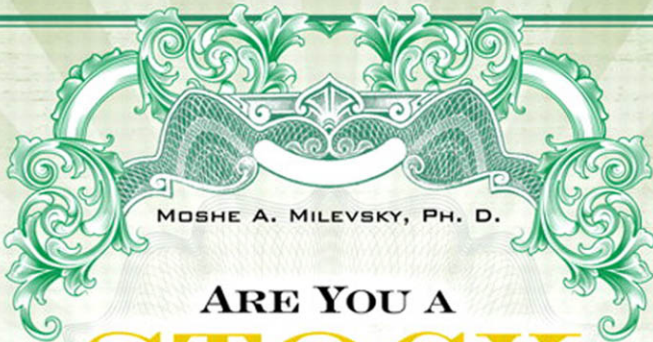




MOSHE A. MILEVSKY, PH. D.

ARE YOU A
STOCK
OR A
BOND?

CREATE YOUR OWN PENSION PLAN
FOR A SECURE FINANCIAL FUTURE



Vice President, Publisher: Tim Moore
Associate Publisher and Director of Marketing: Amy Neidlinger
Executive Editor: Jim Boyd
Editorial Assistant: Myesha Graham
Development Editor: Russ Hall
Digital Marketing Manager: Julie Phifer
Publicity Manager: Laura Czaja
Assistant Marketing Manager: Megan Colvin
Cover Designer: Sandra Schroeder
Operations Manager: Gina Kanouse
Managing Editor: Kristy Hart
Project Editor: Anne Goebel
Copy Editor: Paula Lowell
Proofreader: San Dee Phillips
Indexer: WordWise Publishing Services, LLC
Senior Compositor: Gloria Schurick
Manufacturing Buyer: Dan Uhrig

© 2009 by Pearson Education, Inc.
Publishing as FT Press
Upper Saddle River, New Jersey 07458

FT Press offers excellent discounts on this book when ordered in quantity for bulk purchases or special sales. For more information, please contact U.S. Corporate and Government Sales, 1-800-382-3419, corpsales@pearsontechgroup.com. For sales outside the U.S., please contact International Sales at international@pearson.com.

Company and product names mentioned herein are the trademarks or registered trademarks of their respective owners.

All rights reserved. No part of this book may be reproduced, in any form or by any means, without permission in writing from the publisher.

Printed in the United States of America
First Printing September 2008
ISBN-10: 0-13-712737-5
ISBN-13: 978-0-13-712737-5

Pearson Education LTD.
Pearson Education Australia PTY, Limited.
Pearson Education Singapore, Pte. Ltd.
Pearson Education North Asia, Ltd.
Pearson Education Canada, Ltd.
Pearson Educación de México, S.A. de C.V.
Pearson Education—Japan
Pearson Education Malaysia, Pte. Ltd.

Library of Congress Cataloging-in-Publication Data

Milevsky, Moshe Arye, 1967-
Are you a stock or a bond? : create your own pension plan for a secure financial future /
Moshe A. Milevsky.
p. cm.
Includes bibliographical references.
ISBN 0-13-712737-5 (hbk : alk. paper) 1. Finance, Personal. 2. Investments. I. Title.
HG179.M4577 2009
332.024—dc22

2008005434

Preface

How Much Risk Are You Really Handling?

I normally don't speak to anybody on airplanes unless it is absolutely necessary, preferring instead to mind my own business, catch up on emails, or fill in paperwork. However, when the attractive, middle-aged lady sitting next to me on the flight from Dallas to Boston asked me whether the article I was reading was interesting, I decided to break my long-standing aviation rule and take up the conversation.

Apparently, Kimberly—or Kim as she preferred to be called—was flying to a job interview at a large and well-known financial services company headquartered on the east coast. She was rather apprehensive about the interview because the advertised area was completely new to her, and she didn't have much experience or knowledge of the financial industry. Being a professor of finance myself, it was fun and easy for me to offer some tips and trends.

As we chatted, it became apparent that she had recently lost her job at a medium-sized manufacturing company around the Dallas area—a casualty of cheaper labor and products from overseas—and was instead trying her luck in a completely different field. Her extensive expertise and knowledge of a particular software program used by her previous employer was of little use outside of the narrow manufacturing sector in which she had spent the last decade of her life. So, she was basically starting from scratch.

To make matters worse for Kim, although she was employed at the Dallas-based company for more than eight years, she didn't have much savings accumulated in her employer-sponsored, tax-sheltered savings plan. The company didn't offer a traditional pension plan, which actually had been frozen years ago. Indeed, the bulk of her tax-sheltered (aka 401k) savings plan had been allocated to one mutual fund and the common stock of the company she actually worked for. Neither of these investments had done very well in the last few years, and her account value was well under the cost basis of the funds.

Basically, it was worth much less than the sum of all the money she had ever invested in the plan. The reason she had allocated so much to this one stock is because the company offered a matching deal. Every \$100 of salary she deferred and contributed to the 401(k) plan would be matched by the company with \$50 of company stock. Effectively, she was getting a 50% investment return on her money, from day one—and it was tax deferred. At first glance, this is a great deal, and many companies offer the same plan. Unfortunately, though, her company's stock price had fallen by more than 60% in the last 18 months, which basically wiped out the gains. In fact, the day she and more than 1,000 other employees were let go, the stock price fell a further 15%, likely because the company announced a major restructuring at the same time.

I obviously felt bad for her, although she seemed to be dealing with her financial misfortune with great poise. She was actually looking forward to starting a new job and perhaps new life working in the financial services industry in Boston. She said it reminded her of graduating from college almost 15 years ago with no savings, no relevant work experience, and a bunch of credit card debt. What a great, positive attitude.

As the flight continued and the conversation evolved, it turns out that she was recently separated from her husband, who coincidentally had also been laid off from the same employer on the exact same day. Kim had originally met him at a company picnic a number of years ago, and they had much in common, including a shared employer and career prospects. But, the stress of the dual job loss and the ensuing financial strain had taken a toll on their marriage, and the two of them were in the process of selling their house, which was located a short commute from their old employer, while working out the divorce proceedings.

As if the stress of a job loss wasn't enough, unfortunately, the real estate market wasn't being kind to them either. The house was apparently now worth 20% less than what they had paid a few years ago, and they were having a very tough time getting any offers on the house. I suspected that this difficulty is likely because a number of other residents in the neighborhood, who had also been laid off recently, were also trying to sell their homes at the same time.

Kim was hoping that they would eventually be able to sell the house for at least the value of the mortgage, which, of course, is the amount they actually owed the bank. Otherwise, they might be faced with the terrible possibility of having to file for bankruptcy, or perhaps even face foreclosure. Apparently, Kim and her husband had financed the purchase of their house with an adjustable rate mortgage (ARM) whose underlying interest rate had just been reset to a higher level. The monthly payments were now double what they were two years ago.

As you might suspect by this point in the narrative, I never actually met a Kimberly on an airplane to Boston. I'm sure there are many Kimberlys out there; I just haven't met them yet. I made up her and her very gloomy life just to make a point. Many nice people who have successful jobs, lovely houses, and hefty 401(k) accounts are destined to be Kimberly. They just don't know it yet.

These individuals have placed too many of their life eggs in one basket. They have, unfortunately, allocated their careers, houses, investment portfolios, and even marriages into one economic sector. They have thus violated the most important rule of modern financial theory, and that is to *diversify your risk factors*. Many people incorrectly believe that diversification only applies and is relevant to the stocks and bonds in your investment accounts. The truth is that it should be applied to anything that has the potential to generate an income or cash flow. Diversification should be applied to all the stocks and bonds in your daily life, not just to your financial portfolio.

In today's volatile economic environment and financial markets, investors are constantly reevaluating their attitude to financial risk on virtually a daily basis. During the times and periods stock markets are in positive territory and increasing in value, the masses believe they are risk tolerant. Then, in the next week, month, or year when markets decline sharply, they decide they are risk averse and can't handle the volatility. They sell out, liquidate, and miss-time the market. Their attitude to financial risk is more fickle than the markets themselves, and risk-aversion becomes an elusive temperament without a solid foundation. It is, therefore, almost meaningless to ask people what their risk attitude is. It changes based on yesterday's market, today's mood, and even tomorrow's weather. How can one make

investment decisions regarding hundreds of thousands of dollars based on the answer to a question that changes daily?

This book argues that your approach to financial risk should *not* be based on a psychological mindset based on your temper *du jour*, but instead on the composition of your entire personal balance sheet. My main message is that YOU must start approaching your financial situation in a more holistic manner. Your house, your city, your job, your marriage, and even your health is a financial asset that must coexist and be diversified with the rest of the financial assets and liabilities on your personal balance sheet. In this book, I explain why this holistic diversification is so important and how you can do it.

In the past, a financial portfolio of stocks and bonds was more of a perk than a necessity. The investment account was a retirement income supplement or perhaps a part-time hobby. Today, your stocks and bonds—very broadly defined—will become the means by which you will be able to finance and support the last 20 or 30 years of your life. You owe it to yourself to base these decisions on more than “do you feel lucky today?”

Introduction

Pensions Are Dying; Long Live Pensions

“...At present, the only way a company can manage the risk of long-lived workers is to work them so hard that they die within a few years of retirement; this is not a good way to retain staff....”

Financial Times, editorial, September 30, 2006

On Tuesday, March 7, 2006, General Motors (GM) issued a press release that was distributed to newswires and the usual business channels. In a briefly worded statement, it announced that all new employees hired by GM after January 1, 2007, would no longer be entitled to enroll or participate in the company’s traditional pension plan. The plan was being closed and frozen to all entrants. Instead, new GM employees would be given the option of participating in the company’s enhanced salary-deferred, tax-sheltered savings program, also known as a 401(k) plan. Employees who elected to join the 401(k) plan would have their contributions or savings matched by GM, up to a limit, as is usually the case with these ubiquitous plans. They would be given the ability to manage and diversify their investments across a wide range of stocks, bonds, and other funds. In a sense, they would all become personal pension fund managers.

In the technical language of pension economics, GM had replaced its guaranteed defined benefit (DB) pension plan with a defined contribution (DC) pension plan. Like many other companies before it, and many others since, GM “threw in the towel” and went from a DB to a DC plan.

Oddly enough, despite the rather arcane nature of the news, GM’s stock, which before the announcement on Monday afternoon was

trading around \$19.80 per share, jumped up just as soon as the press release hit the newswires. By the end of trading on Wednesday, it settled at almost \$21.30 per share. Clearly then, the shareholders and the market liked the news and rewarded GM by bidding up its share price.

Hundreds of companies have made the same move as GM in the last few years, and most of them have been similarly cheered on by the market. Major corporations are basically moving away from providing pension income for life. They are shifting the responsibility to you personally. This is why it is now more important than ever for you to answer this question: *Are you a stock or a bond?*

How Do Pensions Work, Exactly?

At its essence, a traditional defined benefit (DB) pension plan is the easiest way of generating and sustaining a retirement income. When you retire from a DB plan, the employer via the pension plan administrator uses a simple formula to determine your pension entitlement. They add up the number of years you have been working at the company—for example, 30 years—and they multiply this number by an accrual rate—for example 2%. The product of these two numbers is called your *salary replacement ratio*, which in the preceding example is $2\% \times 30 = 60\%$. And so, your annual pension income, which you will receive for the rest of your life as long as you live, is 60% of your annual salary measured on or near the day you retired. In the preceding case, if you retired at a salary of \$50,000 per year, your pension would be 60% of that amount, which is \$30,000 of pension income as long as you live.

Now sure, a number of DB pension plans have slightly more complicated formulas that are used to arrive at your pension income entitlement. The accrual rate of, say, 2% might vary depending on when you joined the plan, how much you earn, and perhaps even your age. In some cases an average of your salary in the last few years or perhaps your best year's salary is used for the final calculation. Some pension plans adjust your annual pension income every year by inflation, whereas others don't, which then results in the declining purchasing power of retirees over time. Nevertheless, regardless of the minutia, your initial income under a DB pension plan is computed by multiply-

ing three different numbers together. The first number is the accrual rate, the second number is the number of years you have been part of the pension plan, and the third and final number is your final salary, or the average of your salary during the last few years of employment. Hence, the term, “defined benefit.” Here is the key point: *You know exactly what your income benefit will be as you get closer to the golden years.* This knowledge provides certainty, tranquility, and predictability. This arrangement was the norm for most large North American companies and their employees for more than 50 years. In fact, the earliest defined benefit pension plans have more than a 100-year history.

A defined contribution (DC) plan is the exact opposite of a DB plan and is a broad term that includes self-directed accounts such as 401(a), 401(k), and 403(b). There is no guaranteed benefit, or for that matter, any guarantee at all regarding pension income. As the name implies, only the regular periodic contributions are known and determined in advance. The future benefit that you will receive upon entering retirement is completely unknown. If the stock market, or the particular mutual fund in which your money is allocated experiences a bad month, year, or decade around the time of your retirement, then your nest egg will be much smaller. In general, the responsibility, risk, and yes, the possible rewards, are in the hands of the employee as opposed to employer.

Once again, DC plans contain no formulas or income guarantee. In fact, they don't really focus on retirement income at all. They are salary-deferred, tax-sheltered savings plans, where you and your employer contribute a periodic amount. Your final *retirement nest egg* will depend on how much you (and/or the company) contribute to the plan, how your investments perform on the way to retirement, and what you do with the money when you retire. A 401(k) is a number, not a pension. The amount of money in your 401(k) plan, at the time you retire, is unknown and unpredictable in advance. In language of probability theory, it is a random number. Indeed, you might experience a bear market just before your retirement date, and the nest egg might lose 20% to 30% of its value, as most plans did during the bear market of 2001 to 2003. The 401(k) plan is, therefore, not a pension. You, the retiree, have to figure out how to convert this into some sort

of pension—similar to the defined benefit pension I described previously—as you transition into retirement.

I don't mean to single out GM, because it is not the only company taking this course of action. Indeed, it is difficult to miss the evidence of the decline of traditional private-sector defined benefit (DB) pensions. Countless company press releases, government studies, and scholarly reports have been documenting that DB plans are being frozen, replaced, and converted into defined contribution (DC) plans such as 401(k), 403(b), and other hybrid structures. This is the new reality of personal finance. The responsibility is shifting to you.

The Continued Decline of DB Plans

Like General Motors, companies like Lockheed (October 2005), Motorola (December 2005), Verizon (December 2005), IBM (January 2006), Sprint Nextel (January 2006), Dupont (August 2006), NCR (September 2006), Whirlpool (November 2006), and Citigroup (November 2006) have all taken similar actions. These companies—and many more—no longer offer a traditional defined benefit pension to their new employees. In many cases, they have frozen or terminated the pension accruals for existing employees as well as new employees, which means that even current members of the pension plan will no longer be entitled to any more credit-years beyond those they have already accrued.

To put this trend in perspective, a recently released survey by the Employee Benefits Research Institute (EBRI) claims that one-third of all pension plan sponsors in the U.S. with “open” plans—that is, pension plans that still accept new members—are thinking about freezing their DB plan in the next few years. From a different perspective, according to Watson Wyatt, way back in 1985 a total of 89 out of the largest 100 companies in the U.S. offered a traditional DB pension to their newly hired employees. The vast majority offered traditional pensions. By 2002, this number dropped to 50 out of 100 companies, and in 2005 it was down to 37 out of 100. My hunch is that when the 2008 figures are released, this number might be in the single digits.

Let me stress, though, that very few of these companies are in any financial distress, contemplating bankruptcy protection, being liquidated, or filing for protection from creditors. Many of the previously listed companies are quite healthy, successful, and growing entities that have decided to simply throw in the towel and abandon DB pensions. Why exactly have they shifted this responsibility to you?

Well, one of the main factors that has been contributing to this accelerating pension trend is something that we actually should all be thankful for—namely good health and increased longevity. We are living much longer than anybody anticipated or planned for when these defined benefit pension plans were originally designed and set up more than 40 years ago.

As you can see from Figure I.1, back in the 1970s life expectancy (at birth) was approximately 67 years for males and about 75 years for females. The average of the two was slightly above 70 years. But, in the last 40 years this number has marched steadily higher so that by mid-2007 the average life expectancy was approximately 77 years. This is a 5-year gain within 40 years. Now just think about what life expectancy might look like in 40 or even 80 more years. And that's not the full story because these numbers only apply at birth. As you age the life expectancy numbers get better, not worse. People are living into their hundreds. In fact, General Motor's oldest "pensionsaire" was 110 in 2006.

A few decades ago, pensions were small sums of money paid for a few years between a formal retirement date and the end of the human lifecycle. But now, this period that was intended and estimated to be 5–10 years is turning into 20 or 30 years. People are retiring earlier (with full benefits) from their pension plan and living into their late nineties.

The resulting pressure on the pension system and plans is an unsupportable retiree-to-active workers ratio. There are just too many retirees and not enough active workers, and therefore not enough revenue to go around to continue to support these payments. Table I.1 shows evidence of this trend for the automotive industry. It's becoming too expensive to pay people for the rest of their lives.

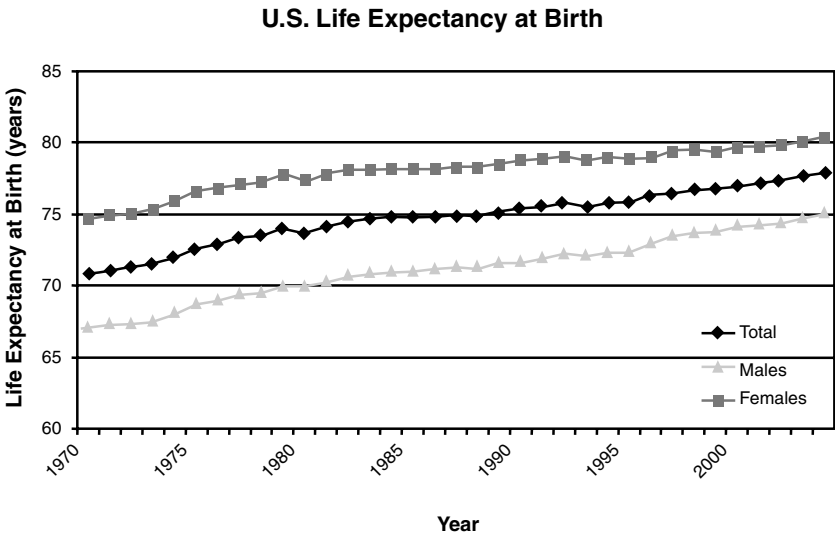


Figure I.1 Up, up, and away.

Source: U.S. Census Bureau, Population Division Working Paper No. 38.

TABLE I.1 U.S. Auto Industry Retirees Versus Active Workers

Company	Retirees Per 100 Workers (median value)
Toyota	2
Honda	5
Nissan	11
Chrysler	153
Ford	163
GM	320

Sources: Eduardo Porter, "Makers Put Health and Pension Burdens Squarely on the Workers," New York Times, May 19, 2006; GM Letter to Stockholders, 2005; "GM, UAW Deal May Presage 'New U.S. Auto Industry,'" Detroit Free Press, 2007; IFID Centre calculations.

Toyota has only two retirees per 100 active workers. Within the U.S. Toyota is a young company with little if any legacy costs or longevity risk exposure. In contrast, companies like Ford, Chrysler, and GM have hundreds of retirees per 100 active workers. After

absorbing the implications of Table I.1, you will appreciate the joke that has been circulating among actuaries in the pension industry that “General Motors (aka Generous Motors) is not really a car manufacturer, but a pension fund and health-care provider for its retirees.” Yet, this is no laughing matter. In 2006, GM paid more than \$30 billion in pension and health-care benefits. That’s what happens when you have more than three times as many retirees as active workers. Now do you understand why GM froze its plan?

Notice from Table I.2 that the ratio of the number of retirees per 100 workers is higher for the U.S. population as a whole than it is for Toyota, Honda, and Nissan (refer to Table I.1), whereas the ratio is greatly reversed in comparison to Ford, Chrysler, and General Motors. Note how the number of retirees per 100 workers is projected to creep up as we move into the middle part of the century. Who will pay for these retirement benefits? How high will these ratios get?

TABLE I.2 Number of U.S. Retirees Per 100 Workers

Year	Number
1950	6
1970	27
1990	30
2010 (projected)	32
2030 (projected)	46

Data Source: Social Security Administration, “The 2007 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds,” p. 48.

The editorial displayed in Figure I.2 of the *Financial Times* newspaper sums up the situation quite well.

Consequently, in the last 10 to 15 years, the U.S. has experienced a remarkable shift in the way retirement is being saved for and financed. A mere 15 years ago, the total percentage of “retirement assets” (broadly defined) sitting within traditional defined benefit (DB) plans was close to 25%, similar to the percentage in defined contribution (DC) plans. Yet, today, the percentage that is comprised of DB plans is less than 15%. As you can see from Figure I.3, the direction of the trend-line is quite clear.



Figure I.2 The verdict is in.

Source: *Financial Times*, May 25, 2005.

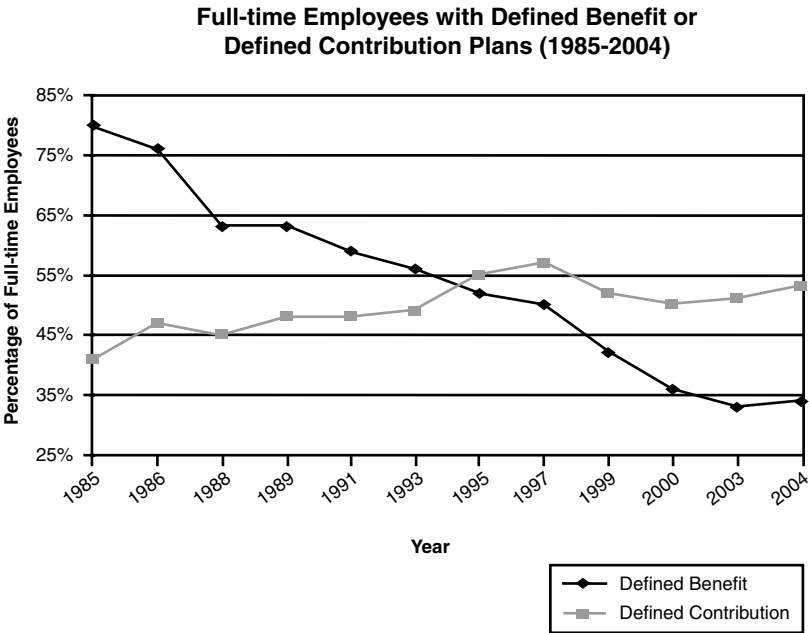


Figure I.3 The responsibility is in your hands.

Source: Social Security Administration, "Defined Contribution Pension Plans and the Supplemental Security Income Program," March 2006.

No matter how you look at it, one would be foolish to assume this trend of reduced DB coverage in the private sector will halt or reverse anytime soon. The only question is the magnitude and speed.

In fact, some consumer advocates and free-market economists argue that this trend away from the traditional pension system is actually a positive change. The idea is that the increased flexibility, mobility, and clarity of defined contribution plans are more in line with the needs of today's more mobile labor force. For this growing group that plans to be with more than one employer over time, the 401k, or any defined contribution plan for that matter, is the only option.

But, Are the Shareholders Happy?

Using extensive data on pension freezes, I have found that since December of 2001, an average of 1–2 publicly traded companies per month announced intentions to freeze or shut down their DB plan and either replace it with a DC plan or enhance their existing DC plan with better products, more choices, and greater matches. In addition to the companies I mentioned earlier, HP, Wendy's, Nortel, and Nissan are just a few of the major household-name companies that froze their plans between 2005 and 2007. The bottom line was that over a window of ten trading days before and after the announcement of a pension freeze or close, the average increase in stock price was approximately 3.96%. Relative to the SP500 index (or in risk-adjusted terms), the effect was even greater—approximately 4.2%. If we expand the event window to twenty business days before and twenty business days after, the aforementioned impact increases to almost 7.3% in risk-adjusted returns.

My hypothesis for the likely reason is the capping of risk and not necessarily the reduction in compensation expenses or costs. Companies have taken this unquantifiable longevity risk off their corporate balance sheet and transferred it to the employees' personal balance sheets.

I think this further reinforces the important financial fact for 21st-century retirement planning. Soon, very few groups of new employees entering the labor force will be able to rely on a DB pension plan to provide retirement income. Whether you are on the verge of retiring,

or think you are much too young to even think that far into the future, the responsibility of generating income in your retirement will more than likely rest in your hands. As part of your holistic personal risk management strategy, this book will motivate you to start thinking about how you and your loved ones will help convert the 401(k) and the sum of money you have saved in your retirement nest egg into a true pension that provides a retirement income that you can't outlive.

The Florida Pension Experiment

Public sector employees who are part of state or local government plans are not entirely immune to the trend I've described. If you live in Florida, you might know this already. Between mid-2002 and ending in mid-2003, every one of the approximately 625,000 government employees who were members of the state's pension fund were presented with a unique decision. Basically, each existing and new employee was granted the option to switch from a traditional defined benefit *pension plan* to a self-managed *investment plan*. In other words, they could take the lump-sum value of their retirement pension, and instead invest the proceeds themselves in a wide range of carefully vetted mutual funds. Alternatively, they could choose to maintain the status quo and remain in their current traditional defined benefit (DB) pension plan until retirement.

The upside or gain from pension switching was twofold. First, the employees would be given the chance to manage and invest the money that they have already earned and accrued, and they will be given the opportunity to do the same with any future contributions. Again, this "investment plan" is not a pension plan. It is a tax-sheltered investment account that will (hopefully) grow over time, the investment returns will (hopefully) beat inflation, and the nest egg will provide a nice cushion for their retirement. However, at some point the employee is going to have to turn this money into an actual pension that provides a respectable income for the rest of his retirement.

So, here are the fundamental questions that permeate much of what I will be discussing in this book:

- Would you take a lump sum in lieu of a pension and invest it yourself, together with all the contributions you would receive from your employer over the next 20 years? Or would you say, “no, thanks” to the offer and just wait until retirement and take a pension based on your 35 years of service?
- If you did decide to take the lump sum and invest it yourself, how exactly would you allocate the money over the next 20 years?

Although I don’t live in Florida I, too, face a similar decision at retirement. I am in a defined benefit plan that gives me the option to cash-out in retirement and manage the funds myself for the rest of my life. Luckily I have about 25 years to decide. How about you? Do you think you could manage and invest a nest egg yourself and grow the money to an amount that would generate a greater lifetime income compared to a pension? What if you live much longer than you expected? What if the market declines just when you are about to retire? What if inflation is higher than expected? It’s a tough decision, no question! And yet, if demographics and corporate trends are any indication, many millions of Americans will be making this exact choice over the next 5 to 10 years. They have a number—an amount of money in a tax sheltered savings account—and must decide how to convert it into a pension.

Agenda for Book

My objective is to get you to think differently about the many decisions you make on a daily basis, and to highlight the financial and investment aspects of those decisions. The reason this type of thinking has now become more important than ever is precisely because of the very large responsibility that has now shifted into your hands, namely the concern of creating a sustainable income for the rest of your very long life. My bias, if I do have one, is to move people away from short-term investing-by-speculating to a more prudent long-term investing-by-hedging or investing-by-protecting. What risks do you really face

over the long-run of your financial life, and how do you manage all of your economic assets to protect against those risks?

For now, unfortunately, many individuals make financial decisions thinking they can outguess the market, their opponent, or nature. The truth is that few if any of us are endowed with this ability. And while it's perfectly fine (and fun) to spend a few thousand dollars betting on whether a given penny stock, mutual fund, or economic sector will outperform another penny stock, fund, or sector, this technique is not the way to manage your personal pension, which must last for the rest of your life. I touch upon this theme—call it the “stop speculating and start hedging” theme—in a number of places within the book.

As you contemplate the possibility of a 30-year or possibly longer retirement, it is very important to start thinking about managing your financial capital more effectively over your lifecycle. This is more than just about creating a pension or sustainable retirement income. It is about proper risk management practiced by major corporations, applied to your personal life. And so, the next few chapters will be devoted to personal financial risk management early in life, which can then prepare you for prudent risk management later in life. Of course, on the way to creating a secure pension, I must start by examining precisely how to measure the value of your own net worth. I will first introduce you to the concept of human capital and why it is likely the most valuable asset you currently own or have on your personal balance sheet. With that in hand, I then move on to discuss very carefully how you should think about risk and return over very long horizons and to understand the role of hedging versus investing or speculating when it comes to managing our human capital. Then, after I get the preliminaries out of the way, I discuss how to properly convert and manage the risk of going from a number in your 401k or IRA plan to a pension that will last for the rest of your life. With the decline of traditional DB pensions, retirement income planning is more than just having the right mix of investments or saving enough in your 401(k) plan. A large sum of money in an investment plan—however you define large—doesn't guarantee you a secure retirement. The strategy you employ and the products you purchase with your nest egg will be more important than the size of that nest egg.

Endnotes

The impact of announcing DB freezes and closures on the stock price of the sponsoring company was studied and documented in the article by Milevsky and Song (2008). For a more extensive discussion of some of the concerns or possible problems with 401(k) plans, see Munnell and Sunden (2003). For additional statistics on the extent of a possible retirement income crisis, see Salsbury (2006), and for a more extensive discussion of the public policy implications of entitlement programs, see Kotlikoff and Burns (2004). Also, the edited books by Aaron (1999) and Clark, et al. (2004) contain some very interesting articles and studies on broader aspects of retirement income planning. Lowenstein (2005) has written an excellent article on the demise of DB pensions from a historical and current-events perspective. The collection of articles in Mitchell and Smetters (2003) provide a more academic perspective on the topic.

1

You, Inc.

“...I am technically broke because I have little money in the bank, I owe money on my credit cards, and I have no retirement savings....”

Myth #1

Let's go back to the very beginning of financial life and let me introduce an entity called You, Inc. This is a small, tightly controlled, privately held company with the bulk of its productive assets invested in nontraded units of your future salary and wages. Your objective as CEO, CFO, and chairman of the board is to maximize shareholder value of You, Inc. while minimizing the financial risks faced by the corporation.

In fact, the financial and risk management strategies plotted in corporate boardrooms of large businesses can be applied to the management of your daily finances. Like any corporate executive, you must take a long-term view when making financial decisions, but at the same time, you have to monitor and control the risks that You, Inc. faces over your entire lifecycle.

The Wall Street Journal doesn't report on the activities of You, Inc. very often, but its corporate history is well known: You, Inc. started life as a subsidiary of a larger company called Parents, Inc., and, for much of its first two decades, You, Inc. was an asset (or liability) on Parents, Inc.'s balance sheet. In purely financial terms, Parents, Inc. likely found You, Inc. to be a poor investment: According to conservative estimates, parents spend at least \$100,000 on a child during the first 18

years of his or her life, and may never see substantial dividends. Consequently, the board of Parents, Inc. tends to anxiously look forward to the day when it can spin You, Inc. off into a separate entity.

As the human lifecycle continues, You, Inc. will eventually consider merger opportunities, otherwise known as marriage. Marriage is the largest merger and acquisitions (M&A) activity undertaken by You, Inc., and may occur more than once. Most business mergers usually have a breakup fee attached to the deal. This is meant to protect the interests of the larger and more established company, in the event things go sour prior to consummation. Modern marriages have adopted similar, albeit longer dated, provisions under the ominous name of prenuptial agreements. Once again, this contract is meant to protect the economic interests of the party that stands to gain the least from the merger. In fact, many a merger in the human capital industry of which You, Inc. is part have been scuttled over the meager terms of such agreements.

After the assets are successfully combined and management cultures reconciled, the enlarged You, Inc., which is perhaps now rightfully called Family, Inc., usually looks to acquire new headquarters. Besides the productivity potential of your human capital, your home is your second largest asset. But the investment in a home is undiversified and illiquid, because it can't be sold off piecemeal; hence it can be considered riskier than most publicly traded investments like stocks and bonds. Millions of homeowners who are currently facing foreclosure on their homes because the value has dropped under the amount of debt they owe on the house are experiencing the fact that your personal residence is not a risk-free investment. Like education and college tuition, the purchase of a house is usually financed with debt, a deal that requires the best of your CFO skills. Each of the myriad loan and mortgage options has its own risks and rewards. But as every good CFO knows, speculating on the direction of interest rates is an ill-advised endeavor. The choice between long-term fixed or short-term floating debt, as well as the maturity of the "bond" (the mortgage), depends on corporate needs, tax considerations, and budgeting issues. If, for example, your budget can allow for potential spikes in fluctuating payments, you are better off with a variable or adjustable mortgage, but if cash is tight, fixed is the way to go.

The global push toward shareholder activism has not gone unnoticed within You, Inc., and the various stakeholders, such as children, spouse, and in-laws, will eventually push for a place in the corporate boardroom. You might be the largest single shareholder, but your family members are minority shareholders with protected rights. If anything should happen to jeopardize your lifespan or future productivity, they would suffer grave financial consequences. Prudent risk management dictates that you purchase a variety of insurance policies to protect your largest asset, as well as other investments, projects, and assets you couldn't afford to lose. Practically speaking, the median 30-year-old with \$600,000 to \$800,000 worth of future earnings would be well advised to buy a similar amount in life insurance.

As your life cycle continues, You, Inc. will likely have some spare cash, and you face difficult dividend-policy choices. A vocal (and likely teenaged) minority on the board might be pushing for big jumps in dividends. However, a savvy CEO will lean toward retaining the earnings because You, Inc. is likely saddled with severe credit constraints and needs to fund future growth.

Because You/Family, Inc. is not a publicly traded company, it can't tap the capital markets to finance new investment projects. After all, you have little in the way of hard assets to pledge as collateral until much later in the life cycle, and financial institutions tend to frown on purchasing shares in You, Inc. on account of slavery being illegal. That leaves you with the option of using internal cash (that is, personal savings) or the much costlier alternative of borrowing from the bank. For many, credit cards are the last (or at least most convenient) resort. But, with effective credit card interest rates being stratospheric, it's hard to find a use for that borrowed money that's worth the cost.

The preceding analogy might be pushing the limits of reality, but I believe the underlying idea, that you should think of yourself as a company and manage your financial affairs using similar techniques, leads to a number of practical insights and takeaways. Thinking like this can help you make better financial decisions. I will get to them later in this chapter and the book, but at this point I would like to go back to the first principles and ask, "What is You, Inc. worth?"

What Are You Worth?

Although I can't answer this question for you personally, I can give you a look at a snapshot of the finances of the typical U.S. household, which I have called "Family, Inc." I can do so using comprehensive data from something called the Survey of Consumer Finances (SCF) conducted by the U.S. Federal Reserve Board. This survey provides a very comprehensive picture of various financial aspects of the personal balance sheet, and I will start with the tangible assets (aka, the left side of the personal balance sheet).

The numbers are slightly out of date because these surveys take time to complete, but in 2004 the typical U.S. family unit had median assets of \$173,100, which represents a growth of 21.1% in real (inflation-adjusted) terms since 1998. This median number means that if we were to rank the assets of "richest" to the "poorest" American family, the halfway point would be \$173,000. This means that 50% of families have more assets and 50% of families have less. Now, remember, assets don't necessarily imply wealth. If you have \$173,000 in assets and exactly \$173,000 in offsetting debt, then you have zero equity or net worth and have no real wealth. So for now, let's focus just on assets of the typical American and then later we can get to the debts and family net worth.

The total assets reported in the SCF can be further subdivided into financial and nonfinancial assets; and Table 1.1 shows the median market value of the financial assets that Family, Inc. has accumulated. U.S. family assets include transaction accounts, such as checking, savings, and money market deposit accounts and low risk certificates of deposit. Assets also include tax-sheltered retirement assets such as IRAs (or individual retirement accounts), pooled investment funds (including hedge funds and real estate income funds), and the cash-value of life insurance policies. Other assets include trusts, annuities, managed investment accounts, futures contracts, and loans made to others. There should be no surprises here. In fact, you might recognize your own personal balance sheet as having very similar assets.

Table 1.1 allows us to imagine a typical American family that is in their early forties. They have a checking account and a money market

mutual fund account collectively valued at \$3,800 and retirement assets of \$35,200, which they have accumulated through their work pension plans. They have accumulated \$6,000 in tax-deferred savings within an insurance policy, something I discuss further in Chapter 3, “Diversification over Space and Time.” They have invested a large portion of their financial capital—\$65,000—in government, corporate, and foreign bonds, and \$15,000 in publicly traded stocks. In fact, you should construct your own personal balance sheet listing of assets, which is an important exercise to do on an annual basis. It should look similar to Table 1.1.

TABLE 1.1 Financial Assets of Family, Inc.

Type of Asset	% with Asset	Median Amount	Change from '01
Transaction Account	91.3%	\$3,800	−9.52%
CDs	12.7%	\$15,000	−6.25%
Savings Bonds	17.6%	\$1,000	−9.09%
Bonds	1.8%	\$65,000	+35.7%
Stocks	20.7%	\$15,000	−29.6%
Pooled Investment Funds	15.0%	\$41,000	+9.92%
Retirement Accounts	49.7%	\$35,200	+13.9%
Cash Value in Life Insurance	24.2%	\$6,000	−43.9%
Other Managed Assets	7.3%	\$45,000	−39.7%
Other	10.2%	\$4,000	−16.7%

Data Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 5 04; IFID Centre calculations.

Table 1.2 moves on to the nonfinancial and illustrates that the median family has various personal use assets, which they might consume or use in their daily lives. The most common nonfinancial asset is a vehicle. If we think in terms of medians, they would have purchased a new car less than two years ago, and its current market value is estimated at \$14,000. The house they reside in is valued at \$160,000 and they have a vacation property that they’ve recently acquired for \$100,000. According to Table 1.2, approximately 11.5% of American families have equity in a privately held business. The median value of this business holding (for those who own this type of asset) is \$100,000.

Once again, this is as good time as any to encourage you to sit down and create a similar list of all your financial and nonfinancial assets. There is very little point in creating a long-term financial plan without having a detailed snapshot of your current assets. At the very least, the type of information contained in Tables 1.1 and 1.2 will enable you to benchmark yourself relative to the population as a whole. Remember, though, we will return later to one asset class that is missing from both tables—the value of your human capital. For now, let’s stick to the traditional accounting numbers.

TABLE 1.2 Nonfinancial Assets of Family, Inc.

Type of Asset	% with Asset	Median Amount	Change from '01
Vehicles	86.3%	\$14,000	–2.78%
Primary Residence	69.1%	\$160,000	+22.1%
Other Residence	12.6%	\$100,000	+17.4%
Equity in Nonresidential	8.2%	\$60,000	+13.9%
Business Equity	11.5%	\$100,000	–6.10%
Other	7.5%	\$15,000	+17.2%

Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 8 04; IFID Centre calculations.

Either way, I have reviewed the various assets of You/Family, Inc. The main takeaway, of course, is that almost 50% of families report having money in “retirement accounts” and the median amount of money in these accounts is \$35,000. Will it be enough to finance retirement? That is one of the main questions addressed later in the book. For now, let’s move on to some other financial metrics and benchmarks.

The pretax “bottom line” of Family, Inc. is shown in Table 1.3. It lists the average versus the median pretax income per family unit, measured over a 15-year period. The average numbers are consistently higher than the median numbers. This is because the median treats all families equally, whereas the average places a greater weight on the wealthier families. It is important to keep this distinction in mind. Remember that the median “value” of the three numbers {1,10, 88} is exactly 10 units. It is the halfway mark. However, the average “value” is a much larger 33, because if you add these three numbers together and divide by three, you get 33 units.

Either way, in 1989, the family unit earned an average income of almost \$60K (in year 2004 dollars), and by the year 2004 it increased to more than \$70K. This is obviously good news—the sign of a growing corporation.

**TABLE 1.3 Pre-Tax Incomes Per Family Unit in
Constant Dollars**

	1989	1995	2001	2004
Average	\$60,100	\$55,000	\$73,600	\$70,700
Median	\$38,800	\$37,800	\$42,700	\$43,100

Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 1 95-98, Table 1 01-04.

Of course, the opposite of all the assets listed in Tables 1.1 and 1.2, which occupy the left side of the balance sheet, are Family, Inc.’s liabilities on the right side. Remember that accountants traditionally place the assets of a corporation on the left side and the liabilities plus “equity capital” on the right side. I’ll get to a picture of that in a moment.

Indeed, whether one wants to buy a brand-new car, finance a graduate degree, or purchase a new home, in North America we have access to a number of credit and lending sources that allow us to make such purchases today even if we do not have sufficient financial assets to do so. I discuss the merits and pitfalls of debt in much greater detail in Chapter 4, “Debt Can Be Good at All Ages,” but now let’s look at what people are actually doing. It seems people hold debt in a number of forms and use it to accomplish numerous goals. So what do Americans owe? How does the level and composition of this debt evolve over the life cycle?

About 76.4% of the population carries at least some form of debt, and the median total debt equaled \$55,300 in 2004, according to the most recently published U.S. Federal Reserve Consumer Finances Survey. This is an increase of 34.2% since 2001.

Table 1.4 focuses in on Family, Inc.’s liabilities. Unquestionably, the most prevalent and the biggest type of debt on Family, Inc.’s balance sheet, which has increased significantly in recent years among the population, is its outstanding mortgage. The 47% of families with this type of debt are carrying a balance of \$95,000. A mere 4% have other forms of home-equity credit in the amount of \$87,000.

TABLE 1.4 Liabilities and Debts of Family, Inc.

Debt Type	% with Debt	Median Amount	Change from '01
Home Mortgage	47.9	\$95,000	+27.3%
Other home secured debt	4.0	\$87,000	+104.2%
Line of Credit	1.6	\$3,000	-28.6%
Installment Loans	46.0	\$11,700	+13.6%
Credit Card	46.2	\$2,200	+10.0%
Other	7.6	\$4,000	+25%

Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 11 04; IFID Centre calculations.

Credit card debt, a very widely used source of credit among the U.S. population, is totaled at \$2,200 on Family, Inc.’s balance sheet. Note that 46% of the population has this credit card debt. This number only includes families who are not paying off the balance in full at the end of the month. Approximately 8% have other forms of debt with a median amount owed of \$4,000. Note that this “other” category is a catch-all that can include wonderful strategies like margin debt (or borrowed money used to purchase investment assets—a concept I discuss in detail in Chapter 4). This category can also include items such as loans against a pension in a current job or against a cash value life insurance policy, or perhaps even an informal loan from the neighborhood loan shark. It seems like Americans have a robust and diversified portfolio of debts. And, while some debts make perfect sense, other types of debt like credit cards and installment loans might raise an alarm bell or two, if the funds are being used to acquire depreciating assets that lose value over time.

Table 1.5 provides the percentage of each age group that holds any of three types of debts: credit cards, lines of credit, or installment loans. As one might expect, reliance on the three types of debt tends to be higher in the early stages of life when net worth is the lowest but major expenditures and purchases are made.

Similarly, Table 1.6 examines the debt data from a more formal corporate accounting perspective. It compares the amount that a family owes relative to the value of their assets. In some sense, the lower the ratio of debt to assets, the more healthy the family, although there

are exceptions to this rule, which I will discuss in a later chapter. In families whose major breadwinner is under the age of 35, the amount of debt they have relative to assets is roughly \$87 per \$100. If you remember the fundamental formula that net worth or equity equals assets minus liabilities, then the typical family under the age of 35 has equity of \$13 and debts of \$87, which implies a debt-to-equity ratio of almost 7 to 1. Such a high ratio in this stage of life is a good reason to think in a more integrated fashion about debt management.

TABLE 1.5 Debts of You, Inc.—Who Has These Liabilities?

Age Group	Credit Card	Line of Credit	Installment Loan
Under 35	47.5%	2.2%	59.4%
35 to 44	58.8%	1.5%	55.7%
45 to 54	54.0%	2.9%	50.2%
55 to 64	42.1%	0.7%	42.8%
65 to 74	31.9%	0.4%	27.5%
Above 75	23.5%	—	13.9%

Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 11 04.

TABLE 1.6 Debts Versus Assets of Family, Inc.

Age of Major Income Recipient in Family Unit	Value of Debt Per \$100 of Assets
Under Age 35	\$87.20
35 to 44	\$50.30
45 to 54	\$35.30
55 to 64	\$13.40
65 to 74	\$10.70
Above Age 75	\$8.30
All Family Units	\$31.90

Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 11 04, Table 8 04; IFID Centre calculations.

I found it quite surprising and perhaps even depressing that 23.5% of people above the age of 75 actually had credit card debt. Think about it. This is almost a quarter of the population of people in their seventies. I actually have no problem with retirees taking on debt to finance their lifestyle, but perhaps a reverse mortgage or other, cheaper forms of debt would be much more cost effective and economical.

One other observation that emerges out of Tables 1.4 and 1.5 is that households seem to be diversifying their liabilities among a number of credit sources that charge different interest rates and maintain different terms. Even though the principle of diversification goes a long way as a portfolio hedging tool, it should not be overextended as it has no place in your debt strategy. In fact this is the one area of your personal finances where your eggs *should* be placed in one basket. To optimize one's debt strategy, outstanding balances in different loan "silos" should be consolidated at the lowest possible rate. This can add up to substantial savings over time.

This brings me to the last and very important number that conveys information about the financial state of You, Inc.—the median net worth. This value also rests on the right side of the traditional balance sheet as "Equity" and simply equals the family unit's assets minus its liabilities. While the median net worth of Family, Inc. was \$93,000 in 2004, which represents an increase of 11.9% in inflation-adjusted terms since 1998, Table 1.7 presents some interesting data for the population at large. This table displays the extent to which the family unit median net worth varies with the income percentile of the primary breadwinner. Although this observation is somewhat expected because of increased savings that may accompany higher income, the variation in net worth is quite remarkable. This disparity also highlights the potential benefit of tailored financial recommendations and strategies.

Particularly relevant to our discussion of You, Inc., and the lifelong risk management process that you must undertake, is the question of how net worth changes over the lifecycle. Economists summon the so-called "lifecycle hypothesis," to describe the change in financial net worth or wealth as we age. At young ages we have little financial capital or often a negative net worth. Many people borrow money to invest in their education, such as student loans and the like, and therefore start their financial life cycle with little if any net worth. This

changes as we grow older, pay back our debts, invest in housing and other assets that might appreciate over time, and gradually approach the retirement years. While we continue to spend, our growing income allows us to accumulate savings. Our financial net worth peaks at the end of our working years and is gradually reduced as we continue to spend throughout retirement. We try and smooth our spending patterns and standard of living throughout these periods in our lives, and the generalized result is the shape illustrated in Figure 1.1. Remember that this is an economic hypothesis or theory and obviously doesn't imply that everyone behaves this way, nor does it mean that you personally should behave in this manner.

TABLE 1.7 Median Net Worth (Ranked by Income Percentile)

After-Tax Income in the Year 2004	Median Net Worth	Real Change from 2001
Less than 20%	\$7,400	−11.8%
20% to 39.9%	\$34,400	−16.3%
40% to 59.9%	\$72,500	+6.72%
60% to 79.9%	\$160,000	+6.69%
80% to 89.9%	\$313,900	+12.4%
90% to 100%	\$922,200	+3.75%

Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 3; IFID Centre calculations.

Real world data is, in fact, consistent with this hypothesis and is summarized in Table 1.8. Households where the main breadwinner is less than 35 years of age have the low median net worth of \$14,200. With each age group, you can see that the net worth figure rises substantially as we work toward our financial goals and retirement. The number peaks just prior to retirement with a median net worth of \$248,700 for the age 55–64 age group and falls to \$163,100 for the group above the age of 75. In other words, it seems that despite some notable exceptions, many individuals do, in fact, behave according to the axioms of the life cycle hypothesis. Stated differently, if you want to smooth your consumption over the course of your financial life—which makes sense on multiple levels—then your financial net worth will evolve similar to Figure 1.1.

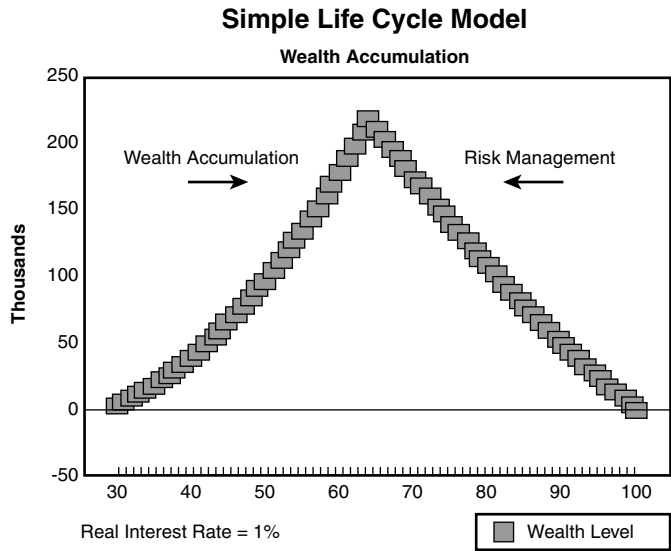


Figure 1.1 Will you be able to get down the mountain?

Source: Life cycle theory and hypothesis based on work by F. Modigliani and R. Brumberg, "Utility analysis and the consumption function: an interpretation of cross-section data," 1954.

TABLE 1.8 Median Net Worth by Age of Household Head

Group	Median (2004)	Real Change from 2001
All Families	\$93,000	+0.82%
Less than 35	\$14,200	+15.1%
35 to 44	\$69,500	-16.0%
45 to 54	\$144,600	+1.30%
55 to 64	\$248,700	+26.0%
65 to 74	\$190,200	+0.32%
Above 75	\$163,100	-2.06%

Source: U.S. Federal Reserve Consumer Finances Survey 2004, Table 3; IFID Centre calculations.

Let’s return for a minute to the early stages of the human life cycle—your late teens and early 20s.

At this age, what was previously a corporate shell becomes an operating unit, and you face the first, and perhaps most important,

decision as the head of You, Inc: how to develop and where to invest the company's human capital. "Human capital" refers to your abilities and skills, which you acquire genetically and through education. Through investing in education, job training, and business networking, you can build a large stock of human capital that can be mined by You, Inc. for many years, and perhaps generations, to come. Your human capital is converted into financial capital through the earnings and wages you receive during your work career. Hence, we measure your human capital through estimating the value of all your future earnings and wages. The greater your income prospects, the greater your human capital, and the greater the value of You, Inc.

In Table 1.8, the net worth numbers for the median American under age 35 tell a bleak tale. Yet one of the main ideas in this book is that when you are young, broke, and possibly in debt, you likely have 30 to 50 productive years of income-generating work ahead of you. Also, although some readers might find the prospect of so many years of work to be depressing, the fact is that the present or discounted value of this income can be in the millions of dollars. This is no different than any major publicly traded mining company or an oil producer that owns mines and wells that are deep underground and years away from producing any cashflow. It might take decades before they will generate any profits for the company, yet these same companies are allowed to display and value these assets on their balance sheet with the full blessing of financial accountants and securities regulators. Why should it be any different for You, Inc? Thus, I argue that the total asset and net worth values we just examined are understated. As you assess your net worth, the traditional accounting-approach balance sheet should be modified to include human capital along with tangible assets to truly reflect the value of You, Inc. (see Figure 1.2).

Going through the exercise of estimating the present value of your human capital can produce some surprising results—you may find out that you're worth much more in financial terms than you realized. Table 1.9 completes the simple exercise of calculating the value of a 30-year-old's human capital, assuming he will work for another 30 years and earn an inflation- and tax-adjusted salary of \$40,500. The value of his human capital is the sum of 30 years worth of salary, discounted back to the present day. Obviously the resulting figure varies

with the chosen discount rate, which is a subjective number that depends on the stability of the income stream. Yet in all three scenarios in the Table 1.9, human capital is worth more than 90% of the 30-year-old’s total capital. That is my main point. Regardless of how safe and predictable or risky and unstable your salary appears, when you have 20 to 30 years of work ahead of you, the discounted value of this asset is likely the largest single item on your personal balance sheet. Of course, your local bank or insurance company doesn’t send you a monthly statement that lists or calculates the value of your human capital, but that doesn’t mean it isn’t valuable.

The Balance Sheet: You, Inc.	
The 21st Century Approach	
Assets • Bank Accounts • Housing • Stocks and Bonds • Car and Vehicles • Small Business Equity • PV of Pension + HUMAN CAPITAL	Debt + Liabilities • Mortgages • Consumer Loans • Credit Cards • Student Loans Equity • Net Worth of You, Inc.

Figure 1.2 We reach the main point—human capital.

Source: Moshe Milevsky and the IFID Centre, 2008.

TABLE 1.9 Example of the Discounted Value of Human Capital

Discount Rate	\$ Present Value of Human Capital	% of Total Capital
3.5%	744,900	94%
5.0%	622,600	93%
7.5%	478,300	91%

Source: Moshe Milevsky and the IFID Centre calculations, 2008.

Let me repeat this point again because it is crucial for the next few chapters and for most of the book. The single most precious asset on your personal financial balance sheet is not your savings account, your investment portfolio, your jewelry, or even your house. Rather, it is the discounted value of all the salary, wages, and income you will earn over

the course of your working life. This asset is called human capital, and though its precise numerical value might be hard to obtain and difficult to calculate, the fact remains that it's the best asset you have until well into your middle ages.

Figure 1.3 demonstrates the evolution of the ratio of this asset to total capital as we age. The figure illustrates that in the years when we think we are worth the least in pure financial terms, we are actually the wealthiest in terms of our human capital. Once again, you are wealthier than you think.

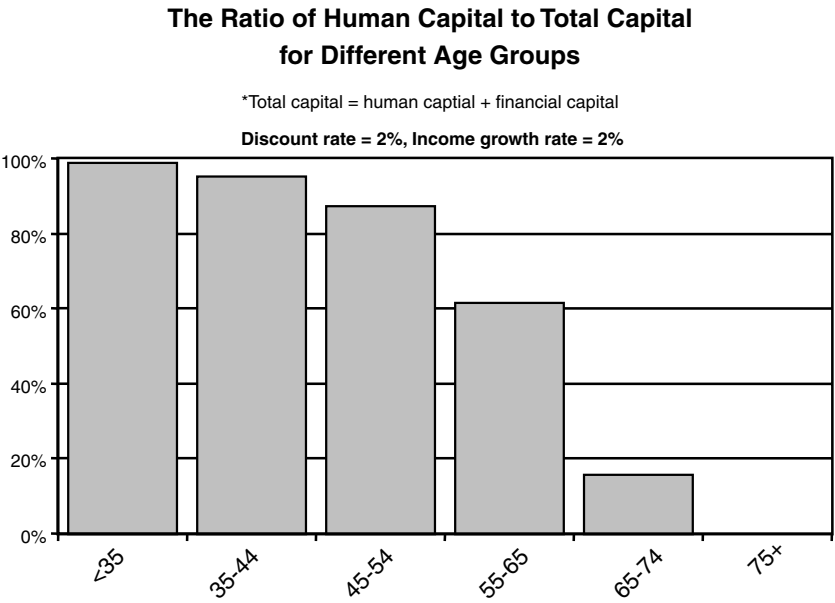


Figure 1.3 Even retirees can still work, if they want to.

Source: Baxter, M., "Social Security as a Financial Asset: Gender-Specific Risks and Returns," 1999: IFID Center calculations.

You may be thinking, what good is knowing the value of an asset that you can't immediately use, spend, or borrow against? But I argue that this is precisely the asset that you should take into account when making many of your financial decisions from your initial years of work to beyond retirement. At the very least, get into the habit of computing the value of your human capital each time you get an account statement from the bank, insurance company, or mutual fund listing

the value of your financial investments. By doing this exercise, you will get a comprehensive picture of your true net worth and not just a partial view. In many cases, your (limited, narrow) financial investments might have declined in value, but your human capital might have increased by much more. In other cases, it will be the other way around. Either way, it is the sum of the financial capital and human capital, together with the value of your house and other nonfinancial assets, that should truly matter for your financial decisions and well-being.

The concept of human capital as a driver and motivator of household economic decisions was popularized by Professor Gary Becker from the University of Chicago, who was awarded the 1992 Nobel Laureate in Economics. Back in 1964 he published a book with the simple title, *Human Capital*, in which he argued the importance of education in promoting economic development. In his work, using U.S. census data, he documented that the rates of return from investing in education were substantial. His analysis showed that not only was it worthwhile to invest time and effort in acquiring and refining one's education, but also it was a key differentiator of economic success in different countries.

His path-breaking analysis, which was considered rather controversial at the time, was one of the first to justify human capital as a legitimate asset class. At the time, many viewed an advanced college or university education as a luxury item that only the rich could afford. What Professor Becker showed was that spending on education was best viewed as an investment as opposed to consumption or expenditure.

So, for example, if you decide to become a brain surgeon, you invest some 15 years of your life, along with the forgone wages during that time, to develop a gold mine of human capital invested in the medical industry. As a newly minted medical resident, you have few financial assets and likely a large debt from financing the education, but the value of your human capital will be in the millions. If, on the other hand, you opt to enroll in a six-month course in auto mechanics, you invest little human capital. Although this investment might lead to positive cash flow relatively soon, it is not associated with much income stability. The rate of return on "cheap" human capital, when you don't invest much time and effort in developing that human capital, should be quite low.

Table 1.10 summarizes the trade-off between spent tuition dollars and additional education, and its consequences. So while you sacrifice time and foregone wages as you study, you ultimately increase the size of your human capital. And, in fact, this increase in the present value of your future earnings may quite easily justify your expenditure on additional years of school. For example, from the analysis in Table 1.11, if you are currently earning \$50,000 and decide to invest in a particular graduate degree that costs \$80,000, your income will only need to increase by \$6,550 or 13.1% to justify this seemingly large expense.

TABLE 1.10 School and Human Capital Analysis

Total Financial Capital = Financial Capital + Human Capital		
No investment in education (<i>status quo</i>)	Earn wages, save time and tuition costs	Salary stays the same and may not grow.
Go back to school	Lost wages, lost time, paid tuition	The present value of human capital is higher than before.

Source: Moshe Milevsky and the IFID Centre, 2008.

Obviously a number of assumptions are built into the numbers displayed in the table, but the general relationship holds true regardless.

TABLE 1.11 By How Much Does Your Salary Have to Increase to Justify Investing in Education?

Salary	Tuition				
	\$20,000	\$40,000	\$60,000	\$80,000	\$100,000
\$25,000	10.2%	13.1%	16.1%	19.0%	21.9%
\$50,000	8.8%	10.2%	11.7%	13.1%	14.6%
\$75,000	8.3%	9.2%	10.2%	11.2%	12.2%
\$100,000	8.0%	8.8%	9.5%	10.2%	10.9%

Assumptions: 2 years education, 3% wage growth, and 20-year career.

Alas, You, Inc. only has a limited amount of human capital. As shown in Figure 1.4, as your life cycle approaches its twilight and enters the retirement phase, the ability to generate new financial capital using human capital decreases dramatically.

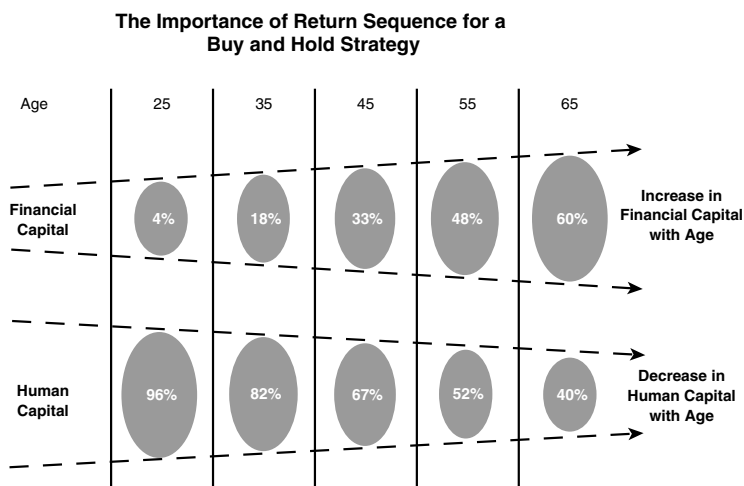


Figure 1.4 A snapshot of your evolving economic life.

Source: Ibbotson Associates.

Hence, the ongoing health of You, Inc.'s financial situation depends on converting your finite human capital into financial capital, and ensuring that you grow your financial capital sufficiently to support you and your family when the "gold mine" of human capital can no further be mined.

You will see in the future chapters that the size of this important asset has relevance for numerous investment decisions that you will be faced with throughout your life cycle. The value of your human capital is what you should consider when purchasing life and other forms of insurance, and your human capital's riskiness should be incorporated into all your investment decisions.

Summary

- The typical 40-year-old has almost \$50 of debt per \$100 of assets. Overall, the typical family unit has \$30 of debt per \$100 of assets. The median amount of money in retirement accounts is a mere \$35,000, and 50% of American families do not have any retirement account. All this implies that many Americans will have to drastically reduce their standard of living at retirement or retire much later than they expected.

- The traditional accounting measures of personal financial net worth and equity, which is computed as the value of assets minus the value of liability.
- Even though you might have very little if any financial equity, you are wealthier than you think. In fact, you probably have an asset worth millions of dollars. It's called human capital. Think of it as the “nest embryo” which will eventually become your “nest egg.”
- As you age you convert human capital into financial capital. Your total capital, which is the sum of both types of capital, should be increasing over time.
- Depending on how risky your job is, you may think of your human capital as a stock or as a bond or some combination in between. This analogy will come in handy later, when we talk about comprehensive asset allocation—considering both your human and financial capital—over the life cycle.
- In particular, individuals who expect to receive little or no income from a defined benefit pension plan must be even more careful to manage the conversion of their human capital into financial capital so that they secure a smooth income stream over their entire life cycle.

Endnotes

Modigliani (1986) describes his path-breaking research that led to his Nobel prize, as well as how he developed the life cycle hypothesis. The book by Becker (1993), yet another Nobel laureate, contains a number of his pioneering articles on the economic returns to human capital investment. Bodie, Merton, and Samuelson (1992) wrote the first formal article within financial economics to treat human capital as an asset class that can be primarily treated as a bond. The monograph by Ibbotson, Milevsky, Chen, and Zhu (2007) provides a more technical and mathematical analysis of the value of human capital, in addition to a number of actual case studies and examples that expand on the ideas in this chapter and the next one. Lee and Hanna (1995) wrote another early and relevant paper on how to think about human capital within the context of financial planning. Finally, the book by Lleras (2004) is an accessible book on the international returns to investing in human capital.