, and police and fire protection. The money that we use to finance these public goods comes from taxes and government user fees. **Taxes** are payments to a government for goods and services provided by the government. For most of us, the government collects taxes on our wages before we are paid for our labor. If you have income from sources other than wages, the federal government requires that you pay estimated taxes, normally on a quarterly basis, to lessen what may be a great financial burden when annual income taxes are due.

There are three basic forms of taxes that a government can, and does, collect: progressive taxes, regressive taxes, and proportional taxes. **Progressive taxes** take a larger percentage of income as that income increases. With each step up in income, a greater percentage of taxes is due. For example, if Tom Childress makes $20,000 in wages a year and pays $3,000 in taxes, and Jane Smith earns $60,000 and pays $16,800 in taxes, then Tom pays 15 percent of his income in taxes, whereas Jane pays 28 percent. The actual tax rates are established by legislation at the federal, state, and local levels. The percentage is a proportion and is calculated by taking the amount paid, dividing it by the gross income received, and multiplying the answer by 100. Thus the formula for tax percentage is as follows:

$$\text{Tax percentage} = \frac{\text{Tax payment in dollars}}{\text{Income in dollars}} \times 100$$

For Tom Childress,

$$\text{Tax percentage} = \frac{\$3{,}000}{\$20{,}000} \times 100 = 15\%$$

For Jane Smith,

$$\text{Tax percentage} = \frac{\$16{,}800}{\$60{,}000} \times 100 = 28\%$$

Regressive taxes take a higher percentage of your income as your income decreases. Sales taxes are a typical example of regressive taxes. Lower-income individuals must use a higher percentage of their income to purchase goods and services. For example, a person making $800 per month will probably have to spend all of his income to survive. If we have a 5 percent sales tax, this individual will pay $40 per month in sales taxes on his $800 income. If, however, another individual makes $5,000 a month, she may spend only $4,000 and save the remaining $1,000 each month. Therefore, she pays a 5 percent sales tax on $4,000, or $200 per month in sales tax. However, the $200 is only 4 percent of her $5,000 income. Thus, the wealthier individual pays 4 percent of income in sales taxes, whereas the lower-income individual pays 5 percent. Consequently, the tax is regressive. Because many politicians realize the hardship that regressive taxes may place on lower-income individuals, there are several cities and states that exempt food and medicine from sales taxes.

Regarding **proportional taxes**, the percentage paid stays the same regardless of income. For many of us, Social Security and Medicare taxes are proportional. As income increases by $1.00, 7.65 percent of that dollar, or $0.0765, is paid in Social Security and Medicare taxes. It is important to note that the employee in an employee–employer relationship pays 7.65 percent tax, which consists of 6.2 percent for Social Security and 1.45 percent for Medicare; the employer also pays 7.65 percent, which adds up to 15.30 percent tax. The self-employed entrepreneur pays the full 15.30 percent. The only true proportional tax in the United States currently is the Medicare tax, which is 1.45 percent of wages, with no upper limit. Social Security has a tax rate of 6.2 percent, but it was capped at an income level of $110,100 for 2012.[5] Therefore, Social Security is proportional for wages up to $110,100, but it becomes a regressive tax for people earning more than $110,100. For example, we previously discussed an athlete making $7 million per year. His Medicare

[5]Social Security Administration located on the Internet at http://www.ssa.gov.