Financing Retirement

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Retirement

Why should you be interested in the subject of financing retirement since you haven't even started your working career? For two reasons. First, you will almost certainly receive some retirement income from a social (government) policy designed to provide a minimum standard level of living. You should understand the issues associated with such programs as both a participant and a citizen. Second, you will probably need to save and invest a considerable part of your earnings to provide the overall standard of retirement living you would like. The more you know about this subject, the better.

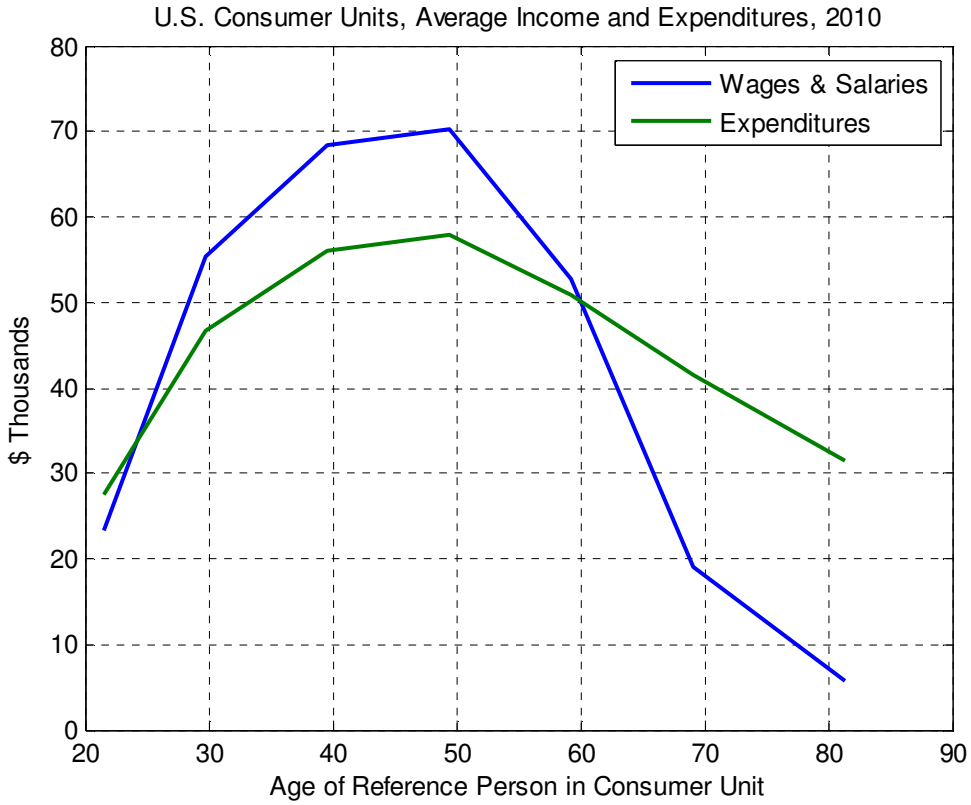
In the grand sweep of history, retirement is a relatively recent phenomenon. The average person born in a developed country in 1900 died before age 50. In 1889, when German Chancellor Bismarck instituted the first compulsory program providing government retirement payments, only a very few people were expected to reach the age when people were eligible to collect benefits (initially 70, lowered to 65 in 1916). But times have changed. Half the children born in the more developed regions of the world in the early 1950's could be expected to die before age 66. But at least half of those born in such regions since the year 2000 are likely to celebrate their 77th birthday. Thanks to modern medicine and better standards of living, life expectancy has increased dramatically around the globe.

Economic Life Cycles

Figure 1 shows a likely pattern for the lifetime cycle of your income and spending. For each of several age categories it plots the average annual before-tax wage or salary income for a consumer unit (household) in the United States in 2010, along with the average annual expenditure. While your experience will differ, it is likely to follow a similar cycle as you go through life.

In the very earliest years of your career you may spend most of your earnings, but thereafter you will spend less than you earn in order to support your desired standard of living in later years. After you leave your regular job or career, your wage or salary earnings will decrease or stop entirely. But you will want to have some sort of income in your later years. To provide this, you will need to spend less than your before-tax earnings during your working years. The social program in your country will likely do some of this for you by deducting required contributions from your wages or salary, likely obtaining additional amounts from your employer, then making payments to you after you retire. Your employer may deduct additional amounts and provide some post-retirement benefits as well. But in all likelihood you will want to further smooth the pattern of your spending over time by saving and investing some of your remaining discretionary income. To do this you will need to move money from your working years to your retirement years. Increasingly, the burden will be on you to make intelligent saving and investment decisions.

Figure 1



Inflation

While the prices of many goods may decrease from time to time, it is far more common for the overall cost of providing a given standard of living to increase from year to year. Such price inflation lowers the purchasing power of the currency, making the standard of living provided by a given amount of monetary income likely to fall over time.

Imagine that you were to give a bank 100 Euros today. In return, the bank promises to give you 110 Euros a year from now. Convention would say that you earned 10% on your investment. So you did, in *nominal* terms. But imagine that during the year the average prices of goods and services went up 8%. By waiting a year, you increased your purchasing power only roughly 2%. Your *real return* was 2%.

From 1980 through the latter part of 2011, the inflation rate in major advanced economies (the G7) averaged roughly 3.2% per year. This may seem benign, but even at this relatively low rate of inflation, the purchasing power of a given amount of money would fall by half in roughly 22 years. To avoid losing ground, your savings must earn more than the rate of inflation.

Most of the time, securities issued by governments with good credit ratings that pay you back within a year or less have provided you with enough money to buy more goods and services than you sacrificed when you bought the securities. The *nominal rate of interest* promised by such short-term bonds or notes is likely to be greater than the subsequent rate of inflation. In such cases, even though there is inflation, the realized *real rate of return* is positive. However, in periods of high unemployment, due in part to the actions of central banks, nominal interest rates may be so low that the realized real rate of return on the highest quality short-term government debt is zero or negative.

A strategy of investing in short-term government debt may have little or no risk in terms of nominal returns, but real returns are uncertain due to unpredictable variations in inflation. To allow investors to obtain a real return with little or no risk, most governments issue *inflation-protected securities*. These are typically longer-term bonds in which the payments are adjusted to match any increases in an index of the cost of living. In real terms, such securities issued by credit-worthy governments are the closest one can get to a savings vehicle that is riskless in real (purchasing power) terms.

Unfortunately, in times when nominal interest rates are low (or virtually zero), the real return on a high quality inflation-protected security may be negative. On some days in early 2012, United States government inflation-protected securities (TIPS) that made payments over the following five years were priced to provide a real return of -1% per year! To obtain a positive real return one often had to purchase a security with 20 or 30 years to maturity.

In more normal times high quality inflation-protected securities may provide positive real returns. But even then rewards will almost certainly be small. This places a heavy burden on those who wish to save for future consumption without taking on the risk associated with non-government investments.

Social Retirement Programs

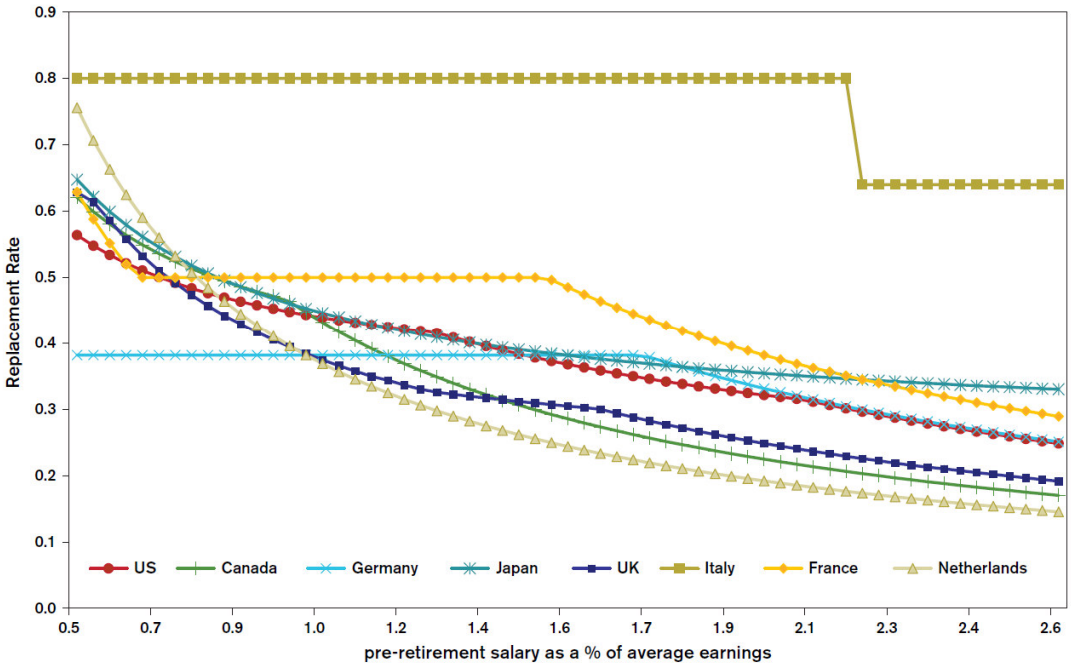
Virtually all developed countries have social retirement programs. Contributions from employees and employers are mandatory and benefits are paid after a specified age as long as the beneficiary is alive. Once payments begin, the annual amounts are generally increased by the amount of inflation, as measured by a government index of the cost of living. While these provisions may not fully reflect changes in the cost and quality of the goods and services you personally will consume, the goal is to allow you to maintain a relatively constant standard of living in retirement.

A standard measure of the generosity of a social retirement plan is its "replacement rate" – the ratio of (1) the amount received in the year payments begin to (2) the recipient's wages or salary in the prior year. Figure 2 shows the ratios of before-tax pre-retirement income that were replaced by retirement benefits from the social system at retirement. Ratios are displayed for eight countries and different income levels, each expressed as a percentage of the average earnings in the country.

One striking feature of Figure 2 is the fact that a person relying solely on a social program for post-retirement income would typically suffer an income decrease of more than 50%. The other is that the replacement rates in a given country are considerably lower for those with higher incomes. This is intentional. Such programs are designed to redistribute income from higher-income people to those less fortunate.

Social programs are typically not intended to fully provide a relatively constant lifetime standard of living for everyone. Rather, the goal is to provide a "safety net", with all but those with the lowest incomes expected to obtain additional sources of retirement income.

Figure 2
Replacement Rates, Social Retirement Programs



One might think that contributions made by employees and employers to a social retirement program would be invested, with the proceeds used to fund payments made after retirement. But this is rarely the case. Most governments use some or all of the contributions made in a year by and for those currently working to make payments to former workers who have retired. Any excess is typically used directly or indirectly to fund other current government expenditures. By and large, such systems follow a "pay as you go" approach.

The lack of significant true savings and investment makes social retirement programs vulnerable to serious problems of underfunding. The frequent use of questionable assumptions about the growth of the economy, unemployment, inflation and other macro-economic variables can lead to situations that generate pressure to reduce the generosity of such plans, adversely affecting beneficiaries. For example, in 2011, the unfunded obligation for past and current participants in the United States social security system was $ 18.8 Trillion – more than an entire year's Gross Domestic Product. Worse yet, to combat some of the effects of the recession that started in 2007, the government reduced contribution rates while leaving benefits unchanged.

In the United States and many other countries, political discussion continues about possible changes in social retirement systems. In 2010 and 2011 some countries

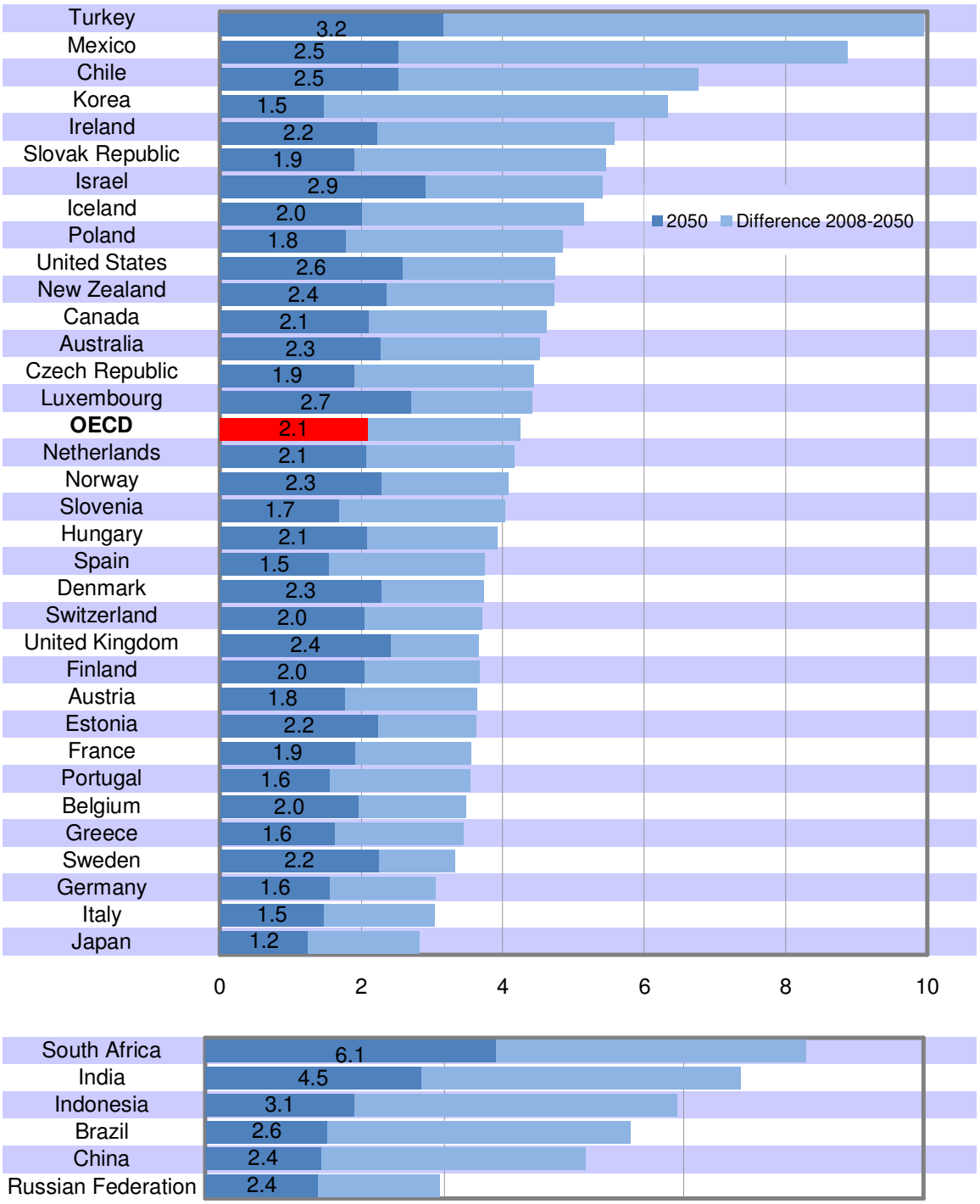
responded to their financial crises by reducing benefits or extending the age at which participants become eligible for payments from the social retirement program.

But the problems are profound. People are living longer and life expectancies may continue to increase. Of course no one can predict such changes with certainty. Medical advances are likely to continue to make it possible to prolong life. On the other hand, changes in habits may slow down the progress (think about fast food) and possibly diminish the quality of life, if not the quantity. But the odds are that you will live longer than your parents, as has every generation in modern times.

Clearly, increased life expectancy adds to the costs of any given social retirement plan. But there is another factor that has greatly affected the financial status of such plans around the globe. We are having fewer children. Demographers focus on a statistic termed the *fertility rate* – roughly, the number of children per woman who lives through her reproductive life. In the early 1950's the average fertility rate was 6.07 in the less developed countries and 2.81 in the more developed ones. In the period from 2005 through 2010 the average rates had declined to 2.68 in the less developed countries and 1.66 in the more developed ones. To keep a population from declining, the fertility rate must be somewhat greater than 2.0 (due mainly to infant mortality). The implication is clear. The populations of developed countries are declining. Immigration from less developed countries can help, but even those countries are growing at much slower rates than formerly.

Figure 3 shows the effects of actual and predicted increases in life expectancy plus decreases in fertility rates for many countries. Each bar shows the value of an actual or projected *old age support ratio,* computed by dividing the number of people from age 20 to 64 by the number of those 65 and over. The former are thought to be of "working age" and the latter of "pension age", although such an interpretation may be too simple, especially in the future. In any event, the ratio is projected to decrease dramatically in every country shown. Note that all the people that will then make up the older age group are alive today, as are many of those that will be in the younger group. Absent a furious increase in child-bearing, a tragic decrease in life expectancy or unexpected massive migration of younger workers from some regions to others, every one of these countries will age substantially in future years, placing increased pressure on their social retirement systems.

Figure 3
Old Age Support Ratios, 2008 and 2050:
Number of people of working age (20-64)
per person of pension age (65+)



Many argue that people should work for more years. This could greatly reduce the pressures on social retirement programs and individual savings. Every additional year worked increases total contributions made and reduces total retirement income required. Thus far, citizens of most countries have continued to retire at the same or even earlier ages. But in the future, economic pressures may lead many to devote at least some of their added life spans to gainful employment.

Even if you can and do continue to work later in life, you will almost certainly need to personally save substantial amounts of your earnings to finance your own retirement. And if you want to retire in your 60's, the amounts will be large.

Employer Sponsored Retirement Programs

To supplement or replace a social retirement system, many employers provide their employees with an independent or supplemental retirement program. In the latter half of the twentieth century many such programs, like the social systems, promised payments in retirement defined in advance in nominal or real terms. In some countries such *defined benefit* plans were, like most social programs, unfunded with benefits paid out of the employer's general revenue. But in many cases contributions were made by the employer (and possibly employees) into a fund designed to be used to make current and future benefit payments. Money in such funds was typically invested in risky securities such as stocks, corporate bonds and higher-risk government bonds as well as possibly some low-risk government bonds. The mismatch between the investments and the obligations led to a substantial risk that the value of the investment fund could be insufficient to pay promised benefits, requiring either reductions in payments or added contributions by the employer.

In the last few decades many employers shifted from such defined benefit retirement plans to programs in which contributions are invested in a separate funds -- each designed to provide money for a particular employee's retirement. The employee is allowed to allocate his or her fund among several investment vehicles selected by the employer. At retirement, the employee can typically cash in the fund to finance his or her retirement in any way desired. Such a system is called a *defined contribution plan*, since the terms specify the amounts that will go into the fund, but not the benefits that it will provide. In all likelihood, this is how some or all of your retirement will be financed. And you will probably have to make critical decisions concerning the amount to be saved, the manner in which it is invested, and the ways in which you use the money in the fund at retirement to try to provide a satisfactory standard of living for the remainder of your life.

Governmental Defined Benefit Plans

While many private sector employers have shifted to defined contribution plans, many government employees continue to be covered by defined benefit plans. A crucial issue for the citizens that must support such governmental plans is the valuation of the obligations already incurred and the extent to which the current value of the fund assets is sufficient to meet those obligations.

Most economists would argue that the best way to value such pension obligations is to estimate the cost of a portfolio of low-risk government bonds that would provide payments matching those required if every employee were to quit tomorrow. Moreover, they would say that the best way to value the assets is to estimate the amount that could be obtained if the investments were sold tomorrow. Unfortunately, due to political pressures, such pension funds often adopt procedures that put higher values on the assets and lower values on the obligations, leading to inflated estimates of the extent to which their plans are truly funded and thus unreasonably low estimates of taxpayers' pension debt. In periods of recession and financial crisis, assets may be valued using averages of prices over a long period rather than current quotations. Obligations may be valued using estimates of expected returns on assets, as if such returns were guaranteed each year, instead of the more appropriate returns that could be earned at the time on low-risk investments. While the use of such optimistic assumptions has declined in the private sector, it continues with only minor reforms in many parts of the governmental sector.

In a number of countries the financial crisis that started in 2007 took a serious toll on defined benefit programs for government employees. The reality of their true funding status led to reductions in benefits, increases in the ages at which employees were eligible to receive such benefits and other wrenching reforms. And a few government agencies shifted some or all of their contributions to defined contribution plans which by design have no outstanding employer unfunded liabilities and in which investment risk is borne by the employee, not the employer.

The Shift to Defined Contribution Plans

For good or ill, many private and some governmental employers have shifted from defined benefit to defined contribution retirement plans. In the latter, each employee can decide, within some limits, how much to save and whether to invest in low-risk government bonds or to put some or all the funds in risker securities in the hope that returns will be higher, providing a more confortable retirement.

Why this shift? Reasons may differ from case to case, but one driving force is the one shown in Figure 3. Populations are aging. Under a defined benefit regime, in bad times when output falls and many people are unemployed, those receiving guaranteed retirement benefits suffer no drop in income (either nominal or real, depending on the plan). When retirees were a relatively small percent of the population this may have been

fine. But with fewer workers producing goods and services per retiree, it makes sense for the older generations to bear at least some of the aggregate risk in the economy. Defined contribution plans make this possible, but not required for every employee. Those who wish to do so can purchase low-risk securities while working and then purchase an annuity contract from an insurance company that will provide guaranteed payments for life. Others can invest in riskier assets and choose to invest and spend the proceeds after retirement and/or purchase an annuity. In a defined contribution regime, workers can choose whether or not to bear more risk in the hope of higher return. And the social fabric is less likely to be badly torn in rough economic times.

Saving and Investing for Retirement

In the brave new world of retirement financing, you will very likely have to decide how much to save, how to invest the proceeds and what to do with the resulting money when you retire. If you are fortunate, your employer will provide education, counseling, projection tools and/or professional management as well as a carefully chosen range of investment vehicle such as bond funds, stock funds, insurance products and pre-packaged multi-asset strategies. Still, your task will be daunting. Many economists have devoted their careers to trying to understand the nature of investment markets and appropriate strategies for individuals to follow when investing in those markets. Here, in brief, are a few lessons based on that research.

Capital markets are highly competitive. It is very unlikely that you will find a strategy that provides long-term returns absolutely guaranteed to be greater than those available from low-risk government securities. Most other securities are risky in both the short-term and in the long-term. You may well want to invest at least part of your funds in some of them. But understand that, at best, your eventual retirement standard of living will be uncertain and could fall anywhere in a potentially wide range of possible outcomes. If you choose a highly diversified portfolio of investments, the center of that range is likely to be higher than the standard of living you would obtain by investing in low-risk securities. But if the outcome falls in the lowest part of the range, you will very much wish you had not taken the added risk.

The financial industry offers myriad possible investment vehicles. In evaluating them, you should keep an important economic principle in mind. In competitive markets, you won't get something for nothing. Economic theory suggests that there should be an expected reward for bearing risk. But not just any risk (otherwise we would all go to Monte Carlo) -- only the risk of doing badly in bad economic times. Other sources of risk can be greatly reduced by diversifying your investments. The implication is that you should diversify widely across many risky investments so that the main risk you bear is that of a major fall in markets world-wide, due to fears of or the actual experience of widespread recessions, financial crises and other catastrophes.

Another key principle is that you should not use your hard-earned money to pay needless expenses for financial products and services. Many firms offer investment vehicles that

are purported to be able to “beat the market” in general or in a particular sector. In return, they charge a substantial added fee every year. But both theory and empirical evidence suggest that such fees are generally wasted. The amounts may seem small (perhaps an added 1% of your funds each year) but their impact on the value of your savings at retirement can be very large indeed.

Fortunately the financial industry also offers low-cost investment vehicles designed to reflect the returns in broad markets. An “index fund” of this type simply holds proportionate shares of most or all the securities in a market (for example, x% of the outstanding shares of each stock and/or x% of the outstanding bonds of each issuer). Such funds may be offered for a fee of as little as 1/10 of 1% of the amount invested each year, leaving you with much more money at retirement.

Here is a simple suggestion. Consider investing your retirement savings either directly or via an annuity in a combination of (1) low-risk inflation-protected securities and (2) one or more low-cost index funds representing a global portfolio of bonds and stocks. The proportions are up to you. The more willing you are to take on added risk in the pursuit of added long-run return. the greater the proportion you should invest in the risky portfolio. A boring strategy, to be sure, but one that could serve you well.

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