THE INVESTOR'S DILEMMA DECODED

RECOGNIZE MISINFORMATION, FILTER THE NOISE, AND REACH YOUR GOALS

ROGER D. SILK
KATHERINE A. SILK

WILEY

Additional Praise for *The Investor's Dilemma Decoded*

"This excellent book is a must-read for investors interested in acquiring a better understanding of the theory and practice of finance. It is exceptionally well-written. Complex ideas are explained thoroughly but in a simple and easy-to-understand and engaging fashion. Investors will find the numerous practical examples and advice invaluable in managing their portfolios."

—Professor Robert I. Webb, University of Virginia

"The Silks' book, The Investor's Dilemma Decoded, should be required reading for every American citizen, including college students of any background, who wants a better understanding of investments and the real-world economy. As a dually licensed attorney and CPA, the information contained in this book will help me to better communicate with my clients on the legal, tax, and business consequences associated with investments-related activities and issues which they confront on a regular basis. The book is also a good refresher for those of us who need to go back to basics to understand and address new problems and innovations on behalf of our clients."

—Clinton McGrath

"Roger has a gift of bringing clarity to virtually every item in the investor lexicon and makes it easy for the non-math layperson to understand while technical enough to challenge the most analytical professional investor's thinking. Armed with this book, any investor will be able to better able to understand, analyze and ask insightful questions about their portfolio and challenge their advisors. It is really a masterclass covering all of the important concepts and tools for analyzing asset classes, risk, returns and valuations that underly portfolio allocation and is a must read for serious investors, and a serious reference book that will still be relevant in 10 years."

—Reg Wilson, Pres EPIC Financial Consulting, Inc.

"I find the Intelligent Layman's Guide to Personal Investing to be very readable and surprisingly comprehensive given its length. I recommend it for a novice and for anyone looking to broaden their existing investment knowledge. The book discusses a

number of different types of investment for someone who wants to shape their own investment strategy or who simply wants to understand what a given fund is trying to accomplish with a given investment strategy."

—Tom Arnold, PhD., CFA, CIPM
Joseph A. Jennings Chair in Business,
Robins School of Business, University of Richmond

"Roger and Katherine have taken a subject that can require years to master, and they have condensed the key areas into a single book that goes beyond the basics. With the information in this book, most people will be in a great position to work with their wealth manager much more effectively. For those without an advisor, this information will help them to make much better decisions."

—Greg Freeman, Advisor Serve

"With his latest publication of "The Investor's Dilemma Decoded" Roger Silk once again provides the reader with a timely, helpful & informative roadmap for individual investors across the wealth spectrum. Silk's detailed review and condensed reminder of investment fundamentals pairs well along with recently updated research on what specific value is attributed to receiving professional advice from reputable financial planners in today's often confusing marketplace. Whether you are already an informed investor or wish to become one, perhaps this book's most impactful and practical value is to help today's investor 'avoid making avoidable mistakes!"

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AEP®, CASL, RICP, ChSNC

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—Kevin Kroskey, CFP®, MBA, Managing Partner, True
Wealth Design

The Investor's Dilemma Decoded

The Investor's Dilemma Decoded

Roger D. Silk, PhD
Katherine Silk, MA

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Synopsis of *The Investor's Dilemma Decoded*

The Investor's Dilemma Decoded provides readers with the background to make informed, effective decisions about their personal investing. The book explains, in a correct, thoroughly documented manner, the relevant economic and financial theory, as well as the historical performance of a wide variety of asset classes that an individual investor might consider.

The book offers some surprising insights, such as the idea that investing in 100% equities may well be the least risky option for young investors; that financial planners have been found in many studies to add significant value without "beating the market" and without exposing the client to excessive market risk; that a home is not a great investment; why Nobel Prize–winner Harry Markowitz did not use his own Nobel formula in his personal investing; and the truth about many supposed yields on futures contracts.

Chapter 1 explains the *Time Value of Money*. Everything else equal, a dollar today is worth more than a dollar tomorrow. Readers will learn how to compare the value of a dollar today to the value of a dollar in the future.

Chapter 2 models investments as a series of cash flows. The value of an investment is the present value of the sum of its future cash flows. Readers will learn how to value bonds using the present value of cash flows framework. We explain the difference between arithmetic and geometric returns, and the significance of the difference.

Chapter 3 focuses on bonds in more depth. Bonds generate returns primarily through their coupons. We review the risks to bonds, including credit risk, interest rate risk, inflation risk, and default risk. After explaining how bonds produce return, and examining how bonds have performed in the past, we show that a bond's current yield to maturity is the best predictor of its future return.

Chapter 4 focuses on equities. Many stock investors have no real understanding of how stocks generate returns. We explain that over the very long run, earnings are by far the dominant source of equities' returns. We review several useful measures for evaluating whether a market is cheap, expensive, or neither. Focusing on the Price-to-Earnings (P/E) ratio and Price-to-Book (P/B) ratio, we explain why, everything else being equal, expected returns are higher when a market has a lower valuation. Risks to equities include the risks of a decrease in valuation multiple or a decrease in earnings.

Chapter 5 examines real estate, the biggest asset class in the world (as measured by market value). We model the value of farmland as the value of a perpetual stream of cash flows. Farmland runs the risk of decreasing in value if its cash flow decreases or if interest rates rise. Homes, contrary to many perceptions, have not generally been a great investment. Over the past 120 years, the real compound annual growth rate of home prices is only about half a percent. The expected returns to apartment buildings are the net rents plus inflation. Overall, returns to income real estate are likely to equal the current yield plus some adjustment for inflation.

Chapter 6 explains that gold is not an investment, but is likely to hold its purchasing power over long periods of time. Over short periods, the price of gold is volatile. The returns to gold have been uncorrelated with the returns to equities, meaning that gold can play a diversifying role in portfolios.

Chapter 7 corrects some common misconceptions regarding futures contracts (sometimes referred to as "commodities"). We explain the arbitrage model of the pricing of futures contracts, and argue that the expected real return to commodity indices is negative. Furthermore, so-called "spot yields," "roll yields," and "collateral yields" are not true yields, and may not be positive.

Chapter 8 examines mutual funds, a vehicle used to invest in assets. We review the advantages of mutual funds, such as the fact that they allow for diversification and may offer reduced transactions costs, especially for bonds. We discuss the difference between open-ended funds, exchange-traded funds, hedge funds, and sector funds.

Chapter 9 discusses financial theories including the Markowitz Model, Capital Asset Pricing Model, Random Walk Theory, and Efficient Market Hypothesis. We examine the trade-off between risk and return in the Capital Asset Pricing Model and discuss that stock prices often follow (or seem to follow) a "random walk with drift" from day to day. We explain that while the Efficient Market Hypothesis is true in many cases, value (i.e. low market valuations) has historically outperformed the broad market over a wide range of markets and long time spans.

Chapter 10 explains the concept of financial leverage. Leveraging a portfolio can lead to greater returns and also carries greater risk. We argue that for the individual investor, investing in the already leveraged S&P 500 index or similar indices carries sufficient leverage.

Chapter 11 reevaluates the ideas of risk and uncertainty. We define *risk* as calculable statistical probabilities, whereas *uncertainty* refers to unknown possibilities. We review statistical approaches to calculating risk through traditional means, including standard deviation and variance. We revisit the importance of understanding

the difference between the geometric and arithmetic mean when considering expected returns.

Chapter 12 evaluates portfolio allocation strategies, examining expected returns for equities, bonds, cash, gold, futures, and managed futures.

Chapter 13 reframes the idea of risk: Rather than focus on the risk of losing money, many investors may find that the most important risk they face is the risk of running out of money. We present 11 portfolio simulations in which investments are allocated between equities and cash. We find that for young investors, investing in 100% equities yields the *lowest* risk of running out of money, while the "riskless" alternative of 100% in cash (or equivalents) virtually guarantees disaster.

Chapter 14 explains the value of financial advisors. We report the results of a number of academic studies that find financial advisors add value in a number of ways, most of which don't involve "beating the market." Advisors help clients get appropriately invested, stay invested in the market during downturns, provide asset allocation strategies, help clients take advantage of opportunities to save taxes, and help clients rebalance their portfolios. Advisors can vastly increase a client's ability to earn the returns that are available to the informed investor who avoids avoidable mistakes. People with greater financial literacy tend to benefit more from professional advice.

Chapter 15 discusses the practical side of investing using the concepts we have introduced.

The appendix explains some of the math used in the book. You should feel absolutely free to skip it. If you took a statistics course, or if you have read finance texts, and not fully understood some of the concepts, this appendix will, we hope, help. We try to clarify some of the concepts that are often seen (or hidden) in investment contexts. In our experience, in classes and in books, the professor or author often maddeningly skips steps, so that it is a great struggle for people who don't already understand to follow. If we've done that here, please email Roger at Roger.Silk@SterlingFoundations.com and let us know. We'll try to fix it in the next edition.

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We would like to thank everyone who has contributed to the creation of this book. Writing a book is a collaborative effort, and we are fortunate to have received support from many people. Unfortunately, space doesn't allow us to name everyone who has, in one way or another, contributed to this book. Among those we can thank are the following.

We wish to thank particularly Professor Tom Arnold, of the Robins School of Business, and Jade Lintott, PhD candidate at Georgie Institute of Technology, for generously reviewing the math in this book. Of course, any errors that remain (which, please point out to us if you find them – we'll give you gift card as a thank-you) remain solely our responsibility.

In addition, we thank Shannon Swery of Sterling Foundation Management for her careful review of the final manuscript. Again, any errors that remain are our responsibility, and if you spot them and point them out to us, we'll send you a gift card as a thank-you.

For Roger, some of the ideas and understandings presented in this book represent the evolution of ideas and concepts I learned

decades ago from teachers. Among them are many of my professors at Stanford, including Anne Peck, Roger Gray, Jeffrey Williams (now at UC Davis), Walter P. Falcon, V. "Seenu" Srinivasan, Bruce Grundy, Scott Pearson, Harry Paarsh, and Carl Gotsch.

In addition, we thank all the readers who read our book and gave us comments that helped us improve the book. Tyler Cowen's feedback and comments were very valuable, and we are grateful for his insights. We also thank Kevin Kroskey, Clinton McGrath, Jimmy Jacobs, Tom Myers, Bruce Popper, Reg Wilson, Michael Millman, Robert Webb, and Tom Arnold for their review of the draft.

Again, we thank everyone who contributed to the writing and publication of this book.

Introduction

Successful investing is hard, even for professionals. As Warren Buffet's partner, Charlie Munger (himself a billionaire investor) told Howard Marks (another billionaire investor), investing is "not supposed to be easy. Anyone who finds it is easy is stupid."[1] Nevertheless, according to Buffet, "You don't need to be a rocket scientist,"[2] either.

The purpose of this book is to help you learn *how to think* about investing. Then, if you choose not to do all your investing yourself (few non-professionals do, or should), you will be able to be an informed, careful consumer of professional investment services. And evidence shows (see chapter 14) that the more you know, the more value you are likely to gain from professional advice.

[1] Oaktree Capital Management, 2021, "It's Not Supposed to Be Easy: How Oaktree Strives to Add Value in Uncertain Times," https://www.oaktreecapital.com/insights/oaktree-insights/special-editions/it-s-not-supposed-to-be-easy-how-oaktree-strives-to-add-value-in-uncertain-times

[2] Carol J. Loomis, "The Wit and Wisdom of Warren Buffett," *Fortune* (November 19, 2012), https://fortune.com/2012/11/19/the-wit-and-wisdom-of-warren-buffett/

We provide a framework for thinking about investing in a consistent, careful way. If you develop a thoughtful approach to your personal investing, and implement it consistently, you'll be ahead of most people, and well on your way to investment success.

This is not a get-rich-quick book. But if you want a get-rich-quick scheme, you need look no farther than Will Rogers's advice from almost a hundred years ago. "Take all your savings and buy some good stock, and hold it till it goes up, then sell it. If it don't go up, don't buy it."[3] Most get-rich-quick schemes are scams, and we won't have any more to say about them.

Instead, we will explain the basics, and build up to a systematic approach to personal investing that, while not guaranteed, should give you about the best odds that are available.

We begin with the "time value of money," and explain how that concept is used in investment analysis. We then devote chapters to bonds, stocks, real estate, gold, and commodity futures, explaining how each of these types of assets generates returns (or doesn't), and we look at long-run historical performances.

In short, we try to explain in theoretical terms how each asset produces returns, and in historical terms what those returns have been. These discussions are intended to help you understand what future returns might reasonably be. We also discuss historical volatility of returns.

We then turn to a discussion of funds as useful vehicles through which to invest, followed by four chapters that focus on portfolio theory. Portfolio theory is mainly about how to get as much return as possible for each "unit" of risk that you accept. We discuss risk in some depth, and also leverage, which can affect risk greatly.

The next two chapters discuss how to assemble a portfolio, and what you might reasonably expect from a variety of different portfolios.

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[3] Will Rogers, "Thoughts of Will Rogers on the Late Slump in Stocks," *New York Times* (November 1, 1929), https://www.nytimes.com/1929/11/01/archives/thoughts-of-will-rogers-on-the-late-slump-in-stocks.html

We devote a chapter to the role of professional financial advisors, and conclude that for many people, the right professional financial advisor offers a sound value proposition.

We have tried to present the material as clearly as possible, without dumbing it down. There are zillions of dumbed-down books out there promising that it's easy. If it were that easy, you would probably already know it, and wouldn't have picked up this book.

However, if you're willing to put in a bit of effort to learn the basics, we believe that the concepts and tools provided here will give you an excellent shot at building real, life-changing wealth over time.

You may notice that there are footnotes in this book. If you don't like footnotes, please feel free to ignore them. They are there to offer additional detail that didn't quite fit into the text and to show the source of quotations or other claims.

There is some math in this book. You don't necessarily need to know the math, but we've found that there are too many people out there giving advice, including some recognized "experts" whose failure to understand the math leads them into errors that could be very costly to people who rely on their advice. So we've included the math for the people who want it.

Even if you don't understand everything, you'll still be able to gain valuable ways of thinking about different asset classes, about risk, and about where returns come from and what might be expected in the future.

We've included a mathematical appendix for those who want a refresher on the math.

Chapter 1
Time Value of Money

Which is worth more: one dollar today, or one dollar tomorrow?

The Standard Theory

The standard theory of the time value of money states that a dollar in your hand today is worth more than the same dollar in your hand in the future. This is true even if there is no inflation.

Here's one example. Would you rather have $100 today, or $100,000,000 in a million years? Even if you were absolutely certain that the $100,000,000 would be "yours" in a million years, it would be worth nothing to you, because you would not expect to be around to enjoy it. Further, even if your great, great, great, etc., grandchildren could be assured of receiving it, it would probably mean little to you.

But what about more realistic waiting periods? For example, suppose you have the choice between $100 now, and $100 in a year from now. The standard theory says that the rational person will

always choose the $100 now, because you could do everything with $100 now that you could do with it in a year from now, and you could invest it to earn interest between now and then.

This standard theory is right, but it has a few important assumptions buried in it. The most important of these assumptions is that you can save money at no cost and at no risk between now and the future. In thinking about the standard theory, or any economic theory, it is important to remember the assumption of "all other things equal" (from the Latin, ceteris paribus).

Assumption: You Can Save Money at No Cost

The assumption that you can save money at no cost means that if you have a certain amount of money today, you can save that money for any period at no cost. No cost means that you don't have to pay any storage charges, or insurance charges, or handling charges, or taxes, or charges of any kind.

In the last hundred years or so, citizens in developed economies have gotten used to the idea that they can save money, in a bank for example, and not have to pay for the service. We will not be surprised if financial historians of the future look back and see this as a sort of financial magical thinking, which has indirectly had catastrophic costs by making the entire banking system unstable.

In general, if you want to store any valuable commodity, you would have to do it yourself – perhaps in your home, in a rented vault, or perhaps even burying it in the ground. You would not expect that you can store it securely for free.

In principle, money is no different. But the way banking has developed over the past several hundred years, bankers, with the willing cooperation of their depositors, have purported to "save" money for free for their depositors. Of course, nothing is free. The bankers have been willing to offer this service for free so that they could get their hands on the money. Do they "save" it for you? Absolutely not. They lend it out. This lending puts your money at risk, and generates income for the bank, provided that the bank doesn't suffer too many loan losses. If the bank suffers too many

loan losses, they may not even be able to pay you back the money that you deposited.[1]

Despite the inherent instability of this practice, it has become so entrenched in the modern banking system that it seems like a permanent feature. We don't think history will prove it so, but for the time being (and perhaps for the foreseeable future), it is.

Assumption: You Can Save Money at No Risk

The assumption that you can save money at no risk of not getting it back (in other words, that you can save money with the guarantee that you'll receive 100% of it back) is easy to understand in principle. It is a bit surprising that so many people believe it to be literally true. There is no truly riskless proposition in the material world. It may be the case that some things carry extremely low risk, but in our world, that risk is never actually zero.

Nevertheless, most people in the developed world behave as though they can put money in the bank, and have no risk of not getting it back in the future.

As long as you can put money in the bank and expect to receive it back in the future, and the bank doesn't charge you for the service, a dollar now is worth more than a dollar in the future, because you can turn it into a dollar in the future by storing it. Anything you can do with a dollar in a year, you could do with a dollar now because you could just wait. But you can do things with the dollar now, such as spend it now, that you cannot do with a dollar in a year. So the dollar now is worth at least as much as the dollar in the future.[2]

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[1] In the current system, deposits may be "insured" by government guarantees. These are not true insurance, because it is not optional, it is not truly risk-based, and it is ultimately backed by taxpayer funds. Furthermore, it is very likely the case that deposit insurance results in bankers taking greater risks with depositors' funds than they would without it, and thereby make the entire system less stable. The financial crisis of 2008 was a case in point, and ended up costing taxpayers at least half a trillion dollars. (See Deborah Lucas, 2019, "Measuring the Costs of Bailouts," *Annual Review of Financial Economics* 11: 85–100.) For a discussion of how deposit insurance causes instability, see Asli Demirgüc-Kunt and Enrica Detragiache, 2002, "Does Deposit Insurance Increase Banking System Stability? An Empirical Investigation," *Journal of Monetary Economics* 49: 1373–1406.

[2] The pure time value of money analysis does not depend on the assumption of there being no risk of not getting your money back, but the assumption simplifies the analysis.

Time Value of Money and Compound Growth

Economists, financial professionals, and talking heads often conflate the time value of money with the phenomenon of compound growth. You don't need to worry about the finer points of theory as discussed earlier, but you do need to understand the math of exponential or compound growth.

Perhaps the easiest way to understand compound growth is to think in terms of "interest on interest." Suppose you have $100 and you can earn 10% per year. (For the purpose of illustration, we assume that the 10% earnings are risk-free, but remember the real world is never risk-free.) Table 1.1 shows how your money would grow if you get paid interest at the end of every year, and reinvest the interest.

Table 1.1 Compound Growth Assuming Interest Payments Are Reinvested

Year	Beginning Principal	Interest	Ending Principal
1	100.00	10.00	110.00
2	110.00	11.00	121.00
3	121.00	12.10	133.10
4	133.10	13.31	146.41
5	146.41	14.64	161.05
6	161.05	16.11	177.16
7	177.16	17.72	194.87
8	194.87	19.49	214.36
9	214.36	21.44	235.79
10	235.79	23.58	259.37
11	259.37	25.94	285.31
12	285.31	28.53	313.84
13	313.84	31.38	345.23
14	345.23	34.52	379.75
15	379.75	37.97	417.72
16	417.72	41.77	459.50
17	459.50	45.95	505.45
18	505.45	50.54	555.99
19	555.99	55.60	611.59
20	611.59	61.16	672.75