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Integrity in Investing
An Informed Philosophy for a Million Dollar Bet

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PROFESSIONAL FINANCIAL
Integrative Wealth Management

"When there is a gap between perception and reality, it is only a matter of time until it is reconciled . . . in favor of reality."
– **Jack Bogel**, *Founder of Vanguard, father of the index fund*

This is part of a series exploring integrity in professional financial strategy

Key takeaways:

- Capital markets have rewarded investors willing to bear risk
- Investors who buy stocks after prices increase, or the reverse, are avoiding risk
- An informed diversified and disciplined strategy should focus on compensated risks
- Market declines are an opportunity to enhance outcomes with informed rebalancing

Last year saw the conclusion of a 10-year wager between Warren Buffett, wealthy chairman of Berkshire Hathaway Inc., and Ted Seides, a New York hedge fund consultant. Seides responded to a public challenge issued by Buffett in 2007 regarding the merits of hedge funds relative to low-cost passive vehicles. The two men agreed to bet $1 million on the outcome of their respective investment strategies over the 10-year period from January 1, 2008, through December 31, 2017. Buffett selected the S&P 500 Index of large U. S. stocks, Seides selected five hedge funds, and the stakes were earmarked for the winner's preferred charity.

The terms were revised midway through the period by converting the sum invested in bonds to Berkshire Hathaway shares, so the final amount is reported to be in excess of $2.2 million. The 10-year period included years of dramatic decline for the S&P 500 Index (–37.0% in 2008) as well as above-average gains (+32.4% in 2013), so there was ample opportunity for clever managers to attempt to outperform a buy-and-hold strategy through a smart timing strategy—if that was possible.

For fans of hedge funds, however, the results were not encouraging. For the nine-year period from January 1, 2008, through December 31, 2016, the average of the five funds achieved a total return of 22.0% compared to 85.5% for the S&P 500 Index. Having fallen far behind after nine years, Seides graciously conceded defeat in mid-2017. But he pointed out in a May 2017 Bloomberg article that in the first 14 months of the bet, the S&P 500 Index declined roughly 50% while his basket of hedge funds declined less than half as much. He suggested that many investors bailed out of their S&P 500-style strategies in 2008 and never participated in the recovery. Hedge fund participants, he argued, "stood a much better chance of staying the course." While Seides makes a valid point—long run returns don't matter if the strategy is abandoned along the way—but the high rate of failure in hedge funds does not make them an simple and elegant alternative to a multi-dimensional investment management fund strategy.

Knowing when to hold or fold

What investing philosophy does Warren Buffett—who ranks among the world's richest men—believe about the way markets work that Seides does not? Indeed, it has been noted recently that rather than chasing U.S. equities ever higher, as most investors and hedge fund traders do, Mr. Buffett has been quietly stockpiling $130 billion in cash equivalents and T-bills in his firm.[1]

Amid all the purported pundits and experts around, it may be worth asking who Warren Buffet listens to for ideas. "When I see memos from Howard Marks in my mail," Mr. Buffet has said, "they're the first thing I open and read. I always learn something."[2] In advance of the 2007-09 market meltdown Mr. Marks set up an $11 billion distressed-debt fund to buy financial instruments of companies at or near bankruptcy. (Warning: do not try this at home!) According to *Bloomberg*, his funds returned 19% per annum after fees, far out-performing almost all other hedge funds. Mr. Marks explained his thinking: "All you had to do to make money in the crisis was to have the money to spend and the nerve to spend it. You didn't need caution, conservatism, risk control, . . . All you needed was money [in the form of cash] and nerve."

Both Mr. Buffet and Mr. Marks would acknowledge an inability to forecast or call market tops or bottoms. But they do believe they understand investors' fluctuating attitudes toward risk. Declining prices increase investor risk aversion and sends them to sidelines when prices are declining—when likely they should be buying. As late Nobel laureate Merton Miller remarked, "The firm's cost of capital is the investor's return." The opposite is seen when prices rise, especially to the record heights of not so long ago. Mr. Marks writes, "The greatest source of investment risk is not negative economic developments [but] when risk aversion and caution evaporate."[3] When investors come to think, "there is no risk," they start to panic and risk aversion goes from inadequate to excessive when news is bad and prices decline. Risk-bearing reward is greatest at the very time when many or most investors are avoiding it. Hence Mr. Buffett's famous advice: "Be fearful when others are greedy and greedy when others are fearful."

The long-run risk of investing

Rising yields on U. S. Government debt as the U.S. moves back to the top of the world's global competitiveness paradoxically challenge the durability of a bull market in U. S. stocks now entering it's tenth year. Interest rates are rising as the Treasury competes for investor capital without the Federal Reserve to buy the excess. Expanding businesses are also looking for capital. In the aftermath of the Fed's "quantitative easing" program, it holds a vast stockpile of bonds and mortgages that must be refinanced in the open market as they mature. On top of all that, the U.S. government must borrow $1 trillion next year and for years following to cover its deficit due to expanding social programs, and so must also complete for investor capital. China, once the biggest foreign buyer of U.S. debt, has become a net seller as a new "Cold War" develops. While a booming economy normally is good for stocks, families nearing retirement or needing reliable income are more likely to pull back from high-risk equities as new issues of risk-free Treasuries or low-risk bonds change over the coming months to offering yields in the 4% range or higher.

So rising yields for yield-starved investors are not a free lunch for them. The Federal Reserve's quantitative easing program explicitly sought to flatten long-term bond yields to push investors into riskier assets, such as equities and corporate debt. As the Fed unwinds its huge bond portfolio, it's likely that prices on outstanding fixed income assets will decline substantially, since we would expect that what goes up on Fed manipulations could come down as bond yields move to historical levels.

From **Exhibit 1** we see a 22.7% 12-month returns for a U.S. large growth stocks index. Growth stocks had a 12.9% annualized return for the past ten years, and with below-average volatility, causing many investors to forget the painful global financial panic years and the tech bust years. In meetings with prospective clients, we find an over-allocation to U.S. stocks due to concerns with low fixed income returns, even among those near or in retirement. I invariability observe they are unaware that the ten-year annualized return of those same growth stocks in the preceding period was a mere 0.6%! That "lost decade" was preceded by high stock returns.

Exhibit 1: PERFORMANCE OF SELECTED INDEXES SINCE THE GLOBAL FINANCIAL CRISIS

Annualized Returns (%) from October 1998 to September 2018 By Periods

ASSET CLASS DATA SERIES	Oct 2008 to Sept 2018			Oct 1998 to Sept 2008		Oct 1998 to Sept 2018
	1 Year	5 Years	10 Years	5 Years	10 Years	20 Years
Russell US Large Cap Growth Index	22.7	15.3	12.9	3.7	0.6	7.2
S&P 500 Index	17.9	13.9	12.0	5.2	3.1	7.4
Russell US Large Cap Value Index	13.6	12.5	10.9	7.1	5.5	7.6
Russell US Small Cap Index	16.7	11.5	12.9	8.2	7.8	9.5
MSCI EAFE Index (gross div.)	3.2	4.9	5.9	10.2	5.4	5.6
MSCI Emerging Markets Index (gross div.)	-0.4	4.0	5.8	19.1	14.8	10.2
Bloomberg Barclays U.S. Aggregate Bond Index	-1.2	2.2	3.8	3.8	5.2	4.4
One-Month US Treasury Bills	1.5	0.5	0.3	3.1	3.3	1.8

Source: *Russell data provided by Russell Investment Group; S&P Dow Jones Indicies, LLC, a division of Standard & Poors Global; MSCI data by Morgan Stanley Capital International; Bloomberg Barclays data provided by Bloomberg Finance L. P.; Mutual fund universe statistical data and non-Dimensional money managers' fund data provided by Morningstar, Inc., all rights reserved.*

In U.S. dollars. Return gross of dividends except where indicated. Indexes are not available for direct investment, therefore past performance does not reflect expenses of an actual portfolio. Past performance is no assurance of future results, and there is always a risk that an investor may lose money. Future performance may be higher or lower than any performance shown. Performance does not represent the impact that economic and market factors may have had on the client or advisor decision-making if money was actually invested during that period.

Too many investors believe the popular media's storyline that economic growth drives stock price growth. The day-to-day connection seems obvious! Earlier this year, an 84-year old client with us since 2004 moved their money because we refused to increase their equity allocations from a moderate to a U.S. growth strategy. But fundamentally, return and compensated risk are related, and speculating that new economic growth will keep driving U.S. stock prices even higher is very risky thinking, and not a sustainable model as investors found out in 2000-2002.

Morningstar's "Price to Fair Value" equity style boxes in **Exhibit 2** suggests to us that the high prices of many U.S. growth stocks has become speculative. The Morningstar study implies that U.S. growth stocks as a group are "overvalued." By contrast, U.S. value stocks—which have underperformed growth stocks for the past ten years—are shown as "undervalued". That is true of international and emerging market stocks in another study. When reviewing the pages of *Barron's* or googling the latest market prices, it is certain that you cannot own past performance. Standard disclosure on mutual fund advertising warns "past performance is not guaranteed." Too many investors simply project past performance into the future because media highlights easy to understand figures to gain instant attention. Publishers also know reader memories are short. But you can make informed decisions on how to own expected future returns by smart planning.

Are stocks always for the long-run?

Jeremy Siegel is a Wharton School professor and author of *Stocks for the Long Run,* now in its sixth edition. Siegel has remained bullish on stocks throughout the post-global crisis period. He vehemently disagrees with Nobel laureate Robert Shiller's warnings that stocks may be substantially over-valued today.[4] While financial theory and empirical data implies stocks should return more than bonds, that does not mean a high stock allocation concentrated in the U.S. is a suitable strategy for someone nearing retirement or during their retirement years when they need income.

Exhibit 1 provides strong evidence that major equity asset classes can perform modestly (or not at all) for ten years or longer. The best evidence empirically rejecting the popular notion nowadays that "stocks are not risky in the long run" is Japan's Nikkei 225 Index. Japan—a large, wealthy and politically stable country, formerly the second or third largest economy by GDP in the world—*has declined 48% over 27 years from 1990 to 2017.*[5]

Exhibit 2: MORNINGSTAR PRICE TO FAIR VALUE, U.S. EQUITY STYLE BOXES
Growth equities are over-valued, Value is under-valued

Size / Style		Value	Blend	Growth
	Total Market 1.9	–5.8	1.0	10.9
Large	1.5	–7.8	0.2	10.4
Mid	6.0	–0.3	4.2	14.9
Small	3.5	0.4	2.9	7.6

Overvalued (%)
- >10.1
- 5.1 to 10

Fairly Valued (%)
- 0.1 to 5
- 0
- –0.1 to –5

Undervalued (%)
- –5.1 to –10
- <–10.1

***Source:** Morningstar Markets Observer Q3 2018—Data as of June 30, 2018. Morningstar quantitative and analyst fair value data. Morningstar Style Boxes based on market-cap weighted data. Past performance is no assurance of future results, and there is always a risk that an investor may lose money.*

So while stocks have higher **expected** returns than bonds, that does not assure particular investors that their **realized** runs will be higher in the long run, even if they diversify. This depends on what is the investor's "long-run" starting point. The common thinking is conceptually refuted in **Exhibit 3** using the standard Black-Sholes asset-pricing model (which earned it's creators Nobel laureates). We see the cost for guaranteeing that stocks will out-perform bonds increases dramatically with the time horizon. *This exhibit mathematically proves that while the probability of stocks underperforming bonds declines with the time horizon, the cost of insuring against underperformance increases.* Creating guarantees for the relative outperformance of stocks versus bonds is not costless, as shown by Nobel Laureate Robert C. Merton.[6] While clients might wish that more had been allocated to U.S. stocks relative to international allocations in recent years, there is no way to know the optimal time when to tactically make such a switch—and be right twice. A truly diversified, global allocation strategy for stocks has been shown by Professor Merton in his studies as the most cost-effective way to manage risk impacting long-term equity outcomes.

Rising interest is impacting prices

It's been ten years since the Lehman Brothers bankruptcy triggered a global financial crisis. Market crises take place when too much bad debt is underwritten and then sold to investors who are looking for high returns with low risk. What happened in credit markets due to excessive debt years ago, is reappearing once again at a greater level. Over the past decade, total global debt (sovereign, corporate and household) has spiked nearly 75%. Sovereign debt has doubled from $29 trillion to $60 trillion.[7] Total corporate debt has increased by 78% to $66 trillion. Bond markets have replaced bank loans with nonfinancial bonds outstanding up 172%, from $4.3 trillion to $11.7 trillion. About 40% of U. S. companies are rated one notch above or below "junk." Once familiar AAA highly-rated debt has virtually disappeared—even U.S. government securities are no longer AAA rated.

A decade of zero interest rates supported by world-wide quantitative easing has increased debt and lowered composite credit quality. Investors desperate for yield have chosen to ignore credit risk and refinance dubious businesses when rates were low as no better alternatives were available. However, central banks worldwide, including the Federal Reserve here in the U.S., are glacially unwinding balance sheets and interest rates are slowly rising. So higher rates are not only coming, but they are here, likely leading to a flood of credit defaults due to huge debt supply of central banks. President Trump, who understands the impact of rising interest rates on real

Exhibit 3: COST OF INSURING STOCK UNDERPERFORMANCE INCREASES WITH TIME HORIZON
Liability Shortfall Guarantee Relative to Bonds as a Function of Time Horizon

Length of Time Horizon (Years)	Cost per Dollar Insured (cents)	Funding Needed Per $ Invested	Fraction Invested of Total Funding
0	0	$1.00	100%
1	7.98	$1.08	93%
5	17.72	$1.18	85%
10	24.84	$1.25	80%
20	34.54	$1.35	74%
30	41.63	$1.42	70%
50	52.08	$1.52	66%
75	61.35	$1.61	62%
100	68.27	$1.68	60%
200	84.27	$1.84	54%

For illustration only. The table was derived using the Black-Scholes option pricing formula with sigma = 20% standard deviation per year. Cost is independent of the risk-free interest rate.

Source: *Zvi Bodie, "On the Risk of Stocks in the Long Run," Financial Analysts Journal (May/June 1995). Available at SSRN: https://ssrn.com/abstract=271430*

estate deals, is criticizing the Fed's raising of its base rate as "my biggest threat."[8]

The threat extends to a declining demand for U. S. Treasuries, as the perception of the U.S. as credit-worthy declines. The U.S. owes $21.5 trillion of Treasury debt, the majority of which is scheduled to be refinanced in the next eight years, disregarding $100 trillion of unfunded entitlement spending off the books. The Fed still owes $2.342 trillion it bought from banks as part of quantitative easing which must be refinanced as it matures. Foreign sovereigns own $6.5 trillion of U.S. debt, 40% of which is controlled by China, Japan and Saudi Arabia. China, newly engaged in a "cold war" with the U.S., is now a net seller of Treasury debt: China needs to finance the enormous "zombie" construction debt of its insolvent banking system. As 10-year Treasury rates pass 3.25% this month, approaching the long-term average yield of 4.25%, "lend and pretend" refinancing could stop. When credit turns, as hedge funds, trading firms and businesses reduce their leverage, a nasty stock market decline may not be long in coming.

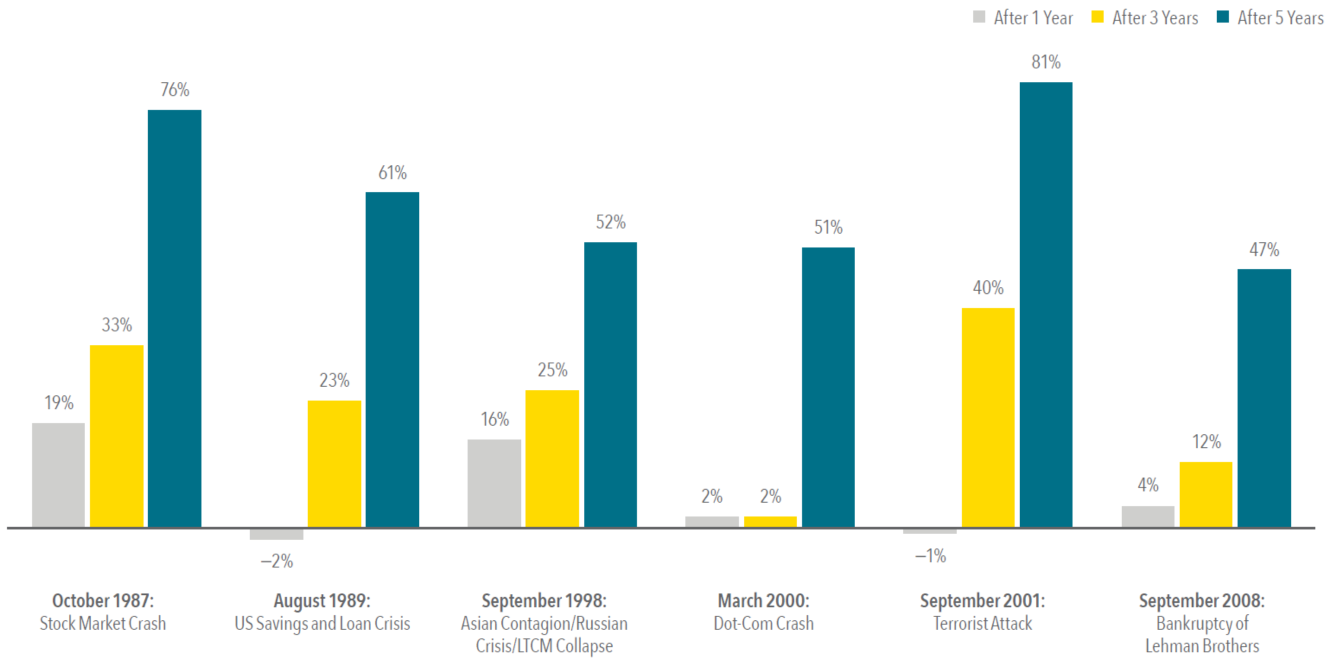
Key lesson to be learned

It is 11 years since the S&P 500 Index hit its highest point in October 2007 that the U. S. markets lost more than half their value over the next year and a half during the global financial crisis. It is difficult to draw useful conclusions based on one observation; financial markets behave unpredictably and don't repeat, but they do echo. There are, however, important investing lessons to remember: Capital markets have rewarded investors over the long-term and having an investment approach you can stick with—especially during tough times—will increase your confidence and improve outcomes during the inevitable crisis. Such events occur about every ten years, and it's time.

A decade's passing may have softened memories, especially by clients of Professional Financial who stuck with their strategy. The rebound and subsequent success of the firm's clients have influenced the recollections of some. Newer investors with little invested in those days don't recall much. But while crisis events were unfolding, the future seemed dark and worrisome. Confusion and fear dominated headlines such as "Worst Crisis Since '30s, With No End Yet in Sight,"[9] "Markets in Disarray as Lending Locks Up,"[10] and "For Stocks, Worst Single-Day Drop in Two Decades"[11] and were front-page news. Reading the news, opening quarterly statements, or going online to check an account balance (if they did it at all) were, for many, stomach churning experiences.

Exhibit 4: A MARKET-DRIVEN RESPONSE TO ECONOMIC CRISIS EVENTS

Hypothetical Performance of Periodically Rebalanced Growth Multi-Dimensional Strategy
60% Global Stocks, 40% Global Bonds (Cumulative Total Returns)



In US dollars. Represents cumulative total returns of a balanced strategy invested on the first day of the following calendar month of the event noted. Balanced Strategy: 12% S&P 500 Index,12% Dimensional US Large Cap Value Index, 6% Dow Jones US Select REIT Index, 6% Dimensional International Marketwide Value Index, 6% Dimensional US Small Cap Index, 6% Dimensional US Small Cap Value Index, 3% Dimensional International Small Cap Index, 3% Dimensional International Small Cap Value Index, 2.4% Dimensional Emerging Markets Small Index, 1.8% Dimensional Emerging Markets Value Index, 1.8% Dimensional Emerging Markets Index, 10% Bloomberg Barclays Treasury Bond Index 1-5 Years, 10% Citigroup World Government Bond Index 1-5 Years (hedged), 10% Citigroup World Government Bond Index 1-3 Years (hedged), 10% BofA Merrill Lynch 1-Year US Treasury Note Index. The S&P data are provided by Standard & Poor's Index Services Group. The Merrill Lynch Indices are used with permission; copyright 2017 Merrill Lynch, Pierce, Fenner & Smith Incorporated; all rights reserved. Citigroup Indices used with permission, © 2017 by Citigroup. Bloomberg Barclays data provided by Bloomberg. For illustrative purposes only. Dimensional indices use CRSP and Compustat data. Indices are not available for direct investment. Their performance does not reflect the expenses associated with the management of an actual portfolio.

Past performance is not a guarantee of future results. Not to be construed as investment advice. Rebalanced monthly. Returns of model portfolios are based on back-tested model allocation mixes designed with the benefit of hindsight and do not represent actual investment performance. See Appendix for additional information.

While investing is never worry-free, the feelings of panic and dread felt by many during the financial crisis were acute. Our normally quiet office phones rang daily for months—and for a couple months, hourly. A few decided it was more than they could stomach and liquidated, locking in their losses and jeopardizing their financial futures. On the other hand, those clients who chose to stay the course and stick to their investment strategy completely recovered over a couple years and benefited from the subsequent years of U.S. market growth and prosperity.

It is important to understand that a successful recovery from sticking with an informed, balanced, multi-dimensional strategy employed by Professional Financial was not the first time it was successful during a time of substantial market volatility. *Exhibit 4* helps illustrate this key point. The exhibit shows the performance of a hypothetical balanced multidimensional strategy following several crises, including the infamous meltdown of September of 2008, which triggered the financial crisis. Each event is labeled with the month and year that it occurred or peaked.

Although a globally balanced multidimensional strategy suffered immediate losses following these events, markets eventually recovered, as can be seen by the one-, three- and five-year cumulative returns. In advance of such times, having a long-term planning perspective, appropriate diversification, and an informed asset allocation strategy aligned with your personal goals and risk preferences with periodic rebalancing can help you remain disciplined and confident enough to ride out the storm, especially when working with a trusted CFP® wealth professional.

An enduring investment philosophy

The importance of having a sound investment philosophy—one that is founded on financial science and one that you can stick with—cannot be overstated. Just like a personal philosophy can act as a moral compass, an informed investment philosophy can guide your decisions on how to plan and stay invested. While this sounds simple, the implications for taking control and staying in control of your financial future during turbulent times that are certainly ahead are profound and far reaching. Warren Buffett has a philosophy, and you should have one, too.

People spend decades planning children's college, a lifestyle for retirement or leaving a legacy for family or causes they care deeply about. Investors put their savings to work in capital markets with the expectation of earning a fair return, and there is ample evidence that long-term investors can be rewarded. But markets go up, and markets go down, so investors encounter disappointing times. It is in such times your philosophy and commitment will be tested. Being able to stay the course requires trusting both your strategy and your advisor.

The enduring investment philosophy that we use at Professional Financial, from our model of world and years of education, is based on the power of market prices and guided by decades of theoretical and empirical research. We specialize in managing wealth aligned with the science of capital markets. Our close relationship with Dimensional Fund Advisors helps our clients pursue higher expected returns using a dynamic implementation process applying portfolios that integrate research, portfolio design, and portfolio management and trading. Through Dimensional's deep working relationships with leading financial economists, academic insights are smartly applied to practical strategies to help you benefit more from global markets for capital.

Without education and guidance—and bitter experience—it is hard for non-professionals to develop on their own a cogent investment philosophy. Even the most self-aware find it hard to manage their response in a crisis. We know that the investing experience vacillates between alluring and scary but having a well-informed financial model how markets work and trusting how they integrate information, and trusting Dimensional to execute its desired strategies, is an important starting point. Having an asset allocation strategy closely aligned with your personal financial goals and risk preferences is also key to sticking with your plan in good times and bad.

In most endeavors, there are things you can control and things you can't. That's true in life. It's true in business. And that's true with planning and investing. Uncertainty is essential to investing. To benefit from higher potential returns, investors must plan how best to bear some degree of uncertainty. By our designing a custom wealth management process for each family situation, with your personal asset allocation strategy at the core, you can be better positioned to deal with uncertainty and gain peace of mind so you may enjoy a more abundant retirement.

"While rational expectations can tell us what will happen. . . they can never tell us when."[12]

– **Jack Bogel**, *Founder of Vanguard, father of the index fund*

Endnotes

1 Barbara Kollmeyer, "Warren Buffett's growing cash pile and the big read-in for investors," *Market Watch* (August 7, 2018) https://www.marketwatch.com/story/warren-buffets-growing-cash-pile-and-the-big-read-in-for-investors

2 Burton G. Malkiel, "The Dangers of Optimism," *Wall Street Journal* (October 9, 2018), A15.

3 Howard Marks, *Mastering the Market Cycle* (Houghton Mifflin Harcourt), 2018.

4 Siegle and Shiller keynote presentation at Wharton Jacobs Levy Center 2018 Conference on September 18, 2018.

5 From Robert C. Merton, Dimensional Fund Advisors Webinar. The 1990 high was 38,951, 2017 ended 19,469.

6 Robert C. Merton, Dimensional Fund Advisors Thought Leader Webinar (March 2, 2018).

7 McKinsey Global Institute, "A Decade After the Global Financial Crisis: What Has (And Hasn't) Changed (September 2018).

8 Nick Timiraos, "President's Sustained Criticism of the Federal Reserve Complicates a Tricky Balancing Act" Wall Street Journal (October 17, 2018) https://www.wsj.com/articles/presidents-sustained-criticism-of-the-federal-reserve-complicates-a-tricky-balancing-act-153972780

9 http://wsj.com/articles/SB122169431617549947

10 http://washingtonpost.com/wp-dyn/content/article/2008/09/17/AR2008091700707.html

11 http://nytimes.com/2008/09/30/business/30markets.html

12 Jason Zweig, "Bogleheads Meet the Head Bogle," The Intelligent Investor, *Wall Street Journal*, October 6-7, 2018

APPENDIX

BALANCED STRATEGY 60/40

The model's performance does not reflect advisory fees or other expenses associated with the management of an actual portfolio. There are limitations inherent in model allocations. In particular, model performance may not reflect the impact that economic and market factors may have had on the advisor's decision making if the advisor were actually managing client money. The balanced strategies are not recommendations for an actual allocation.

International Value represented by Fama/French International Value Index for 1975–1993. Emerging Markets represented by MSCI Emerging Markets Index (gross dividends) for 1988–1993. Emerging Markets weighting allocated evenly between International Small Cap and International Value prior to January 1988 data inception. Emerging Markets Small Cap represented by Fama/French Emerging Markets Small Cap Index for 1989–1993. Emerging Markets Value and Small Cap weighting allocated evenly between International Small Cap and International Value prior to January 1989 data inception. Two-Year Global weighting allocated to One-Year prior to January 1990 data inception. Five-Year Global weighting allocated to Five-Year Government prior to January 1990 data inception. For illustrative purposes only.

The Dimensional Indices used have been retrospectively calculated by Dimensional Fund Advisors LP and did not exist prior to their index inceptions dates. Accordingly, results shown during the periods prior to each Index's index inception date do not represent actual returns of the Index. Other periods selected may have different results, including losses.

INDEX DESCRIPTIONS

Dimensional US Large Cap Value Index is compiled by Dimensional from CRSP and Compustat data. Targets securities of US companies traded on the NYSE, NYSE MKT (formerly AMEX), and Nasdaq Global Market with market capitalizations above the 1,000th-largest company whose relative price is in the bottom 30% of the Dimensional US Large Cap Index after the exclusion of utilities, companies lacking financial data, and companies with negative relative price. The index emphasizes securities with higher profitability, lower relative price, and lower market capitalization. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Exclusions: non-US companies, REITs, UITs, and investment companies. The index has been retroactively calculated by Dimensional and did not exist prior to March 2007. The calculation methodology for the Dimensional US Large Cap Value Index was amended in January 2014 to include direct profitability as a factor in selecting securities for inclusion in the index. Prior to January 1975: Targets securities of US companies traded on the NYSE, NYSE MKT (formerly AMEX), and Nasdaq Global Market with market capitalizations above the 1,000th-largest company whose relative price is in the bottom 20% of the Dimensional US Large Cap Index after the exclusion of utilities, companies lacking financial data, and companies with negative relative price.

Dimensional US Small Cap Index was created by Dimensional in March 2007 and is compiled by Dimensional. It represents a market-capitalization-weighted index of securities of the smallest US companies whose market capitalization falls in the lowest 8% of the total market capitalization of the Eligible Market. The Eligible Market is composed of securities of US companies traded on the NYSE, NYSE MKT (formerly AMEX), and Nasdaq Global Market. Exclusions: Non-US companies, REITs, UITs, and investment companies. From January 1975 to the present, the index also excludes companies with the lowest profitability and highest relative price within the small cap universe. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Source: CRSP and Compustat. The index monthly returns are computed as the simple average of the monthly returns of 12 sub-indices, each one reconstituted once a year at the end of a different month of the year. The calculation methodology for the Dimensional US Small Cap Index was amended on January 1, 2014, to include profitability as a factor in selecting securities for inclusion in the index.

Dimensional US Small Cap Value Index is compiled by Dimensional from CRSP and Compustat data. Targets securities of US companies traded on the NYSE, NYSE MKT (formerly AMEX), and Nasdaq Global Market whose relative price is in the bottom 35% of the Dimensional US Small Cap Index after the exclusion of utilities, companies lacking financial data, and companies with negative relative price. The index emphasizes securities with higher profitability, lower relative price, and lower market capitalization. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Exclusions: non-US companies, REITs, UITs, and investment companies. The index has been retroactively calculated by Dimensional and did not exist prior to March 2007. The calculation methodology for the Dimensional US Small Cap Value Index was amended in January 2014 to include direct profitability as a factor in selecting securities for inclusion in the index. Prior to January 1975: Targets securities of US companies traded on the NYSE, NYSE MKT (formerly AMEX), and Nasdaq Global Market whose relative price is in the bottom 25% of the Dimensional US Small Cap Index after the exclusion of utilities, companies lacking financial data, and companies with negative relative price.

Dimensional International Marketwide Value Index is compiled by Dimensional from Bloomberg securities data. The index consists of companies whose relative price is in the bottom 33% of their country's companies after the exclusion of utilities and companies with either negative or missing relative price data. The index emphasizes companies with smaller capitalization, lower relative price, and higher profitability. The index also excludes those companies with the lowest profitability and highest relative price within their country's value universe. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Exclusions: REITs and investment companies. The index has been retroactively calculated by Dimensional and did not exist prior to April 2008. The calculation methodology for the Dimensional International Marketwide Value Index was amended in January 2014 to include direct profitability as a factor in selecting securities for inclusion in the index.

Dimensional International Small Cap Index was created by Dimensional in April 2008 and is compiled by Dimensional. July 1981–December 1993: It Includes non-US developed securities in the bottom 10% of market capitalization in each eligible country. All securities are market capitalization weighted. Each country is capped at 50%. Rebalanced semiannually. January 1994–Present: Market-capitalization-weighted index of small company securities in the eligible markets excluding those with the lowest profitability and highest relative price within the small cap universe. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. The index monthly returns are computed as the simple average of the monthly returns of four sub-indices, each one reconstituted once a year at the end of a different quarter of the year. Prior to July 1981, the index is 50% UK and 50% Japan. The calculation methodology for the Dimensional International Small Cap Index was amended on January 1, 2014, to include profitability as a factor in selecting securities for inclusion in the index.

Dimensional International Small Cap Value Index is defined as companies whose relative price is in the bottom 35% of their country's respective constituents in the Dimensional International Small Cap Index after the exclusion of utilities and companies with either negative or missing relative price data. The index also excludes those companies with the lowest profitability within their country's small value universe. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Exclusions: REITs and investment companies. The index has been retroactively calculated by Dimensional and did not exist prior to April 2008. The calculation methodology for the Dimensional International Small Cap Value Index was amended in January 2014 to include direct profitability as a factor in selecting securities for inclusion in the index. Prior to January 1994: Created by Dimensional; includes securities of MSCI EAFE countries in the top 30% of book-to-market by market capitalization conditional on the securities being in the bottom 10% of market capitalization, excluding the bottom 1%. All securities are market-capitalization weighted. Each country is capped at 50%; rebalanced semiannually.

Dimensional Emerging Markets Index is compiled by Dimensional from Bloomberg securities data. Market capitalization-weighted index of all securities in the eligible markets. The index has been retroactively calculated by Dimensional and did not exist prior to April 2008.

Dimensional Emerging Markets Value Index is compiled by Dimensional from Bloomberg securities data. The index consists of companies whose relative price is in the bottom 33% of their country's companies after the exclusion of utilities and companies with either negative or missing relative price data. The index emphasizes companies with smaller capitalization, lower relative price, and higher profitability. The index also excludes those companies with the lowest profitability and highest relative price within their country's value universe. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. Exclusions: REITs and investment companies. The index has been retroactively calculated by Dimensional and did not exist prior to April 2008. The calculation methodology for the Dimensional Emerging Markets Value Index was amended in January 2014 to include profitability as a factor in selecting securities for inclusion in the index. Prior to January 1994: Fama/French Emerging Markets Value Index.

Dimensional Emerging Markets Small Cap Index was created by Dimensional in April 2008 and is compiled by Dimensional. January 1989–December 1993: Fama/French Emerging Markets Small Cap Index. January 1994–Present: Dimensional Emerging Markets Small Index Composition: Market-capitalization-weighted index of small company securities in the eligible markets excluding those with the lowest profitability and highest relative price within the small cap universe. Profitability is measured as operating income before depreciation and amortization minus interest expense scaled by book. The index monthly returns are computed as the simple average of the monthly returns of four sub-indices, each one reconstituted once a year at the end of a different quarter of the year. Source: Bloomberg. The calculation methodology for the Dimensional Emerging Markets Small Cap Index was amended on January 1, 2014, to include profitability as a factor in selecting securities for inclusion in the index.

Fama/French Total U.S. Market Research Index: The value-weighed U.S. market index is constructed every month, using all issues listed on the NYSE, AMEX, or Nasdaq with available outstanding shares and valid prices for that month and the month before. Exclusions: American Depositary Receipts. Sources: CRSP for value-weighted U.S. market return. Rebalancing: Monthly. Dividends: Reinvested in the paying company until the portfolio is rebalanced.

Fama/French U.S. Value Research Index: Provided by Fama/French from CRSP securities data. Includes the lower 30% in price-to-book of NYSE securities (plus NYSE Amex equivalents since July 1962 and Nasdaq equivalents since 1973).

Fama/French U.S. Growth Research Index: Provided by Fama/French from CRSP securities data. Includes the higher 30% in price-to-book of NYSE securities.

(plus NYSE Amex equivalents since July 1962 and Nasdaq equivalents since 1973).

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Paul founded Professional Financial Strategies, Inc. in 1993 as one of the first independent financial and wealth planning advisory firms for affluent and aspiring families. Paul and his firm act as a personal chief financial officer for clients, bringing together a distinctive wealth management process and a network of experts that help families make smart decisions about money for investing wealth, mitigating excessive taxes, protecting assets from unjust loss, and making a real impact in passing a secure legacy to people they love and causes they care about that make a difference.

Paul earned pioneering designations as a Certified Financial Planner (CFP®), a ChFC® (Chartered Financial Consultant), and as a ATA (Accredited Tax Advisor). A graduate with distinction from the University of Rochester, Paul earned an MBA in Finance from the Simon Business School. His professional education includes MFP (Master of Science in Financial Planning) and MSFS (Master of Science in Financial Services). Finally, Marquis Who's Who presented Paul with the Albert Nelson Marquis Lifetime Achievement Award.