Why Invest?

By Adam Jared Apt
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This month, the first part of a two-part essay. This article is intended for the educated layman. It was written as part of a continuing series of articles on a variety of investment topics. To view all the articles in this series, click on "More by the same author" in the left margin.

Part I: Why We Do It and to What Extent

Why invest?

Isn't it a little late to be asking this, after ten essays about investing? Shouldn't we have begun with this question? No, it wasn't an oversight: We weren't in a position to answer before we gained our bearings. We had first to orient ourselves among the fundamental concepts of investments and thereby locate the path forward.

Investing has its rational justifications, but like any human activity, it's contingent upon history. American society has come to regard investing in stocks and bonds as a matter of personal responsibility and even an obligation. Authorities and economic experts, not just editorial writers, stockbrokers, and shills for mutual funds, tell us that we should invest in order to raise the funds needed to pay for our retirement, for health insurance, and for our children's college education. Though corporate managers and politicians may abuse our trust, we are nonetheless democrats in a polity of property owners, and the property we own includes stocks and bonds. As Mitt Romney so simplistically rendered this idea on the campaign trail in Iowa, "Corporations are people." But it was not always thus.

How it all began

When life expectancy at birth was only about 65 or less – within the lifetimes of some who are still living – there was little expectation of any retirement. Pensions existed, but so did old-age penury. On average, personal wealth was much less, but so were many big expenses, like college education, and not just because ordinary household price inflation has made them seem more costly today. Workers, if they had any surplus remaining after paying expenses, saved it in the bank or some other institution that promised to safeguard

[1] "Know thyself," the Greek saying that supposedly was inscribed on the temple at Delphi.

it. Stocks and bonds, even government bonds, were regarded with suspicion, and not without justification, in light of the way company promoters and the brokers of stocks and bonds practiced upon the public. Financial securities weren't esteemed as assets, like real estate. That's not to say that middle class folk didn't invest in stocks at all. I've seen a late nineteenth-century Wall Street brochure that was hawking stocks for a brokerage, and except for its typography, it wouldn't have looked archaic a century later. But it took an ideological revolution in the early twentieth century to turn a democracy of yeomen holding real, physical assets into a democracy of workers and the middle class holding both real assets and financial assets. This was largely the accidental outcome of a dialectic between those who demanded regulation of the stock market for the protection of the public, and the New York Stock Exchange and its corporate friends, which defended the market as a public service.

In 1890, no New York Stock Exchange member firm ran even a single branch office for the convenience of retail clients. It is estimated that even as late as 1917, no more than 2.5% of American households owned any kind of financial security, stock or bond, corporate or government. Though, as Calvin Coolidge said in 1925, "the business of America is business," at the turn of the twentieth century, corporate share ownership was more broadly diffused in Britain and France than here. But World War I caused roughly a third of the American population to buy a federal government bond, and then stock ownership followed. By 2001, 53% of American households held the stock of a corporation either directly or indirectly (through a mutual fund or a pension plan), though this fell to 45% by 2008.[2] Presumably, the proportion holding bonds as well as stocks was even higher.

As common investors began to trust in financial securities, they identified the return on bonds with coupon income, and the return on stocks with dividend income alone, which unlike price appreciation, seemed to be certain and real. In an earlier essay, we've reviewed why, however, the total return, including price appreciation (also known as "capital gain") matters more than income alone.[3]

Alternatives to investing

There long have been and still are alternatives to investing in stocks and bonds as a way of storing and making use of idle money. There is saving in the bank, of course. There your money earns interest (which is a positive return), but it's modest, and these days, less than modest. Stable-value funds, which sometimes appear in retirement plans, are another vehicle for getting a safe interest rate. Money market checking accounts and money market mutual funds are safe on the whole, though the risky mismanagement of a few of the latter could not remain disguised during the depth of the 2008-2009 financial crisis.

[2] For these statistics and much of the history in the preceding paragraph, I am indebted to Julia C. Ott, *When Wall Street Met Main Street* (Cambridge: Harvard University Press, 2011).

[3] Peabody River *Newsletter*, issue 2, July 2008, "How to Think about Returns."

To an economist, all of these things, even bank accounts, are investments, because by his definition, an investment is just a resource that is not immediately consumed. But I'll defer to popular usage: Henceforward, I'll let "investment" refer only to a financial vehicle that offers the prospect of appreciable growth in value, like stocks and bonds and the mutual funds that invest in them, and derivatives, private equity, venture capital, and hedge funds.

You might think that bonds that have zero or very low risk of default are yet another safe alternative to investing. But that's only on the assumption that you'll spend the proceeds when the bond matures; if you cash out before then, it's entirely possible that you'll do so at a dismal rate of return. And if you buy new bonds with the interest payments you receive in the interim and with the return of principal, you'll face the *reinvestment risk* of unfavorable new bond prices. Inflation may chew away at their value. Regardless of any risk of default, you can still lose money in bonds.

Insurance products, which aren't really investments in our sense, are another relatively secure place to park unspent money. The fixed annuity is one such product: You give the insurance company a lump of cash, and the company, in return, commits to making regular payments to you for a fixed span of years, or for the rest of your life. These days, there are insurance products that blend the characteristics of an investment with the characteristics of traditional insurance products, but the basic idea of an insurance product is that it lacks risk.[4] Indeed, the whole point of insurance, as a concept, is to mitigate risk. As a mathematical exercise, you can calculate the return on an insurance product, but there's little point in doing so. You know in advance that the return won't make you the cynosure of the country club or reading group in the way that you hope a hedge fund will; you're forgoing large returns because you want the certainty of having adequate money in the future.

Social Security has characteristics of an insurance product, and similarly is without risk, but unlike bank accounts and insurance, it's not optional. And it is not an investment. It is primarily a system of transferring money from individuals who are working now to individuals who worked in the past and have reached the age of retirement. It also does not in any meaningful way have a return. A few years ago, during the debate over whether to convert Social Security partly into a scheme of private accounts, which would be investment vehicles, some proponents pointed to the meager returns on Social Security. This was a category error. These critics of the present system were evidently calculating the return that the government was earning on the so-called Social Security trust fund (which provides supplemental funding to the transfer payments). But this was as irrelevant to Social Security's beneficiaries as calculating the return that an insurance company earns on its reserves would be to the holders of its annuities.[5] The discussion of whether to

[4] There is the risk that the insurance company won't be able to make good on its promises, and this is one reason to choose insurance companies carefully, but defaults are very, very rare.

[5] You might be interested in the return on an insurance company's reserves if you were trying to estimate the likelihood of its making good on its obligations, or if you were considering buying its stock. It is worth noting in passing that the complaint that Social Security's putative return is too low is in direct opposition to the claim that it's a Ponzi scheme.

convert Social Security, even partially, from an insurance to an investment system should be based on arguments other than a comparison of returns.

All these alternatives to investing have one thing in common: They lack risk. Well, that's not entirely true. Banks and insurance companies can fail, politicians can choose not to provide programs or funds to backstop them, and, as you know, Social Security faces a future funding shortfall that politicians may choose not to remedy. But these are unlikely risks, and to live is to be exposed unavoidably to risks, some of them deadly. You can be hit by a car while crossing the street, but if you spend all your time indoors to avoid this risk, you'll expose yourself to other risks, through lack of sunlight and exercise. You might contract a fatal disease from someone you meet, but avoiding any human contact imposes other costs. Nothing is truly free of risk. All in all, though, bank deposits, annuity contracts, and Social Security, while they stand some chance of not meeting their financial obligations, are by and large free from the everyday risk of financial loss that is inextricably bound up with investments.

When we do invest, we're looking forward to income and growth, and at non-negligible levels. But as I've written before, what really matters, ultimately, is the amount of money you have, not the return you earned.[6] Earning a 20% return in one year on $1 matters very little, unless it is indicative of an ability to earn a return of 20% a year on a base of, say, $100,000. Return is a measure of relative change in value, but money, not relative change in value, pays the bills.

How to sell investing

So you don't have to take on investment risk. And if you're not so inclined, how might I persuade you to do so?

Easily done. The arguments have been honed over the last century. You've probably heard one or another half a dozen times.

I'll ask you to assume that you have $500,000 in the bank, and that you put away $20,000 each year. The bank is paying, say, a 2.5% rate of interest per year. (That's much higher than current rates, but closer to historical rates.) And, as we saw in my last essay, we're expecting a rate of return on the stock market of about 7%. After 25 years, your bank account will grow to more than $1,610,000.

But your colleague, whose financial circumstances are the same as yours, puts her money in stocks, rather than in the bank. And after 25 years, her financial account will be worth nearly $4,000,000. Figure 1 shows the results for both of you.

[6] Peabody River *Newsletter*, issue 2, July 2008, "How to Think about Returns."

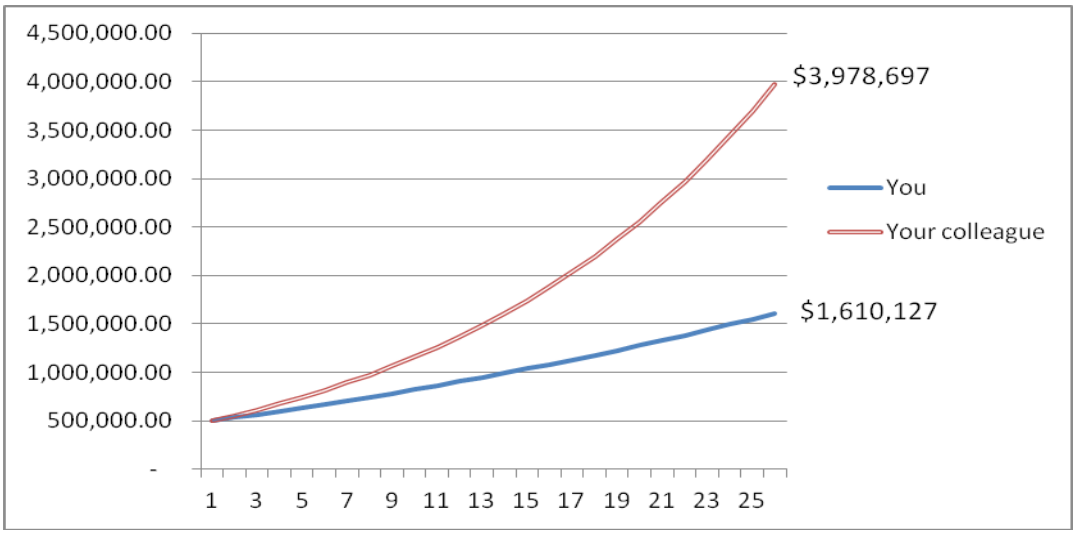

Figure 1

The difference is thanks to the "miracle of compound interest." For every $1000 with which you begin investing in the stock market, you will have 7% more after one year, or a total of $1070; that is, there's an extra $70 that in the second year will itself grow an additional 7%, so that there is growth upon growth. That means that during the second year, you will gain $75, for a total of $1145 by the end. This is *exponential growth*, a term that has lately been debased into a figure of speech meaning "tremendous growth."

But I'm not finished selling you on investing. Consider Figure 2. It depicts the growth of $1 invested in Treasury bills (the shortest-term bonds issued by the U.S. government), and $1 invested in the stock market, from January 1, 1926 through December 31, 2010. By the latter date, the dollar invested in the stock market had grown to nearly $3000, whereas the dollar invested in Treasury bills (in effect, left in the bank) grew to only about $20. (Because the difference is so enormous, I've compressed the vertical scale of the graph in order to fit it on the page; notice that it proceeds from $1 to $10 to $100 to $1000 in equal intervals.)[7]

[7] That is, I've plotted the logarithms of the values.

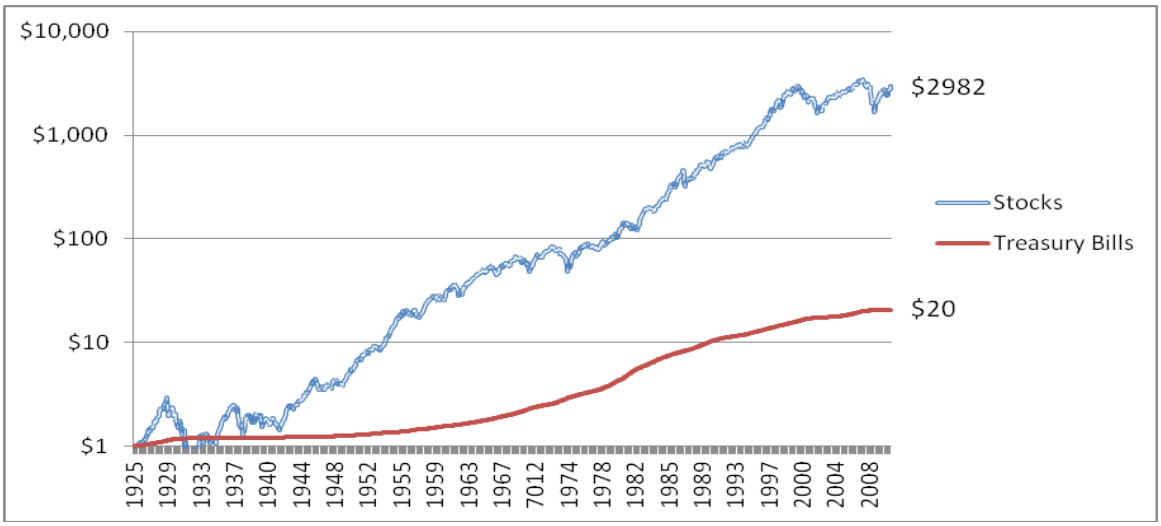

Figure 2

The first argument is mathematically correct, and the second argument is simple historical fact. Given the force of these numbers, why wouldn't you invest in stocks rather than keep your money in the bank?

Although the numbers are fair, their presentation can mislead. In the first argument, the results in both cases – you saved your money in the bank, your colleague invested her money stocks – reflect two processes: periodic saving and compound growth. Although realistic, this mingling of the two obscures the effect of growth alone, which is our concern here. If we take out the saving part, we find that the initial amount in the bank grew to a bit more than $927,000, while the initial amount in the stock market grew to somewhat more than $2,700,000.[8] After subtraction of the effect of inflation, which we'll assume to be 2.5% per year, these amounts would be no growth at all in your bank account, so you remain at $500,000 in purchasing power, and your colleague attains almost $1,503,000 in the stock market.

The second argument, the one based on history, is only implicit; the numbers are facts. But the argument elides three difficulties. First, again, we again need to take out inflation to see what real growth is. Second, as we saw in my preceding essay,[9] the long-run rate of return on the stock market that we're expecting is markedly lower than the historical one, about 7% (before adjusting for inflation) versus the 9.4% that is reflected in our graph. And third, who among my readers, apart from the institutional investors, has a time horizon for investing of 85 years? If we take a more realistic time horizon of 25 years, as in the first example, history gives us annualized returns (depending upon which historical 25-year interval we choose)[10] varying from about 6% to about 17% (as of the end of 1999, when the great bull market that began in 1982 was reaching its climax).

[8] For simplicity, I am assuming that the return is compounded annually.

[9] Peabody River *Newsletter*, issue 11, April 2011, "What Return Can We Expect from Stocks?"

[10] I'm using annual compound growth rates again.

Can investing make you rich?

So we find that the advantage of the stock market over the bank is very good indeed, but not astonishing. In short, as I tell my clients, investing in the stock market ought to increase your wealth, but it won't make you rich. Yes, I mean that to be a little startling, and "rich" is a subjective term, but in relying on future growth of a portfolio, it's best not to be carried away with enthusiasm unless you have a very long time horizon.

You should also bear in mind that we have been assuming unsullied rates of return, before their diminution by taxes and management or brokerage fees. Of course, taxes may also apply even to the safe repositories of your money (assuming that they're not tax-advantaged, like an IRA): The interest on money in a bank account, which mostly compensates for price inflation, is also taxed. So the safe alternatives to investing actually entail a small but steady loss in purchasing power through nickel-and-diming by the taxing authorities.

The *"Rule of 72,"* better than these sales pitches, can help you quickly grasp what investing can do for your wealth. This is a rule of thumb that follows from the mathematics of compound growth: *The number 72, when divided by the interest rate (or rate of return), is approximately the number of periods needed to double your money*. (The rule works best with ordinary interest rates, not exceptionally high rates.) Our estimate of the expected annual return to the U.S. stock market is not more than about 7%, but let's shade this up, for convenience, to 7.2%. Then, the rule of 72 tells us that at this rate, it will take 10 years to double your initial investment. In another 10 years, your investment will double again, for a quadrupling over 20 years. But since our estimate of the rate of return is less than 7.2% per year, the doubling time is actually a bit longer than 10 years.

Would doubling your money in a little over 10 years and quadrupling it in somewhat more than 20 years (and *before* allowing for the loss of purchasing power to inflation) make you rich? There's no question that you'd be a lot better off, but whether this will make you fabulously wealthy when you're now only just comfortable is a judgment you'll have to make for yourself.

Risk tolerance and risk capacity

Still, given these numbers, why would you hesitate to put all your money in the stock market, or in an even more promising investment?

Of course, you know why: risk. "Nothing venture, nothing win" does not imply, something venture, something win. To get extra return, you have to accept extra risk. In earlier essays, we've considered the relationship between risk and return that is intrinsic to investments. Now our concern is, how much return do we want from our investments to compensate for the risks that they impose on us? In short, what is our *risk tolerance?*

If our risk tolerance is zero, then we know what to do: We don't invest at all, but instead put our money in the bank or in insurance products. Some, maybe many people, on the contrary, are not just risk tolerant, but risk seeking, in at least a corner of their financial lives. Many individuals get financial kicks by risking small stakes on slot machines, or the roulette wheel, or the state lottery, where they expect to lose money, but they like the idea that they might, despite the odds against them, win. (If they don't expect to lose money, then they don't understand casinos or lotteries.[11]) If they do this with all their wealth, however, they are truly risk seeking, and we say that they have a "gambling addiction." This, by the way, is why it is unfair to characterize the stock market as a casino, as some detractors of capitalism do. Unlike a casino, the stock market actually offers its participants the *expectation* of winning, though, of course, both a casino and the stock market present the risk of significant losses.

There's a certain terminological confusion when investment professionals talk about risk tolerance. Some talk about *risk capacity*, as a quantity distinct from risk tolerance. "Risk capacity" refers to the ability, based on financial circumstances, to deal with losses. To take one extreme example, if you're living off your nest egg and you can't cut your expenses any further, then you have no capacity for investment risk. "Risk tolerance," in contrast, refers instead to the psychological ability to deal with investment risk. Institutions as well as individuals have a risk tolerance in addition to a risk capacity.

In practice, this can mean that your risk capacity determines what portion of your financial wealth should be kept safe and what portion should be invested, with the invested portion suited to your risk tolerance. But some investment professionals believe that your total financial wealth (apart from your rainy-day fund) should be invested, and they take into account *both* risk capacity *and* risk tolerance in determining what its investment disposition should be. From this perspective, "risk tolerance" is the sum of the two: risk tolerance = risk capacity + risk tolerance. Presented this way, the definition may sound like a mistake. Actually, I'm not entirely sure that it is, though there's unquestionably a semantic problem. Clearly, the choice between the two definitions of risk tolerance can make a huge difference to the way you should invest your portfolio. I'll return to this issue two essays hence, in the second part of our consideration of how to build a portfolio.

To the extent that each definition of risk tolerance refers to the psychology of coping with risk, we will be better equipped to develop intuitions about the concept if we first make it more precise. In the minds of many, including some investment professionals, risk tolerance has no more precise definition than that it is a preferred tradeoff between return and risk. Those of us of a more quantitative bent or training in economics prefer to define risk tolerance as the quantity of return that an investor requires as compensation for an

[11] I except, of course, the ingenious folk who take advantage of systematic faults in the randomization methods used by some lotteries. See "Lottery Wins Come Easy, if You Can Spot the Loopholes," *NewScientist*, 19 August 2011.

incremental unit of risk (that is, how much return will induce the investor to take on a small amount of additional risk).[12]

We know that return is quantified in percentages. But units of risk?

As I've mentioned a number of times in earlier essays, it is common to identify investment risk with volatility. There are simple statistical measures of volatility, the technical details of which need not hobble my narrative. But yes, one can easily, in both theory and practice, quantify risk tolerance as a number, representing incremental required return divided by incremental risk.[13] (This is sometimes called the *risk aversion parameter*, as it's a measure of your aversion to risk, rather than your tolerance of it, but it's easy to convert between aversion and tolerance, as they're just upside-down versions of each other.) Like much quantifiable financial theory, this is an oversimplification. By considering its implications, however, we may sharpen our understanding of risk tolerance and uncover problems with even the more nebulous definitions of risk tolerance. Anyone inclined, as some are, to dismiss this as financial engineering mumbo-jumbo should beware that this definition of risk tolerance is just one instantiation of a pedigreed species of model of rational behavior from *expected utility theory*, which can be traced back to Daniel Bernoulli in the early 18th century,[14] and it is matched to the criteria that define a rational decision-maker, as established by Otto Morgenstern and John von Neumann, the begetters of game theory. In short, you should perhaps think twice before blowing off the work of several of the greatest mathematicians of the last three hundred years.

To make our definition concrete: As we've seen, a realistic outlook for the U.S. stock market is probably no more than about 7% per year. That's about 4.5% more than the return that you might get (under normal conditions, not today) from a riskless investment. The measure of risk of the stock market is about 0.04 per year. (Take it from me; I'm not going into its calculation from historical data.[15]) That suggests that if you're comfortable putting all your money in the stock market, your risk tolerance is about 0.045/0.04 = 1.125. If you're more risk averse than this, your ratio would be higher. Since the return can't go up, the risk will have to go down, and you'll choose to put less than all your wealth into the stock market, resulting in lower risk, but also lower return. (If you're thinking that, since lower risk leads to lower return, the achievable ratio would stay the same and you could never be satisfied with the tradeoff, the explanation is that the return and risk of your

[12] Risk is specified as variance of return, though it could equivalently be specified as standard deviation of return. In my previous essay, I explained that there were two ways of specifying a rate of return: the average or typical return per period, and the growth rate. That is, the arithmetic average return or the geometric average return. The latter is always less than or equal to the former. In specifying risk aversion, both return and risk are expressed per unit of time, and we use the average return, not the growth rate, in the numerator.

[13] Alternatively, one can invert it: incremental risk over incremental return is known as the **risk acceptance parameter**.

[14] Daniel Bernoulli, "Exposition of a New Theory on the Measurement of Risk," trans. Louise Sommer, *Econometrica*, Vol. 22, No. 1. (Jan., 1954), pp. 23-36. First published 1738.

[15] For those with of a statistical bent, it's worth noting that I'm measuring volatility here by variance, not standard deviation. This will matter in my next essay. The standard deviation of stock market returns is about 20% per year.

investments shouldn't go down at the same rate. We'll return to this matter in the next essay.)

The trouble with risk tolerance

There are at least four problems with this definition of risk tolerance.

First, it incorporates a definition of investment risk that we already know is wrong, or at least incomplete.

Second, it assumes that risk tolerance is the same for both gains and losses. Everyone likes prices that go up. But this alone doesn't vitiate the use of volatility in defining risk aversion as long as we're correctly measuring the aversion to volatility in the wrong direction.

Third, it assumes that risk tolerance does not change with your level of wealth. If the value of a very wealthy investor falls by 50%, he may still be sufficiently wealthy not to fear penury, and so his risk tolerance may stay constant. Someone of middling wealth who sees her net worth suddenly fall by 50% would rightly fear for her ability to remain independent in retirement, and would therefore be forced to constrict her risk tolerance.

Fourth, you can't measure it.

On the first matter, we have already seen that the simple statistical concept of volatility doesn't fully capture the risks inherent in investments.[16] History shows that extreme events – extreme bad events – are more common than the basic statistical definition of volatility would lead us to expect. Perhaps a person (or the board of an institution) is more rattled when extreme drops in price occur more frequently than might be expected from ordinary volatility, though even infrequent extreme price drops are bad enough. (And bear in mind that even plain old volatility doesn't mean that risk washes out in the long run, a point to which I shall turn in a moment.)

The first matter, though important, is not a theory-killer. Business school students may be taught that this definition of risk tolerance is true, but like so much financial theory taught in business schools, it is "bread and milk for children." Actual academics and academically trained investment professionals know that it is a simplification, and, as so often in the sciences (and even more so in engineering), a concept that we know to be precisely wrong in theory may nonetheless turn out to be roughly right and good enough to be useful in practice.

The second and third matters are features, not defects in the theory of risk tolerance, and we'll return to them in a bit, when we look at Prospect Theory. If your risk tolerance decreases as you lose money, perhaps the concept of risk capacity, independent of risk

[16] Peabody River *Newsletter*, issue 3, January 2009, "How to Think about Investment Risk."

tolerance, should kick in. That is, perhaps you've put more at risk through investing than you had the capacity to do.

But the fourth matter is, in my view, the most troubling: We don't know how to determine, even crudely, the risk tolerance of an individual or an institution. Not that you'd know this from the way the financial services industry sells its advice to the public. These companies usually ask you some questions, cogitate ever so briefly, and then either tell you what your risk tolerance is, or they present an ideal portfolio that they claim matches your risk tolerance. Can they do this? Think for a moment: Can you tell me how many units of return you require for an additional unit of risk?

Sure, that sounds absurd, yet some unthinking investment advisors assume that you can. They may ask you if you're a conservative, moderate, or aggressive investor, and according to your choice of adjective, they will give you worthless investment recommendations. If, without knowing the facts and theory of investing, you believe that it's reasonable to get a return of 20% a year on your investments (and if I don't know that that's what you believe), what meaning can I possibly attach to your telling me that you're an aggressive investor? None. Furthermore, even if you actually have realistic expectations for returns and risk, your feel for investment risk might change when you're confronted with its reality rather than a verbal description of it.

The risk tolerance questionnaire

Recognizing this, more thoughtful investment advisors, perhaps a majority, ask clients to complete a *risk tolerance questionnaire*. This can take many forms, and questionnaires may range in length from, perhaps, five questions up to the longest I've come across, with fifty-seven questions. Some of the questions may actually relate to investing. But all suffer from at least one fatal flaw: There is no way to map the answers you give on the questionnaire to a required return for an extra unit of investment risk. To see this, let's convert values of risk aversion to a scale that ranges from 0, meaning that you don't need any return to be induced to invest in anything, up to 100 (and beyond), which means that you require an enormous return persuade you to take on any risk. I have no way of knowing, *a priori*, whether, out of the entire adult population, risk tolerances are evenly distributed along that scale, or if nearly everyone is in the range of 90 to 100, or if nearly everyone is in the range of 5 to 10. When I score your answers to the questionnaire, does a somewhat conservative score mean that your risk tolerance is 91, or does it mean that it's 6? So, even if the questionnaire is good for determining whether one investor is more aggressive than another, it can't tell me their absolute levels of conservatism or aggressiveness.

Furthermore, the determination of risk tolerance is necessarily highly imprecise, though this by itself doesn't mean it can't be estimated roughly. A representative from my least favorite Wall Street firm, now happily defunct, once boasted to me that the firm could place its clients in one of ninety different risk tolerance categories. Ninety?! It's probably not

possible to discriminate among even nine levels of risk tolerance. But the firm's approach was scientifically impressive – like the white lab coat on the actor in toothpaste advertisement.

Some questionnaires ask about your attitude toward all kinds of risks, not just investment risk. Do you like to bungee jump? Are you a glass-half-full sort of person? But any relationship between the answers to such questions and your attitude toward investment risk is pure supposition. An individual or an institution can be more averse to some kinds of risks than to others. Who's to say, without social and psychological research, that a paraglider is necessarily a risk tolerant investor? Perhaps extreme sports enthusiasts and heavy smokers worry about leaving a comfortable benefaction for their heirs, or about having enough to live on should they suffer grievous and permanent bodily harm and be unable to earn a living. But there need not even be any rationale for, let alone any identifiable association with, the psychological element of financial risk tolerance. (Just as no one would deduce that a veterinarian friend of mine is highly averse to mice.)

My foregoing remarks are likely to be ill-received by many of my professional peers. I should confess that I've helped to design a risk tolerance questionnaire myself, earlier in my career, after examining many others, so I know whereof I write.

Readers skeptical of the mathematization of finance may suspect that I have got myself in a fix by insisting on a quantitative definition of risk aversion. But the very same objections I've raised to the scoring of risk tolerance questionnaires also apply to the nebulous, ill-defined notion of risk tolerance. The quantitative outlook just gives us a clear impression of a conceptual hazard that is otherwise obscured in the mists of imprecise thought. It doesn't follow from using vague and ill-thought-out definitions of risk and of risk tolerance that an investment advisor can any more accurately map her estimate of an investor's risk tolerance to an appropriate combination of investment risk and return.

But risk tolerance (or aversion) is a critical datum for the determination of appropriate overall portfolio choices, both for those who invest for themselves and for those who would give recommendations to others. You have to gauge it somehow.

In **Part II***, next issue: We consider how to evaluate risk tolerance, and whether it is or even should remain constant.*

Adam Jared Apt, CFA, is a financial advisor and the owner of Peabody River Asset Management, based in Cambridge, MA.

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