Lean Advice for New Investors

By Jarrod Wilcox, PhD, Zvi Bodie, PhD, and Dan diBartolomeo
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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As defined benefit pensions have been replaced by investor-directed defined contribution plans, implementing sound investment policies for retail investors of modest means has become a problem of increasing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 United States, it is characterized by inadequate saving, failure to take advantage of the higher payout for delayed Social Security benefits, extensive credit card debt, and pursuit of naive investment policies. Sophisticated financial advice is available to large investors, but the associated high costs prohibit access by many others. This paper provides an affordable prescriptive blueprint for them, in particular for new investors. Although U.S.-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.

INTRODUCTION
The creation and implementation of sound investment policies for investors of modest means is an urgent but largely neglected aspect of financial services. By number, individual households represent the vast preponderance of investors. However, the relatively small value of each 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 underserved investors if we focus on where the most value can be added at the 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 simple and the potential lifetime payoff is large.

This simple design can be followed by investors and advisors the same way home cooks can elevate their cuisine by using a classic cookbook. But just as cooking is bound by the physical chemistry of the available ingredients, our process also is bound by the 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, embedded in the problem of investment portfolio formation tied to financial plans.

In addition, many investors require a degree of personal interaction. To achieve cost breakthroughs in reaching those who need this interaction, we seek to match potential investors who are most likely to benefit with techniques that are most likely to provide that benefit at low cost.

Note, however, that our paper is not directed toward retail investors. It’s directed toward financial advisors and organizations whose missions and strategies would benefit from serving lower-net-worth investors. These include traditional financial intermediaries and employers that channel access to financial advice. 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 is a minimally satisfactory retirement income. New investors also may be interested in saving for an emergency fund or for home ownership.

With respect to investing, the focus is on building the resiliency necessary to carry through a long-term investing program. 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 flu pandemic of 1918, and the Global Financial Crisis of 2008–2010. Now we have the ongoing coronavirus pandemic and its distressing inflationary aftermath. A resilient investment policy anticipates the possibility of such substantial disruptions.

Unfortunately, this shift has transferred the burden of saving and investing from financial professionals who work for the employers to the individual employees, most of whom have little to no sound knowledge of financial planning and investing. Government programs for incentivizing individual saving and investment, such as individual retirement accounts (IRAs) in the United States, are available outside of employer programs, but they have the same drawbacks. At the same time, low interest rates, along with longer life expectancies, have reduced the potential sufficiency of simple government–guaranteed bank savings accounts.

The financial services industry has responded to this challenge with several 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). Regardless of the ongoing debate about the relative value of active versus passive investment management, passive ETFs provide investors with a broad range of diversified investment products at relatively low fees.

On the negative side, the resulting compression in the income of financial services 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 services firms to steer investors dealing with a provider into particular investment products of an unrelated asset manager (Boyson 2019). In the United States, such payments are legal when disclosed in the 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. A target-date fund provides a cohort of persons expected to retire in the same year a portfolio with a prescribed “glide path” that describes how the allocation of invested funds will evolve over time. Target-date funds are now widely available, but their adoption has remained limited for a variety of reasons (diBartolomeo 2006). We believe target-date funds still do not adequately take into account differences in investor situations.

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

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

A SURPRISING OBSTACLE
High costs and customer naivete are two obvious barriers to good investment practice. But another—rather surprising—obstacle to better financial results is a lack of agreement about what constitutes sound investment policy. We note two book-ends of the spectrum that form the extremes of this range.

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

At the risk-averse end of the spectrum is Worry-Free Investing by Zvi Bodie and Michael Clowes (2003). These authors argue that 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. Investors who want an assured retirement income must hedge that “liability to self” with risk-free investments. Such a portfolio should be fully deployed in high-quality fixed income investments with emphasis on securities that offer protection against inflation shocks. In the United States, U.S. Treasury Inflation-Protected Securities (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 have a distinct probability of reducing the available amount of eventual retirement income.

There is no universally settled ground between these two extremes, because there is no reliable basis for determining the appropriate middle ground for individual cases.

It is tempting to look to defined benefit pension funds for evidence of a middle ground. These plans pay retirees a fixed annuity throughout their retirement lifetimes. Most such plans invest most of their assets in equities and other risky investments. This evidence is unreliable, however, 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 fulfillment 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 for how to evaluate pension fund investing risks inclusive of guarantee arrangements is presented in diBartolomeo (2015).

We now present what we believe is a middle ground suitable for serving new investors of limited means.

PART TWO: LEAN DELIVERY OF CORE FINANCIAL ADVICE
To deliver effective lower-cost financial expertise that retains some face-to-face advice, we focus on the following questions: Who are the people who are most likely to benefit? Can we help them save enough through efficient low-cost investing? And how can we bring their investment risk-taking into line with their limited ability to absorb risks?

REALISTIC EXPECTATIONS FOR INVESTOR SUCCESS
To find the people who are most likely to benefit, we borrow from guidelines used in health care to identify the best candidates for particular health interventions.

Substantial behavior changes proceed in stages. Minimize costs of customer acquisition by focusing on those who apply to the program, express a need for assistance, and persist in subsequent time periods. Leave more-complex investment strategies until a later stage for investors who need them.

Make specific skills and situations a prerequisite for learning advanced behaviors. Require an applicant to have a bank account. Participants who have a surplus over rock-bottom funding requirements and want to learn to invest in stocks must open a brokerage or mutual fund account. Require that investors be able to understand their extended balance sheets, including planned savings and retirement spending.

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

Practice and success build confidence. We advocate for investors “learning by doing,” for both financial planning and practicing simple investment transactions. In a low-cost delivery system, more difficult-to-master investment expertise can remain centralized.

APPLICANT READINESS
On the application form, require applicants to list their bank or credit union account and write a paragraph describing the goals they hope to achieve if accepted into the program. A readiness exercise provides for more rigorous screening (see figure 1).
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 invest only 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.

Expect applicants to express frustration for how difficult it is to come up with accurate numbers. But an applicant who does not understand the problem, or has no facility or patience with arithmetic, will need 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. Excellent free alternatives are available for keeping track of expenses and budgeting, but most do not focus on long-term saving and investments. New investors, however, can benefit by considering the idea of a minimum retirement goal. Developing such a goal motivates saving and helps them understand the balance they need to achieve between allocating to safe fixed income investments and exposure to the risks of stock ownership.

Figure 2 shows a very basic financial planning form that accepted applicants should complete before a face-to-face appointment. On the form, the shaded elements represent results of calculations the advisor organization supplies through a spreadsheet.

For simplicity, all amounts should be in today’s dollars. The form calculates funding surplus or deficit. Estimates of any usable surplus are based on the requirement that spending goals be minimized to the amount the investor would find just barely acceptable. Any investment returns used in estimating surplus calculated on that basis should be at government-guaranteed interest rates. This caveat is important because many people will need to focus merely on arriving at a surplus, and until that point they will need to stick with fixed income investing.

The investor, with the advisor’s assistance as necessary, adjusts inputs until discretionary wealth (surplus) is maximized consistent with the irreducible goal commitments. The resulting allocation will assume that a surplus is necessary to support the risk of investing in stock. The appropriate risk aversion is determined by the ratio of investments to surplus. (We will say more on this ratio later.)

We advocate 100%-percent fixed income if there is no surplus. We are not aiming to reflect the investor’s subjective attitudes toward risk-taking. We are prescribing what we think is a healthy financial diet based on the goals and resources the investor provides after being motivated to think about irreducible funding requirements.

Of special note is the absence of home ownership and associated mortgages in figure 2. Assessing the cash extractable from home ownership to meet a financial goal is often complicated, and it 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.”

Again, in the absence of a surplus, advice should focus on debt reduction, reducing interest on remaining debt, better use of government- or employer-subsidized savings programs, and efficient fixed income investing.

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

The ratio of investments to surplus is used as a starting point for a risk aversion parameter to determine a suitable investment asset allocation; this is based on the Rubinstein (1976) formulation of utility. It can be interpreted as maximizing the expected growth rate of surplus over the funding required to achieve a minimum positive goal (see, e.g., Wilcox 2021).
In terms of conventional quantitative asset allocation, it can be viewed as finding an appropriate location on the Markowitz (1952) efficient frontier. The unique benefit of Rubinstein’s utility analysis is that it approximates the mathematically optimal location for each investor at each moment of time. In doing so, this utility measure provides an investor-specific way to quantify the 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 shown in figure 2. A balance sheet that is more leveraged is less able to withstand drawdowns, and the investor should choose a more conservative allocation. 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 minimum goals becomes very high.

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 provided through government assistance, e.g., subsidized health care, Social Security benefits.

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

**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.
Bonds and stocks are more volatile. Figure 3 shows U.S. stock and bond pre-tax values compounded monthly from 1871 through 2021, with income reinvested and inflation rates discounted to show value in real terms.

The relatively straight-line trends (on a logarithmic scale) shown in figure 3 suggest it is useful to use long-term data when thinking about the nature of the investment problem. These long-term returns of stocks are more appealing than those of fixed income, but for investors with time horizons of less than twenty or thirty years, attention to capital preservation is needed to meet financial goals.

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

Many people never accumulate a surplus as defined in figure 2. Without a surplus, it may be difficult to justify stock ownership. On the other hand, better expectations of long-term returns from stock ownership may be feasible 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.

Figure 4 shows a probability distribution of compounded investment results drawn randomly from Shiller’s monthly U.S. history from 1871 through 2021.¹ The distribution is for a portfolio starting with a 20%-percent allocation to stocks, and the stock allocation drifts upward as the higher average rate of stock returns overcomes their higher volatility relative to bonds. The distribution shown in figure 4 is made more realistic by applying a 25%-percent ending tax and subtracting 2%-percent annual inflation.

The implied buy-and-hold strategy, over long periods, grows the median surplus faster than investments. This leads to an increasing ability to carry investment risks until retirement needs start to require fund withdrawals. This kind of buy-and-hold investing appears sufficient to improve the financial lives of a great many investors of limited means.

Fewer than 5 percent 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 are challenging, the effort can be rewarding.

PROBLEMS THAT ARE MORE DIFFICULT FOR INVESTORS OF LIMITED MEANS

Investors of limited means face some important challenges that are less troublesome to high-net-worth investors. First, lower-net-worth investors are more sensitive to investment disruptions often labeled as “tail risk.” Second, these investors’ need for retirement funding may make their longevity risk as, or more, important than investment risks.

Tail risk. We recommend using the tables of investment allocations, which are derived from long-term U.S. investment return data from Shiller (2021), and applying risk aversion based on the ratio of investments to surplus, or the reciprocal of the ratio of discretionary wealth to investments calculated at the bottom of figure 2. For investors with risk aversions of less than eight...
(see table 1), this metric gives nearly identical results to those from the ubiquitous Markowitz (1952) mean–variance framework. However, these Rubinstein utility scores fall more rapidly near goal failure than 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). Figure 5 shows utility scores for investors with varying appropriate risk aversions.

**Longevity risk.** Preliminary research about risky surplus based on longevity risk leads us to regard examples of adding five or ten years to expected lifetimes as defensible but in need of some improvement. Consequently, we advise accessing a probability distribution of lifetimes for age and sex combinations using the U.S. Social Security Administration’s calculator. Setting planned lifetime at the 75th percentile, categorized by age and sex, appears to be a reasonable approach given an assumption of the greater penalty for estimating a too short rather than a too long lifetime.

**FROM EXTENDED BALANCE SHEET TO INVESTMENT ALLOCATIONS**

Our process supplies investment expertise through centralized guidance, even though, to reduce costs, it must be delivered cookbook-fashion, as shown in table 1. Note that table 1 is for annual use, not for use for either very short-term or very long-term intervals between reassessments.

To start, investments with higher tax rates should be preferentially allocated to deferred-tax pension funds or to U.S. Series I Treasury bonds so as to lower effective tax rates through delayed payment.

**POTENTIAL INVESTMENTS**

**Fixed income.** The best fixed income investment is paying off high-interest credit card debt. Once this is accomplished, evaluate competitive rates among government guaranteed instruments. In the United States, the candidates include government-insured bank or credit union savings accounts and certificates of deposit. Other good choices are U.S. Treasury bonds, especially Series I savings bonds, which offer inflation protection and deferred taxation until maturity. Still attractive, however, are intermediate maturity (seven- to ten-year) Treasury bond ETFs. Government bond fund expense ratios should be less than 0.15 percent annually. In the United States, if the investor’s 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 will be shielded from possibly higher tax rates as the investor’s income increases.

**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 United States. Fees and other expense ratios should not exceed 0.10 percent annually. Alternatively, 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 U.S. investors, the benefit of international diversification appears to be 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.

**U.S. SERIES I SAVINGS BONDS—THE SAFEST ASSET**

Series I bonds, also known as “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

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Table 1

<table>
<thead>
<tr>
<th>Risk Aversion</th>
<th>T-Bills</th>
<th>T-Bonds</th>
<th>Stocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>26.2</td>
<td>73.8</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>48.7</td>
<td>51.3</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>60.1</td>
<td>39.9</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>77.4</td>
<td>22.6</td>
</tr>
<tr>
<td>16</td>
<td>27.1</td>
<td>60.4</td>
<td>12.5</td>
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<tr>
<td>32</td>
<td>49.6</td>
<td>43.6</td>
<td>6.8</td>
</tr>
<tr>
<td>64</td>
<td>63.7</td>
<td>32.5</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Note: Risk aversion is defined as investments/surplus.

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Figure 5

**RUBINSTEIN UTILITY SCORES FOR INVESTMENT RETURNS**

Appropriate risk aversion for failure avoidance

Source: Rubinstein utility ln((1+Lr)), where L is risk aversion and r is portfolio return.
unlimited quantities at an interest rate dictated entirely by market forces of supply and demand. But I bonds offer a much better value than TIPS, even though 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. TIPS, however, 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, I bonds can never yield less than zero. This means that worst case, unless the U.S. government declares bankruptcy, money invested in I bonds maintains its purchasing power. If there were to be outright deflation, with prices going down, money invested in I bonds would rise in value.

Investors who have held I bonds for more than five years can cash them in with no penalty. We know of no safer way to invest for a long time horizon.

In other words, whether interest rates go up or down, the investor is protected. We believe that, if they have the money, U.S. citizens would be unreasonable not to invest in I bonds up to the $10,000 per year per person limit.

Most people we talk to, however, have never heard of I bonds, which have been around since 1998. A new thirty–year fixed rate is announced every six months on May 1 and November 1 and applies to all I bonds purchased during the following half–year. The total rate of interest is the fixed rate plus the annualized rate of inflation that occurred during the preceding six months.

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 during the next thirty years. So, worst case, where investors get no interest at all, their money maintains its purchasing power. Investors who have held I bonds for more than five years can cash them in with no penalty. 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. For 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 thirty 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 significant tax advantages.

Let’s explore the tax advantages of I bonds. Investors can defer federal taxes on interest earnings for up to thirty years, and I bonds are 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. Investors enjoy these tax advantages regardless of how much tax–sheltered saving they have with other special accounts.

The fixed rate is a rate selected by the U.S. Treasury. The fixed rate is in effect until the bond stops increasing in value at maturity, thirty years after its issue date. Thus, the most recently announced fixed rate applies only to I bonds purchased during the six months following its announcement.

The U.S. Treasury credits I bonds monthly with a composite rate of interest that reflects the combined effects of the fixed rate and the semi–annual inflation rate. The semi–annual inflation rate reflects the percentage change in the Consumer Price Index for All Urban Consumers (CPI–U) over a six–month period. The semi–annual inflation rate announced in May reflects the percentage change between the CPI–U figures from the preceding September and March. Similarly, the semi–annual 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 more slowly or not 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 an I bond to decrease from its most recent redemption value.

Investors who redeem an I bond that is less than five years old 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 is set, the available return is occasionally considerably higher than other forms of U.S. Treasury debt. This happened in November 2021; see Chapatta (2021).

As a very safe yet liquid asset, however, Series I bonds are well suited 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 such as FDIC-insured saving accounts. But 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

Global financial markets periodically have suffered major disruptions from world wars, pandemics, and financial crises. When we count disruptive local impacts across individual countries, however, the frequency is much larger. At the extreme is the 1917 disappearance of the Saint Petersburg stock exchange, the world’s third-largest equity market at the time. A more recent example is the 2008 implosion of the Zimbabwean currency.

Investing abroad almost always involves exchange-rate risk. Regardless, all investors should have some portion of their capital invested abroad, because overseas investment acts as a hedge against the sort of large, local events that have disrupted economic activity recently in countries such as Lebanon and Venezuela. (Note, however, that some countries ban overseas investment as a way of controlling a capital.)

Investors therefore must determine what fraction of their equity portfolios might be invested sensibly outside their home countries; in extreme cases, they must decide what fraction of their fixed income securities also should be invested abroad. For robust advice about 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 the country of domicile depends on trade in other than the local currency. Investors living in countries with a high proportion of imports, i.e., relative to gross domestic product or 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 will have a higher chance of 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 percent.4

We also must consider the trading currency. Consider Luxembourg and Singapore, both of which had among the highest levels of trade intensity based on the World Bank data. In the case of Luxembourg, most trade is with neighboring countries that also use the euro, so there is little currency risk. By contrast, most of Singapore’s trade is conducted in major currencies, e.g., U.S. dollars. 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, which can create havoc for citizens who invest domestically. Almost all national governments have credit ratings published by one or more independent rating agencies. Countries facing instability will have lower credit ratings. Studies such as Schleifer and Vishny (1993) show 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 and even civil war. A widely used metric is the Corruption Perceptions Index published by the nonprofit organization Transparency International, which ranks global perception of the level of corruption in business and government of each country.5

Almost all national governments have credit ratings published by one or more independent rating agencies. Countries facing instability will have lower credit ratings.

The foregoing discussion focuses on international diversification in the equity portion of an investor’s portfolio. To the extent that fixed income investments typically are perceived as the “safe” portion of an investor’s allocation, investing abroad and engaging with currency 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 U.S. Social Security system. An unfortunate example is the extreme devaluation of Russian old-age pensions in 1998 due to collapse of the ruble and the related default of Russian sovereign debt. If an investor’s retirement is significantly dependent on a life annuity denominated in an unstable currency, a larger allocation to international investing is appropriate.

To help an investor estimate the portion of an equity portfolio to invest abroad, we have developed the following simple heuristic. Our percentage asset allocation recommendation, denoted as J in the following equation, assumes the availability of appropriate securities.

\[
J = \frac{100 - \text{Country Risk} - \text{Geopolitical Risk}}{2}
\]
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\[ J = \frac{T}{2G \times 100} / (100 - P) \]

\[ J_{\text{max}} = 100 - (H + R) \]

where:

- \( J \) is the percentage of non-domestic investment in equities
- \( J_{\text{max}} \) 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

The far right column in table 2 summarizes these inputs for various countries to provide a plausible guide to international allocation \( J \).

### THE VALUE OF CITIZENSHIP

Much of the economic rationale we present is based on determining appropriate levels of risk aversion using information from the investor's balance sheet. A less-explored aspect of the household balance sheet that deserves more attention is what we call a “citizenship asset.” That is, we capitalize on the social safety net to increase savings and reduce needs for retirement investment withdrawals.

The social safety net includes retirement subsidies, such as U.S. Social Security; free or subsidized medical care, such as Medicare and Medicaid in the United States; and even outright cash income payments for the very poor. Although the extent of such public assistance varies widely from country to country, the economic magnitudes are considerable.

For fiscal year 2020, the U.S. federal budget for the social safety net was $847 billion. As of 2019, the U.S. Census Bureau estimated that about 10.5 percent of the U.S. population of 330 million had incomes low enough to be eligible for federal benefits. For some sub-populations, the eligible percentage is much higher, e.g., it is roughly 30 percent for single mothers. This works out to a federal benefit value of more than $22,000 per year per eligible recipient. The comparable figure is much

### FOREIGN DIVERSIFICATION BY HOME COUNTRY

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Sources: (1) External Trade: World Bank WITS database (assumes 60 percent of trade for European Union countries [France, Germany, Italy] within the for European Union) GDP: World Bank (2) Housing Costs: Organisation for Economic Co-operation and Development, note median used if country-level data not available (3) GovRev/GDP: World Bank Development Database (4) PD: estimated from Five Year Credit Default Swap assuming 40 percent recovery
higher for many European countries. Critics of such programs point to the programs’ administrative costs, which do not directly provide for beneficiaries.

Consider that an investment portfolio capable of producing even a substantial fraction of $22,000 of reliable annual income would have significant market value. Should investors of modest means ascribe economic value to their right to public assistance in calculating their investor balance sheets? In effect, if an investor’s country is generous and reliable, the investor might choose to be more risk tolerant. In the rare event that such an investor suffers a total loss of investment capital, the investor still would be far better off than an indigent individual domiciled in many other countries.

Does this adjustment in investor risk tolerance present a moral hazard? Moral hazard occurs when investors are encouraged to take inappropriate risk because they do not bear the full loss associated with negative outcomes. Much of the vast economics literature on moral hazard, at both the individual and institutional level, focuses on insurance contracts that shield the contract holder from negative outcomes; see Arrow (1963) and Finkelstein et al. (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 its private assets, i.e., investments, essentially have been exhausted. A good example is in the United States, where individual resources must be exhausted to establish eligibility to received subsidized nursing-home care under the federal Medicaid program. In other countries, e.g., the United Kingdom and Canada, free or reduced-cost health care is universal irrespective of financial assets. As fiduciaries, U.S. financial advisors should encourage new investors to view the social safety net as a resource available to mitigate severe duress in the moment, and to view sensible investing as a tool that should minimize the likelihood of such duress.

A common-sense parallel might be a physician who would not provide an addictive painkiller to treat a routine headache for a healthy person. That same doctor may be justified in prescribing 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 the safety net’s value is non-zero. For example, health insurance coverage for cancer in some countries, e.g., Japan, generally is void if the insured is a smoker, who then must pay for cancer coverage out of pocket.

PORTFOLIO MAINTENANCE
Maintaining newly learned saving and investment behavior can be challenged by inappropriate media and advertising as well as by short-term investment setbacks.

If security returns were described perfectly by Brownian motion, and if there were no trading costs or tax consequences, and if no expensive investor attention was required, we believe closely following the prescriptions of table 1 would lead to higher expected long-term median wealth. However, we know that frequent trading is expensive in terms of taxation as well as investor and advisor time and attention.

Consequently, we recommend applying table 1 when non-investment events such as marriage or a big salary promotion, etc., occur, and using a buy-and-hold approach to investment allocations in between. Eventually these buy-and-hold investments will drift away from the prescriptions of table 1, even with updated surplus, and may call for a return visit with an advisor. At this time, research has revealed no simple formula for when this should best occur. However, an advisor might reasonably suggest a more formal review at least every three years.

Between reviews, fluctuations in stock market values and, to a lesser extent, in interest rates, will induce investors to have either too much or too little confidence in the long-term results of the program. Humans tend to extrapolate recent trends, so paying close attention to market news provides little benefit, especially when media is incentivized to promote emotional engagement. Investors are best-served by realizing that results will be variable and unpredictable over time. But for most new investors, the time horizon is long enough that good results are extremely likely.

CONCLUSION
Sound investment policies are urgently needed for new investors of modest means. Such policies benefit investors themselves as well as society at large, which bears the burden of support for retirees who have inadequate resources.

Our main conclusions are the following:

1. To deliver effective, low-cost financial expertise that retains 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 limited means.
2. Accepted applicants should provide information using a basic financial planning form (such as that shown in figure 2) before a face-to-face appointment with an advisor. Put all figures 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 on achieving a surplus, and until that point they need to stick with fixed income investing.
3. The investor, with the advisor’s assistance as necessary, adjusts inputs until discretionary wealth (surplus) is maximized given the irreducible goal commitments. The resulting allocation is based on the ratio of investments to...
surplus as an appropriate risk aversion parameter for asset allocation models. The risk aversion parameter generally assumes that any surplus is available to support risk bearing consistent with an allocation to equity.

4. If there is no surplus, focus 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, especially for investors of limited means, who need greater resilience with respect to these risks.

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 cost.

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ENDNOTES


4. See https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS.

5. See https://www.transparency.org/.

REFERENCES


