LEAN ADVICE FOR NEW INVESTORS

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Abstract

As defined benefit pensions have been replaced by investor-directed defined contribution plans, implementing sound investment policies for retail investors of modest means has become a problem of increasing urgency. This group comprises most of the investor population across all countries. In the U.S. it is characterized by inadequate saving, failure to take advantage of materially higher payout for delayed Social Security benefits, extensive credit card debt, and pursuit of naïve investment policies. While sophisticated financial advice is available to large investors, the associated high costs prohibit access by many others. This paper provides an affordable prescriptive blueprint for them, particularly for new investors. While somewhat US-centric, our framework can be put to practical use in any country. We envision implementation as a low-cost tier service using simple technology that permits mass customization with limited in-person contact.

LEAN ADVICE FOR NEW INVESTORS

Introduction

The creation and implementation of sound investment policies for investors of modest means is an urgent but largely neglected aspect of the financial services industry. By number, individual households represent the vast preponderance of investors. However, the relatively small value of each asset portfolio removes the economies of scale that make large institutional investors and high net worth individuals the focus of the financial services industry. We see opportunities for reaching many currently underserved investors if we focus on where the most value can be added at least cost.

In that spirit, we put forward a practical design for providing good quality financial planning and investing guidance to *new* underserved investors at very low cost. We focus on this subgroup because their needs are relatively simpler, and because the potential lifetime payoff is large.

We provide a simplified recipe that can be followed by investors and their advisers, much as the quality and sophistication of home cooking has been elevated through the vehicle of classic cookbooks. In the same way that cooking must be bound by the physical chemistry of the available ingredients, so must this process be bound by the relevant concepts of financial economics and the practical realities of modern capital markets. We assert that our framework provides practical solutions to many of the challenges (both conceptual and statistical) which are embedded in the problem of investment portfolio formation tied to financial plans.

Many investors require a degree of personal interaction. To achieve cost breakthroughs in reaching those who need this interaction, we seek to match those potential investors most likely to benefit with techniques most likely to give high benefit at low cost.

It should be noted that our paper is not directed toward retail investors but rather toward those financial advisors and organizations whose missions and strategies would benefit from serving lower net worth investors. Of necessity, simplified financial planning is as necessary as simplified investing.

With respect to financial planning, the focus is on *the fulfillment of specific financial goals*, the most critical long-term goal usually being the provision of at least a minimally satisfactory post-retirement income. For new investors, additional medium-term

interests such as an emergency fund or saving for home ownership may also benefit from attention.

With respect to investing, the concept of *resiliency* to carry through a long-term investing program is stressed. Public trading of financial securities has promoted the growth of wealth for centuries. But occasional periods of prolonged decline in the value of asset portfolios may be devastating for investors of limited means.

At the global level, we can recall events such as the First and Second World Wars, the 1929 stock market crash and subsequent Great Depression, the Spanish Flu pandemic of 1918, the Global Financial Crisis of 2008-2010. The current candidate disruption is the ongoing COVID pandemic and its inflationary aftermath. A resilient investment policy contemplates the possibility of such substantial disruptions.

On a purely personal level, outliving one's financial resources can be even more disruptive. Financial intermediaries such as defined benefit pension funds and private annuity companies can reduce longevity risks by pooling across unrelated participants. In contrast, the individual without this benefit faces the additional uncertainty of post-retirement survival time -- which *dominates the need for retirement income*. We need to provide for the possibility of living longer than expected while experiencing worse-than-average investment returns and lower-than-planned saving.

In the first part of the paper, we offer our view of the financial service industry with respect to reaching underserved investors, primarily in the U.S.

The second part of the paper responds to potential providers of financial planning and investment services. We outline key components for providing cost-effective service to new investors of limited means.

PART ONE. PROBLEM SYMPTOMS

Today, most U.S employers have abandoned defined-benefit plans for lower-cost defined-contribution retirement schemes. Unfortunately, such defined-contribution plans have *moved the burden of motivating saving and pursuing sound investment policies from financial professionals within companies to the individual investor employees*, most of whom have no material or sound knowledge of financial planning and investing. Government programs for incentivizing individual saving and investment, such as IRAs in the U.S., are available outside of employer programs, but have the same drawbacks. At the same time, low real interest rates, along with longer life expectancies, has reduced the potential sufficiency of simple government-guaranteed bank savings accounts.

The financial services industry has responded to this challenge with innovations. By far the most successful of these has been the broad expansion of passive index investing in the form of exchange traded funds (ETFs). While there is ongoing debate on the relative value of active versus passive investment management, it must be said that passive ETFs provide investors with a broad range of well diversified investment products at direct fee levels materially lower than have existed in the past.

On the negative side, the resulting compression in the income of financial service firms has led to the adoption of various ways to layer multiple fees on investors. In some cases, such fees have been levied upon investors for non-existent services (see Australian Royal Commission on Financial Services, 2019). Less obvious are largely hidden payments between financial service firms to steer investors dealing with a provider into particular investment products of an unrelated asset manager (see Boyson 2019). In the US, such payments are legal when disclosed in "fine print" but are widely considered a conflict of interest and a breach of fiduciary duties to an investor.

A second important innovation has been the advent of the "target date fund" which provides to a cohort of persons expected to retire in the same year a portfolio with a prescribed "glide path" whose allocation of invested funds has an explicit plan to evolve over time. While target date funds are now widely available, their adoption has remained somewhat limited for a variety of reasons, diBartolomeo (2006). We believe current target funds still do not adequately take account for differences in investor situations.

A third innovation has reduced the cost of financial advice to investors able to access and trust "robo-advisers." Though these have increasing promise, there remains material concern about the quality of their advice. Nevertheless, they have continued to gain use, particularly with young households just starting to accumulate investable wealth. A useful survey of the world of robo-advisers is provided in Kolm and Grealish (2021).

Despite these innovations, inadequate saving, failure to take advantage of materially higher payout for delayed Social Security benefits, extensive credit card debt, and pursuit of naïve investment policies all indicate that most people do not receive and act on high quality financial advice. We believe there remains a large portion of the population, particularly those of limited means, that require at least some in-person assistance to adequately improve their financial outcomes. Unfortunately, customized fiduciary assistance is currently very expensive relative to the means of those who most need it.

A Surprising Obstacle

After the obvious barriers to good investment practice such as high costs and customer naivete, obstacles to better financial results include lack of agreement as to sound policy. We note two bookends of the spectrum by prominent authors that form the extremes of this range.

At the risk-tolerant end of the spectrum is the book Stocks for the Long Run, (5th ed 2014) by Professor Jeremy Siegel. The book makes a largely empirical argument that investing in stocks has consistently produced much higher returns than fixed income investments, leading to much greater cumulative wealth for the long time-horizon investor. It is asserted that even if equity markets suffer a major decline, the remaining wealth of the investor is still likely to be greater than the investor would have accumulated with a purely fixed income portfolio. Obviously, such a strategy would not succeed in the face of a 100% liquidation event (e.g., Russia 1917), but this is a low probability outcome.

At the other end of our virtual bookshelf is Worry Free Investing written by Professor Zvi Bodie and Michael Clowes (2003). These authors argue that having a sufficient retirement fund is so critical to the well-being of an average household that for most people no material level of investment risk is tolerable. If an investor wants to have an assured retirement income, they must hedge that "liability to self" with risk-free investments. Such a portfolio should be fully deployed in a high-quality fixed income portfolio with emphasis on securities that offer a material degree of protection against inflation shocks. In the US, US Treasury TIPS and "Series I" savings bonds would be key components of this low-risk strategy for retail investors. Of course, the lower returns associated with such a strategy has a distinct probability of reducing the available amount of eventual retirement income.

There is not yet a universally settled ground between these two extremes. What is missing is a reliable basis for determining the most appropriate middle ground for individual cases.

It is tempting to look for evidence from defined benefit pension funds. These plans pay their retirees a fixed annuity through their retirement lifetime. Most such plans invest most of their assets in equities and other risky assets. However, this evidence is unreliable because the sponsoring entity effectively subsidizes this risk-taking. If the investment results are poor, the sponsor, and sometimes a government guarantee, is responsible for contributing additional money to the pension fund to ensure fulfilment of the required benefit payments. In contrast, the household on its own may not have the risk-taking capacity for this tilt toward equity. A framework of how to evaluate pension

fund investing risks inclusive of guarantee arrangements is presented in diBartolomeo (2015).

PART TWO. LEAN DELIVERY OF FINANCIAL ADVICE

To deliver effective financial expertise consistent with much lower costs while retaining an element of face-to-face advice, we focus on these elements: Focus on people who are most likely to benefit. Help them save enough. Bring their investment risk-taking into line with their situation.

We bring to bear elements from varied sources. The financial adviser's motivation may either be altruistic or the nurturing of those who will eventually evolve into more attractive commercial customers.

Realistic Expectations for Investor Success

We borrow guidelines from effectiveness in health intervention as they can be applied to new investors of limited means.

1. *Substantial change in behavior proceeds in stages.* Advisory costs can be reduced by eliminating expensive early-stage efforts to increase financial awareness and instead focusing on those who apply to the program, express a need for assistance, and persist in subsequent time periods. We also leave complex investment strategies to a later stage for those investors who will then need them.

2. *Specific skills and situations are a prerequisite for learning more advanced behaviors.* Applicants can be required to already have at least a bank account before they can learn to save effectively. If surplus permits investing in stocks, they must open their own brokerage or mutual fund account. They should also be able to understand their extended balance sheet including planned savings and retirement spending after a brief introduction.

3. *It is easier to accept advice in an area new to the person than to revise already established ideas and habits.* Without excluding others, we recommend a program shaped for *new* investors.

4. *Practice and achieving small successes are the most important elements in building confidence that one can carry out recommended behaviors*. We advocate investor "learning by doing" for both financial planning and practicing simple investing transactions. In contrast, in a low-cost delivery system, more difficult-to-master investment expertise can remain centralized.

Requirements for Cost-Effective Readiness

An application form can be required in which the applicant identifies at least their bank or credit union account and writes a paragraph regarding what they hope to achieve if accepted into the program. More rigorous screening can include a readiness exercise to be returned before acceptance, something like Exhibit 1.

EXHIBIT 1. READINESS EXERCISE

We check readiness by working on an imaginary simplified retirement plan. For information not ready at hand, just give an estimate.

Suppose you have no debt and can only invest in a savings account that earns exactly nothing after inflation and taxes. Try adjusting inputs below until MONEY IN balances MONEY OUT. You can adjust planned saving, retirement age, and retirement spending.

If you are married, plan first for the family during one partner's lifetime and then for the surviving spouse after that.

Start with what you consider to be absolute minimum retirement needs beyond receiving Social Security payments or pensions.

Your Inputs:

Current investments:
Plus annual savings pre-retirement…
Times years to retirement:

TOTAL MONEY IN:

Annual investment withdrawals to supplement Social Security and any pension:
Times years of retirement life:
(optional) Plus surviving spouse annual withdrawals…
(optional) Times years of survivor's remaining life:

TOTAL MONEY OUT:

Expressing frustration for how difficult it is to come up with accurate numbers should be expected. However, if the applicant does not understand the problem or has no facility or patience with arithmetic, he or she needs more preparation from other sources or should seek alternatives.

Long-term Planning

Computerized help in managing finances ranges widely in terms of capability and cost. There are excellent free alternatives for keeping track of expenses and budgeting. But most do not focus on long-term saving and investments. However, new investors can benefit greatly by thinking about a minimum retirement goal, both to motivate saving and to understand the balance they will need to achieve in allocating between safe fixed income investments and exposure to the risks of stock ownership.

A very basic financial planning form such as Exhibit 2 can be made available to the applicant after acceptance but before an in-person or video appointment to enable information collection. In the form, the shaded elements represent results of calculations the advisor organization supplies through a spreadsheet.

Input figures should be in today's dollars for simplicity. The form calculates funding surplus or deficit after including plans, with the following caveat. Usable surplus estimates require funding goals be minimized to what the investor would find just barely acceptable. Any investment returns used in calculating surplus should be at government-guaranteed interest rates. This caveat is important because many people will need to focus merely on arriving at a positive surplus and until that point will need to stick with fixed income investing.

The investor, with the advisor's assistance as necessary, adjusts inputs until discretionary wealth (surplus) is the maximum that can be realistically reached consistent with his or her irreducible goal commitments. The resulting allocation will assume that positive surplus is necessary to support stock risk-bearing, with the ratio of investments to positive surplus determining appropriate risk aversion. We advocate 100% fixed income if surplus is not positive.

Of special note is the absence of home ownership and associated mortgages in Exhibit 2. Assessing the cash extractable from home ownership to meet a financial goal is often complicated and is less relevant for young investors. In exceptional cases, enter the net benefit from selling a home and providing for substitute housing under "Other Disposable Assets."

EXHIBIT 2. EXTENDING A BALANCE SHEET TO PLANS

INVESTOR INFORMATION		Date (mm/dd/yyyyy):	
Name:		Spouse's Name:	
Birthdate (mm/dd/yyyy):		Birthdate (mm/dd/yyyy):	
Sex (M,F)		Sex (M,F)	
GOAL FINANCING BALANCE SHEET			
INVESTMENT ASSETS		LIABILITIES	
Personal Investments ($):		P.I. Deferred Taxes	
Pension Plan Investments ($)		P.P. Deferred Taxes	
Other Disposable Assets (net) ($)		Non-Housing Debt	
CURRENT NET WORTH (EXCLUDING HOUSING) AVAILABLE FOR GOALS			
ANNUAL SAVING UNTIL RETIREMENT			
Debt Reduction (Negative if Borrowing)		Year of Retirement	
Into Personal Investments			
Into Pension Plan Investments		SAVINGS PRESENT VALUE	
ANNUAL WITHDRAWALS AFTER RETIREMENT			
Annual Withdrawals Needed (Joint)		Further Lifespan (years)	
Annual Withdrawals Needed (Survivor)		Additional Lifespan (years)	
		WITHDRAWALS PRESENT VALUE	
NET FINANCING AVAILABLE FOR RETIREMENT			
OTHER GOALS (Examples: House Downpayment, Education)			
Goal name:		Year or Year Starts (yyyy):	
Cost:		Year Ends (yyyy)	
Goal name:		Year or Year Starts (yyyy):	
Cost:		Year Ends (yyyy)	
ADDITIONAL FUNDING NEEDED			
YOUR DISCRETIONARY WEALTH (DW) ($):		DW/INVESTMENT%:	

Again, if there is no positive surplus, the focus of advice should be on debt reduction, better use of government or employer subsidized savings programs, and efficient fixed income investing.

If a plausible positive surplus can be visualized, one can plan for a future in which investing in stocks can increase options for future consumption or goal setting.

The implementation of Rubinstein's concept of utility (1976) extended by Wilcox (2000, 2003) will be discussed shortly. It can most simply be viewed as finding an appropriate location on the more familiar Markowitz efficient frontier. The unique benefit of the Rubinstein utility analysis is that it provides the *mathematically optimal location for each investor at each moment of time.* In doing so, the utility measure provides an investor-specific way to quantify risk- adjusted return that investors hope to maximize. The "best position for now" is calculated from the extended balance sheet set up for the investor household as indicated by Exhibit 2. Like a house bought with a small down payment, a more "leveraged" balance sheet (total assets/net worth) is less able to withstand drawdowns and the investor should choose a more conservative allocation (steep slope). As leverage declines, the investor can better withstand temporary market declines and so can operate with a more aggressive stance. If the balance sheet is prepared thoroughly and updated frequently, the likelihood that the investor will meet all their minimum goals becomes very high.

The Rubinstein utility calculation of risk aversion is applicable inclusive of the presence of higher moments (i.e. "tail risk"). Alternatively, the presence of higher moments can be approximately represented as adjustments to the expectation of return and volatility via the method of Cornish and Fisher (1938). This makes the resulting problem fit into the familiar Markowitz mean-variance framework, wherein investor risk aversion can be thought of as the slope of a line drawn tangent to the efficient frontier.

Investors of very modest means may be able to increase their estimates of savings and debt reduction as well as reduce their estimates of required withdrawals because of the "social safety net" of government assistance (e.g., subsidized health care).

The Rubinstein method can also be used to determine needed adjustments in savings rate or planned expenditures for an investor such that the balance sheet leverage is approximately consistent with an achievable return target.

Motivating Investment Strategy

We recommend that new investors of limited means restrict their investments, disregarding home investment, to exposures to stock, bond, and cash assets. Cash returns averaged over long periods look like inflation plus a small pre-tax premium. The bonds and stocks are more volatile. Exhibit 3 below shows their US stock and bond pre-tax values compounded monthly for some 140 years if income is reinvested and inflation rates are discounted to show value in real terms.

EXHIBIT 3. SHORT AND LONG-TERM INVESTMENT HISTORIES
(Data drawn from Shiller, 2021)

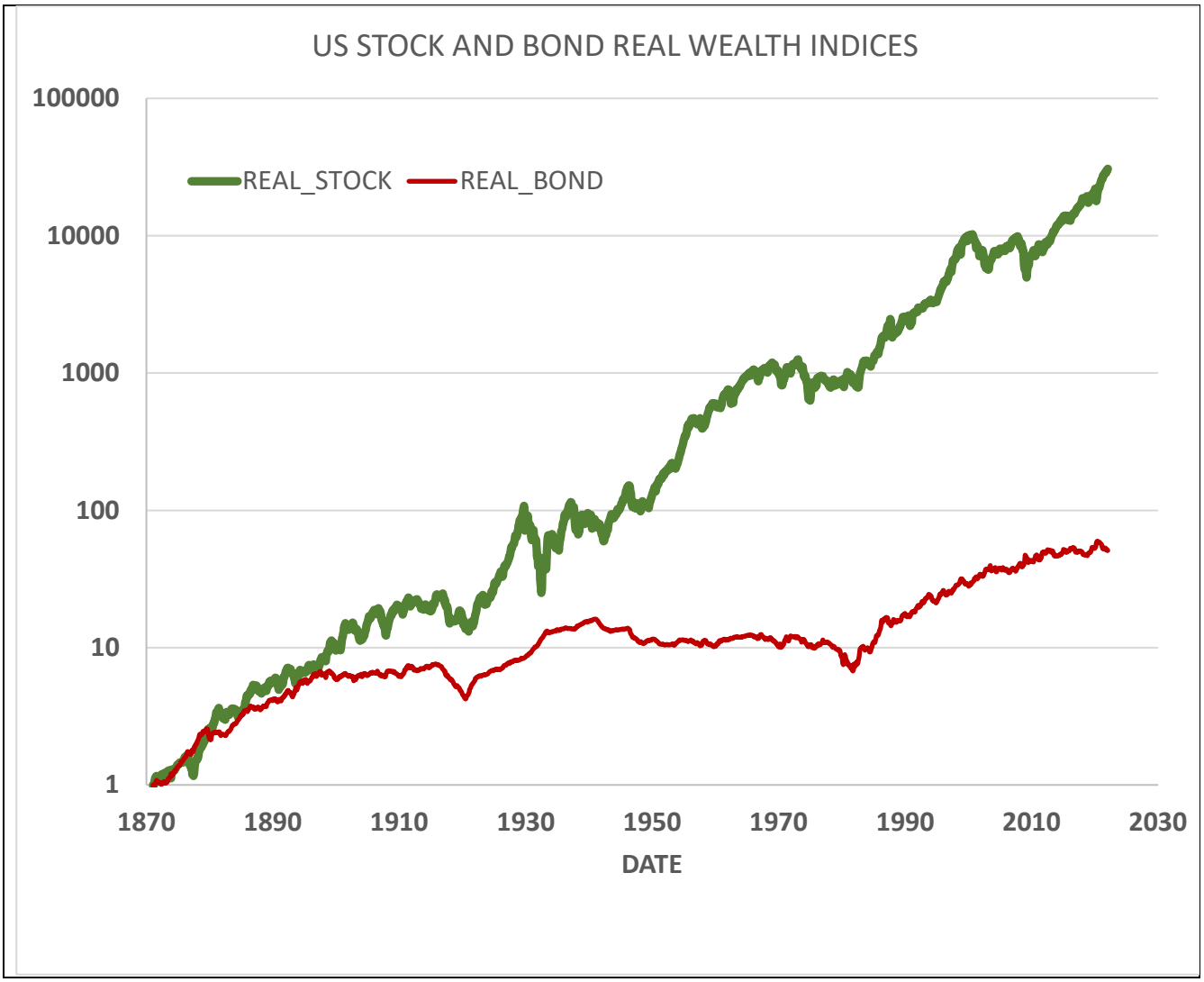


Exhibit 3's relatively straight-line long-term stock value trends on a logarithmic scale over 140 years suggest that it is useful to use long-term data to fix our ideas on the nature of the investment problem. These long-term returns of stocks are much more appealing than those of fixed income, but for investors with time horizons of less than twenty or thirty years, capital preservation attention is needed to meet financial goals.

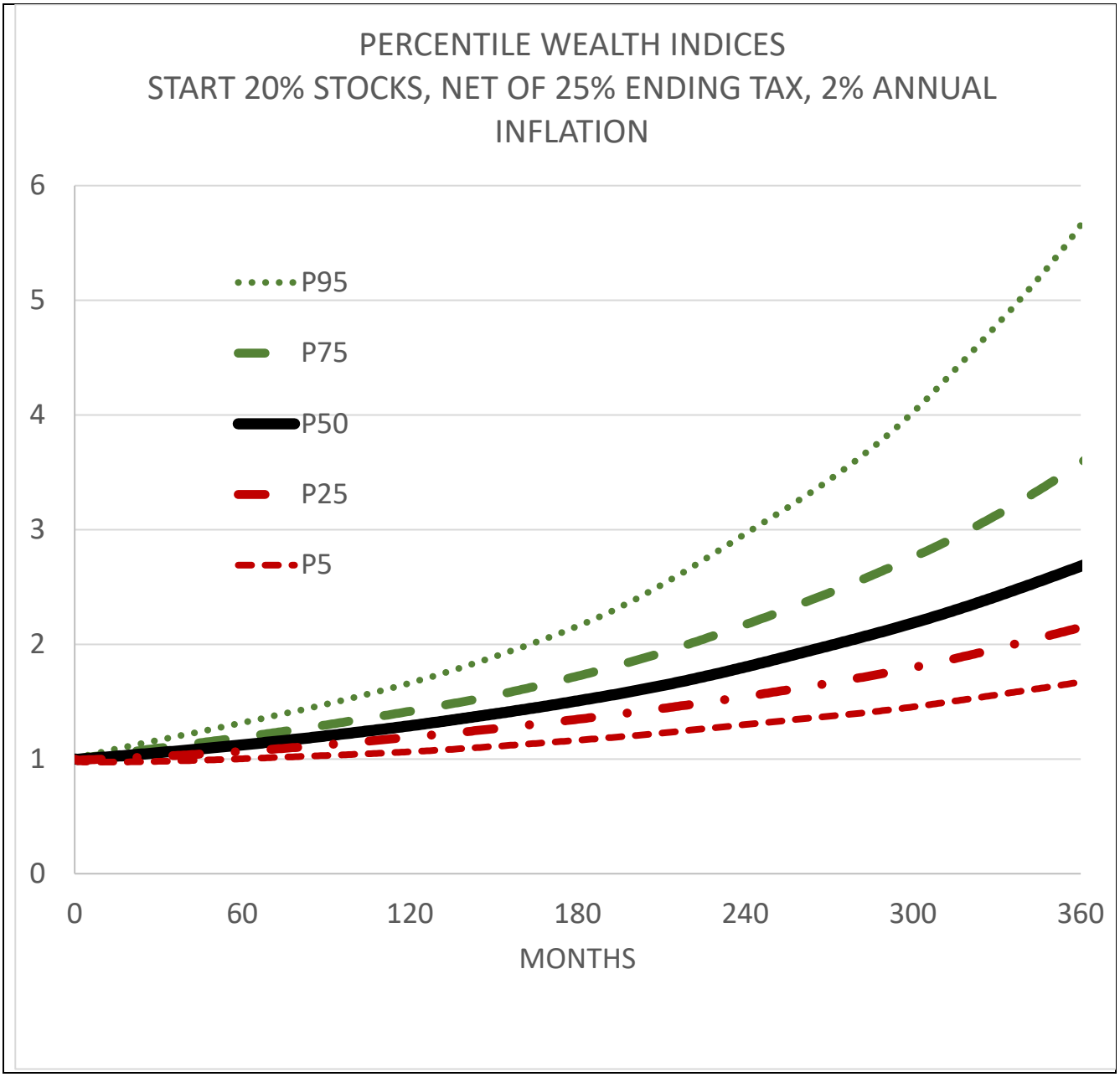
Bonds are much better suited than stocks to capital preservation, but unfortunately, they, too sometimes lead to moderate losses after netting out inflation, while unfortunately, taxes may also have to be paid on the inflation component of their stated returns. Later, we will point favorably to inflation-protected bonds and savings accounts that aim to improve this picture. Short-term fixed income can also be a desirable ingredient for the very risk averse.

Many people, perhaps most, never accumulate a positive surplus as reflected in Exhibit 2. If not, it may be difficult to justify stock ownership. On the other hand, better expectations of long-term returns from stock ownership are visible if one can be satisfied with less lifestyle spending and maximum exploitation of government and employer savings plans. Then one may be able to project a surplus sufficient to cover a plausible chance of both living longer than expected and enduring unfavorable investment returns.

Exhibit 4 shows a probability distribution of compounded investment results drawn randomly from Shiller's US history for a portfolio starting with a 20% allocation to stocks and allowing the stock allocation to drift upward as the higher average rate of stock returns overcomes their higher volatility relative to bonds. The exhibit is made more realistic by applying a 25% ending tax and subtracting 2% inflation.

Less than 5% of randomly drawn paths have negative real returns after five years, and that fraction continues to decline with increasing holding periods. After thirty years, the median after-tax real value of a dollar invested is about two and a half dollars. Though disciplined savings and subsequently limiting planned withdrawals is challenging, the effort can be rewarding.

EXHIBIT 4. MONTE CARLO SIMULATION



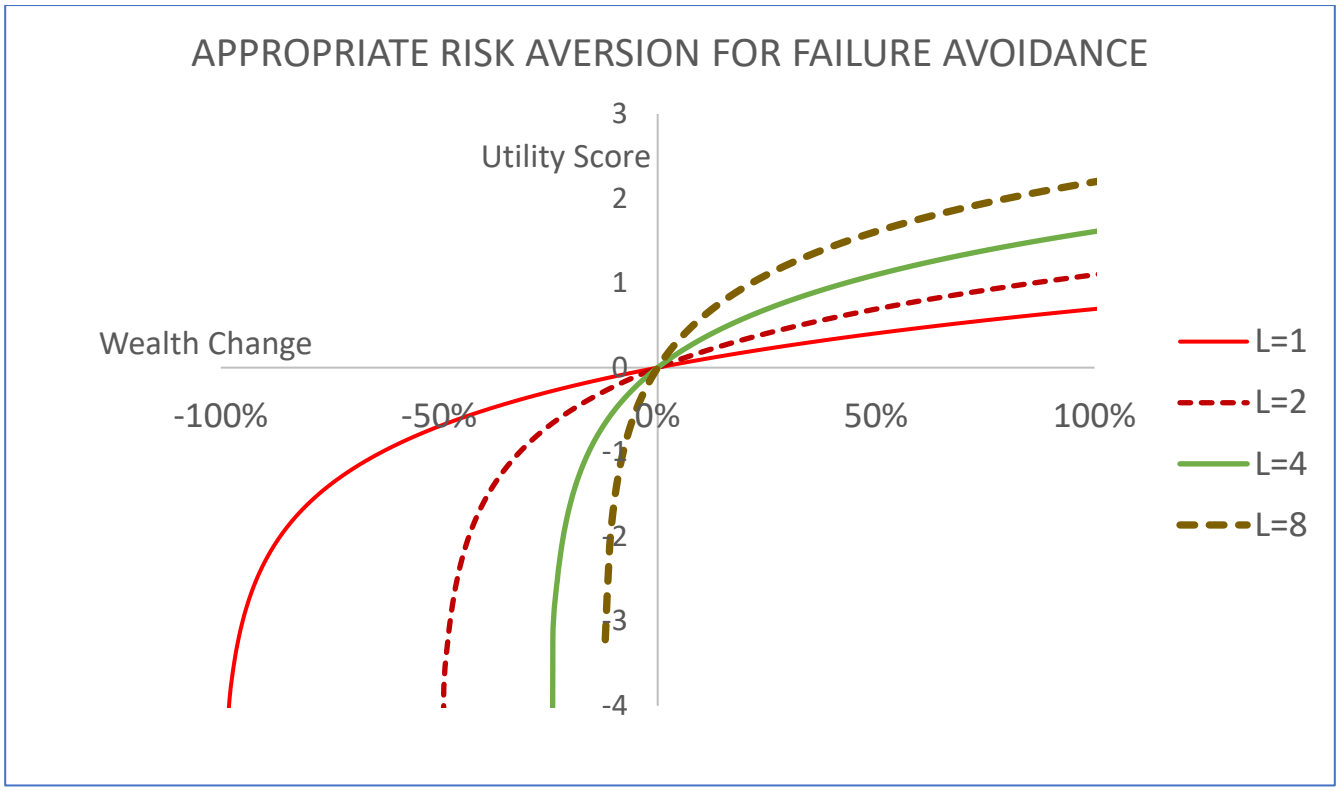
Addressing Investment Problems More Difficult for Investors of Limited Means

Tail Risk: Investors of limited means face some important challenges less troublesome to higher net-worth investors. They are more sensitive to investment disruptions often labeled as "tail risk." Second, the need to meet minimum retirement funding may make the risk of outliving their funds as, or more, important as investment risks.

For addressing tail risk, we recommend the tables of investment allocations derived from Shiller's (2021) long-term US investment return data and the application of the expected return criterion based on Rubinstein utility (1976). That is, each possible outcome is judged using a score based on the logarithmic return of the investment portfolio's return relative to discretionary wealth, or surplus.

For investors with risk aversions below 8 as calculated by inverting the ratio of discretionary wealth to investments in Exhibit 2, this metric gives essentially identical results to those from the ubiquitous Markowitz mean-variance framework [1952]. However, such utility scores fall off much more rapidly when near goal failure than does the quadratic utility implied by the mean-variance criterion. Consequently, they provide more effective protection against tail-risk for very low surplus edge cases. This simplifies advice because it reduces the need for additional overlays such as Conditional Variance at Risk (CVaR). Exhibit 5 shows utility scores for investors with varying appropriate risk aversions L.

EXHIBIT 5. RUBINSTEIN UTILITY SCORES FOR INVESTMENT RETURNS



Longevity Risk: Preliminary research on risky surplus based on longevity risk leads us to regard practitioner examples of adding 5 or 10 years to expected lifetimes as defensible but subject to some improvement. Consequently, we advise accessing a probability distribution of lifetimes for age and sex combinations using the US Social Security Administration's calculator [2021]. *Extracting a lifetime at the top of the third quartile, categorized by age and sex, appears a reasonable heuristic for investors of limited means.*

From Extended Balance Sheet to Investment Allocations

We supply investment expertise through centralized guidance, even where to reduce costs it must be delivered in the following cookbook fashion as in Exhibit 6. It should be noted that this table is for annual use rather than very short-term or very long-term intervals between reassessment.

EXHIBIT 6. ALLOCATION PERCENTAGES
(AFTER ADJUSTING SURPLUS FOR LONGEVITY RISK)

Risk Aversion	T-Bills	T-Bonds	Stocks
1	0	0	100
2	0	26.2	73.8
3	0	48.7	51.3
4	0	60.1	39.9
8	0	77.4	22.6
16	27.1	60.4	12.5
32	49.6	43.6	6.8
64	63.7	32.5	3.8

Note: Set risk aversion as investments/surplus.

As a beginning heuristic, higher tax rate investments should be preferentially allocated toward deferred tax pension funds or U.S. I-Series Treasury bonds, so as to lower effective tax rates through delayed payment.

Potential Investments

Fixed Income:

The best fixed income investment is paying off the negative of high interest credit card debt. Otherwise, evaluate competitive rates among government guaranteed instruments. In the U.S., candidate positive fixed income investments include government-insured bank or credit union savings accounts and Certificates of Deposit. Other preferred choices are U.S. Treasury bonds, especially I-Series Savings bonds, which offer inflation protection (except for taxes on inflation) and taxation deferred until maturity. Still attractive, however, are intermediate maturity (7-10 year) Treasury bond ETFs. Government bond fund expense ratios should be under 0.15% annually.

In the US, if the investor's current income tax rates are low, we recommend the immediate taxation of Roth plans over ordinary IRA or 401(k) retirement plans, so that future earnings of new investors will be shielded from possibly higher tax rates as their incomes increase.

Stocks:

New investors should confine their stock investments to broadly diversified, low-cost index funds, which may be purchased from mutual fund companies in the US. Fees and other expense ratios should not exceed 0.10% annually.

Alternatively, exchange traded funds (ETFs) replicating such passive portfolios can be purchased through most brokers, though care should be taken to keep costs similarly low. ETFs generally involve lower effective taxation than mutual funds if one holds them over long periods.

For US investors, the benefit of international diversification appears less than in many other countries and substantially less than a few decades ago when globalization was less prominent. However, there is still an argument for diversifying investments abroad. For investors in less-diverse economies, or with local governments less certain to permit open securities markets, international diversification appears to offer significant benefits.

US I-Series Savings Bonds – the Safest Asset

I-Bonds are savings bonds, not to be confused with TIPS. The latter are the U.S. Treasury's marketable inflation-protected bonds that can be purchased in unlimited quantities at an interest rate dictated entirely by market forces of supply and demand. But I Bonds offer a much better value to the investor than do TIPS, although the government limits purchases to $10,000 per year per person.

In buying TIPS investors must sometimes (e.g., today) accept a *negative* real interest rate. Of course, TIPS do add on a rate of interest equal to the Consumer Price Index: that's why they're called "inflation-protected." But suppose there's *no* inflation. In that case, the investor is paying the government to loan *it* money. By contrast, a great virtue of I Bonds is that they can never yield less than zero. This means that in the worst case (unless the U.S. government declares bankruptcy and refuses to pay anyone), money invested in I Bonds will at least maintain its purchasing power. If there were to be outright deflation, with prices actually going *down*, money invested in I Bonds would *rise* in value.

In other words, whether interest rates go up or down, the investor is protected. (But note that when investors buy new I Bonds they would be subject to the $10,000 limit.). If they have the money, US citizens would have to be nuts not to invest in I Bonds up to the limit.

Most people we talk to, however, even the financially savvy, have never heard of I Bonds, even though the government started issuing them back in 1998. A new 30-year

fixed rate is announced every six months on May 1 and on Nov. 1 and applies to all bonds purchased during the following half a year. The total rate of interest is the fixed rate plus the annualized rate of inflation that occurred during the preceding six months.

But to repeat the basic point, I Bonds are a "no-brainer" because for every dollar invested in them today, the investor has the right to take it out fully adjusted for inflation at any time over the next 30 years. So, in a worst-case scenario where investors get no interest at all, they will maintain the purchasing power of their money. If an investor has held the old bond for over 5 years, there is no penalty when they cash it in. We know of no safer way to invest for a long time horizon.

For people of modest income, a combination of Social Security and an annual investment of up to $10,000 per year in I Bonds should suffice to finance a comfortable retirement without any significant risk and without any special tax-deferred retirement accounts.

We believe that the government should do much more to inform and educate the public about these bonds. Take a closer look at how I Bonds work. Here is a list of their key features:

- They are U.S. Treasury securities backed by the full faith and credit of the U.S. government.
- They are sold at face value and grow with inflation-indexed earnings for up to 30 years.
- They are liquid and can be turned into cash any time after the first year.
- You can invest as little as $50 or as much as $10,000 per year.
- *They have a significant tax advantage.*

Let's explore the tax advantage of I Bonds a little further. Investors can defer Federal taxes on interest earnings for up to 30 years, and I Bonds are completely exempt from state and local income taxes. There is no need to hold them in a special retirement or college savings account to get these benefits. The investor enjoys *these tax advantages regardless of how much tax-sheltered saving you do in other special accounts.*

The fixed rate is a rate selected by the U.S. Treasury. It is announced twice a year, at the beginning of May and November. The fixed rate that is in effect when a bond is issued applies until the bond stops increasing in value upon reaching the end of its maturity period, 30 years after its issue date. Thus, the most recently announced fixed rate applies only to bonds purchased during the six months following its announcement. You can find the current rates at

https://treasurydirect.gov/indiv/research/indepth/ibonds/res_ibonds_iratesandterms.htm#now.

The U.S. Treasury credits I Bonds monthly with a composite rate of interest that reflects the combined effects of the fixed rate (which depends on when the bonds were issued) and the semiannual inflation rate (which is the same for all bonds regardless of when they were issued). The semiannual inflation rate reflects the percentage change in the CPI-U over a six-month period. As previously mentioned, it is announced twice a year. The semiannual inflation rate announced in May reflects the percentage change between the CPI-U figures from the preceding September and March. Similarly, the semiannual inflation rate announced in November reflects the percentage change between the CPI-U figures from the preceding March and September. There is a short delay between the months covered in a measurement period and the date of the inflation rate announcement.

Deflation will cause a bond to increase in value slowly or not increase in value at all. However, even if deflation becomes so great that it would reduce the composite rate to below zero, the U.S. Treasury won't allow the value of a bond to decrease from its most recent redemption value.

If an investor redeems a bond that is less than five years old, you'll forfeit the three most recent months' interest on that bond. However, the bond's redemption value will never be less than what you paid for it.

Due to the way the yield on Series I Bonds are set, there are occasionally moments when the available return is considerably nigher than other forms of US Treasury debt as occurred in November 2021 as was well recognized by the investing public (Footnote "The Secret is Out on 7.12% Inflation Protected Bonds" by Brian Chappatta, Bloomberg, December 7, 2021).

However, as a very safe asset yet liquid asset, Series I Bonds are well suited in most other time periods to serve as every American's emergency fund. Financial planners and investment advisors routinely suggest the creation of an emergency fund before the start of investment in risky assets. The emergency fund should be held in safe and liquid assets like FDIC-insured saving accounts. But currently interest rates on these accounts are close to zero and taxable. Moreover, if these accounts are retirement accounts such as an IRA, withdrawals before age 59½ are subject to a 10% penalty in addition to taxes on the withdrawals.

International Diversification

As earlier noted, *global* financial markets have periodically suffered major disruptions from World Wars, pandemics, and more than one financial crisis such as the 1929 market crash and subsequent Great Depression. However, when we count disruptive *local* impacts across individual countries, the frequency is much larger. At the extreme is the disappearance of the Saint Petersburg stock exchange in 1917, at the time the world's third largest equity market. A more recent example is the 2008 implosion of the Zimbabwe currency, with trillion-dollar bills.

Though investing abroad almost always involves exchange rate risk and though there are countries where government controls on capital ban or severely limit investors in this regard, ideally all investors should have some portion of their capital invested outside their home country as a hedge against the sort of large, local events that have recently disrupted economic activity in countries such as Lebanon and Venezuela.

Investors must therefore at least determine what portion of their equity portfolio might be sensibly invested outside their home country, and in extreme cases, their fixed income securities. For robust advice offering better resilience to tail risk, we depart from reliance on investment return histories to focus on underlying economic influences – trade interdependence and the home government's geopolitical stability.

Consider first the extent to which economic activity in their country of domicile is dependent on trade in other than the local currency. Investors living in countries with a high proportion of imports in their economy (i.e., relative to GDP) need to invest more outside the local country to hedge increases in the cost of imported goods. Similarly, the livelihoods of investors in countries with a high proportion of exports in their economy will have a higher chance of disrupted unemployment. According to 2017 data published by the World Bank, the median level of national trade as a percentage of GDP was considerable at 56%. We must also consider in what currency trade occurs. As an example, let us contrast two countries: Singapore and Luxembourg, both of whom had among the highest levels of trade intensity based on the same World Bank data. In the case of Luxembourg, the preponderance of trade is with neighboring countries who also use the Euro currency, so there is very little currency risk. By contrast, the vast preponderance of trade by Singapore is done in major currencies (e.g., US$). Local economic activity could therefore be severely affected by extreme movements of currency exchange rates.

A second consideration is the geopolitical stability of a nation. This can bring forward economic havoc for citizens who invest domestically. Almost all national governments

have a credit rating published by one or more independent rating agencies. Countries facing conditions of instability will naturally have lower credit ratings. Studies such as Schliefer and Vishny (1993) have shown that financial markets in countries that are perceived to be corrupt have low levels of equity market valuation in relation to GDP and slower economic growth. Countries that are facing both economic difficulties and high perceived corruption have increased likelihood of political instability, even civil war. A widely used metric is the Corruption Perception Index published by the non-profit organization Transparency International which ranks global perception of the level of corruption in business and government of each country.

The foregoing discussion focuses on international diversification in the equity portion of an investor's portfolio. This is intentional to the extent that fixed income investments are typically perceived as the "safe" portion of an investor's allocation so investing abroad involving currency translation risk would be conceptually contrary. However, many small investors obtain the bulk of their retirement income from a defined benefit life annuity (e.g. the US Social Security system). An unfortunate example is the extreme devaluation of Russian government old-age pensions in 1998 as the result of the collapse of the ruble and the related default of Russian government sovereign debt. To the extent that investor's retirement is significantly dependent on a life annuity denominated in an unstable currency a larger allocation to international investing is appropriate.

To give investors a simple heuristic for the portion of their equity portfolio that would it be sensible to invest abroad, we suggest the following starting point for international allocation, assuming availability of appropriate securities:

$$J = T / 2G * 100/ (100-P)$$

$$J_{Max} = 100 – (H+R),$$

Where:

J is the percentage of non-domestic investment in equities

J_{Max} is the maximum of J

T is the level of national trade

G is the GDP

P is the annual percentage probability of sovereign default associated with the known credit rating

H is the expected level of housing cost as a percentage of GDP

R is the expected level of taxation as a percentage of GDP

Exhibit 7's rightmost column summarizes these inputs to provide a plausible guide to international allocation J.

EXHIBIT 7. FOREIGN DIVERSIFICATION BY HOME COUNTRY

	Billions $							
	T	G	1 Year PD	5 Year	H	R	%	% Upper
	Trade	GDP	SDP	Survival	Housing	Taxes	J-Prelim	Bound
Mexico	915	1269	1.62	92.2	16.0	18.56	39.12	65.44
Argentina	114	445	18.00	37.1	16.0	18.83	34.55	65.17
South Africa	177	351	5.23	76.4	16.0	32.41	32.98	51.59
South Korea	1045	1647	0.31	98.5	9.0	27.96	32.22	63.04
Canada	989	1742	0.50	97.5	16.0	18.78	29.11	65.22
Saudi Arabia	396	793	1.30	93.7	16.0	31.18	26.66	52.82
United Kingdom	1460	2831	0.16	99.2	22.5	35.34	25.99	42.16
Russia	674	1687	1.55	92.5	16.0	27.57	21.60	56.43
Australia	487	1396	0.24	98.8	23.0	25.99	17.65	51.01
Indonesia	338	1119	1.37	93.3	16.0	12.35	16.18	71.65
India	802	2871	1.79	91.4	16.0	13.20	15.29	70.80
Japan	1426	5065	0.30	98.5	21.0	20.12	14.29	58.88
Germany	1090	3861	0.15	99.3	16.0	29.36	14.22	54.64
Brazil	403	1878	3.93	81.8	16.0	29.11	13.11	54.89
Italy	407	2005	1.38	93.3	19.0	40.18	10.88	40.82
United States	4222	21433	0.23	98.9	22.0	17.64	9.96	60.36
China	2567	14280	0.87	95.7	16.0	16.54	9.39	67.46
France	480	2715	0.35	98.3	16.0	43.46	9.00	40.54

Sources:
External Trade: World Bank WITS database,
(Assumes 60% of trade for EU countries (France, Germany, Italy) within the EU)
GDP: World Bank
Housing Costs: OECD, note median used if country level data not available
GovRev/GDP: World Bank Development Database
PD: estimated from 5 Year Credit Default Swap assuming 40% recovery

The Value of Citizenship

Much of the economic rationale we present is based on the concept of an investor balance sheet from which the most appropriate levels of risk aversion can be determined. A less-explored aspect of the household balance sheet that deserves more attention is what we choose to call a "citizenship asset." That is, we capitalize increased savings and reduced needs for retirement investment withdrawals based on the social safety net to get a sense of magnitude.

This ranges from retirement subsidies, as with US Social Security, to free or subsidized medical care, to outright cash income payments for the very poor. While the extent of such public assistance varies widely from country to country there is no doubt that the economic magnitudes are considerable.

For fiscal year 2019, the US Federal (excluding state and local funds) budget for the concept of a social safety net was $773 Billion (FY 2020 $847). As of 2019, the US Census Bureau estimated that about 10.5% of the then American population of 330 million have incomes which fall below the level at which they become eligible for Federal benefits. For some sub-populations the number is much higher (e.g., roughly 30% for single mothers). This works out to Federal benefit value of over $22,000 per year per eligible recipient, The comparable figure is much higher for many European countries. Criticism of such programs points out that a large portion of these funds are lost to administrative costs and do not directly provide for the beneficiaries.

It is easily seen that an investment portfolio capable of producing even a material fraction of $22,000 per annum of reliable income would necessarily have considerable market value. The question at hand is whether an investor of modest means should ascribe some amount of economic value to the right to obtain public assistance through their lifetime in calculating their investor balance sheet. In effect, if an investor's country is generous and reliable in helping the economically-disadvantaged, the investor might choose to be somewhat more tolerant of risk than they otherwise would be. In the rare event of total loss of their investment capital, such an investor would still be far better off than an indigent individual domiciled many other countries.

Beyond the level of the individual household there is a question to whether such an adjustment in investor risk tolerance represents a *moral hazard*, wherein investors are encouraged to take more than the appropriate degree of risk because they do not bear the full loss associated with negative investment outcomes. There is a vast economics literature on moral hazard at both the individual and institutional level. Much of the related literature focuses on insurance contracts that are explicitly intended to shield the contract holder from the cost of negative outcomes, as in Arrow (1963) and Finkelstein, Arrow, Gruber, Newhouse, and Stiglitz (2014).

There is a natural dichotomy in the consideration of the social safety net within the context of investment policies. In many cases, a household is not eligible to receive public assistance until their private assets (i.e., investments) have been essentially exhausted. A good example in the US is that individual resources be exhausted to establish eligibility to received subsidized nursing home care under Federal Medicaid. In other countries (e.g., the UK and Canada), free or reduced cost health care is essentially universal irrespective of financial assets. As fiduciaries, US financial advisors should

encourage new investors to understand the social safety net as an option to mitigate what would otherwise be severe duress *in the moment*, but that sensible investing should minimize the likelihood of such duress.

A common sense parallel would be that of a physician who would not provide an addictive painkiller to treat a routine headache of an otherwise healthy person. That same doctor might be entirely justified in prescribing such an opiate to relieve the suffering of a terminally ill cancer patient. Economic valuation of the social safety net must strike a balance that does not make investors indifferent to risk but recognizes that that value is non-zero. A financial example of that balancing construct is that health insurance coverage in some countries (e.g., Japan) for cancer is generally void if the covered individual is a smoker, who then must pay separately for cancer coverage.

Portfolio Maintenance

Maintenance of newly learned saving and investment behavior will be challenged by inappropriate media and advertising, as well as by short-term investment setbacks.

If security returns were perfectly described by Brownian motion, and if there were not trading cost or tax consequences, and no expensive investor attention required, we believe closely following Exhibit 6 would lead to higher expected long-term median wealth. However, we know that frequent trading is expensive in taxation and investor and adviser time and attention.

Consequently, we recommend maintenance application of Exhibit 6 primarily based on non-investment events like marriage, a big salary promotion, and the like, with buy and hold drift in investment allocations in between. However, eventually "buy and hold" drift away from Exhibit 6, even with updated surplus, may indicate the benefit of a return visit with an advisor. At this time, research has revealed no simple formula for when this should best occur. However, an adviser might reasonably suggest a more formal review at least every three years.

During interim periods, it is likely that fluctuations in stock market values, and to a lesser extent in interest rates, will induce either too much or too little confidence in the long-term results of the program. There appears to be an inbred tendency of humans to extrapolate recent trends, leading to trading based on what is essentially noise to all but the most skilled investors. Consequently, there appears to be little benefit in paying close attention to market news, especially when media reporting is incentivized to promote emotional engagement. What is important is to realize that there are inherently

wide and unpredictable results over time, mostly because of when a cohort of investors starts investing, and though these can be influenced, they are largely inevitable. Nevertheless, for new investors allocating funds, there is a long enough time horizon to make it highly likely that good results will accrue.

CONCLUSION

The formulation of sound investment policies for new investors or those of otherwise modest means is a task that is urgently needed both by individual investors and society at large on whom the burden of financial support of retirees would otherwise fall.

Our main conclusions are the following:

1. To deliver effective financial expertise consistent with much lower costs while retaining an element of face-to-face advice, focus on people who are most likely to benefit. Help them save enough. Bring their investment risk-taking into line with their situation.

2. A very basic financial planning form can be made available to the applicant after acceptance but before an in-person or video appointment to enable information collection. Figures should be in today's dollars for simplicity. Any investment returns used in calculating surplus should be at government-guaranteed interest rates. This caveat is important because many people will need to focus merely on arriving at a positive surplus and until that point will need to stick with fixed income investing.

3. The investor, with the advisor's assistance as necessary, adjusts inputs until discretionary wealth (surplus) is the maximum that can be realistically reached consistent with his or her irreducible goal commitments. The resulting allocation generally assumes that any positive residual is available to support risk bearing consistent with an allocation to equity.

4. If there is no positive surplus, the focus should be on debt reduction, better use of government or employer subsidized savings programs, and efficient fixed income investing.

5. Pay attention to longevity risk and tail risk for the greater resilience needed by investors of limited means.

This paper provides a robust synthesis of relevant economic theory, everyday common sense, and recognition of the heterogeneous nature of investing circumstances around the world. The prescriptive but detailed nature of the proposed process will allow sophisticated concepts of investment policy to be delivered to many small investors at minimal costs.

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