

Personal Finance Workshop: Investing in Risky Assets

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Principles of Risky Investing (1)

- Participate!
 - ▶ When risk is rewarded you should always take some, even if you are a cautious person.
- Diversify!
 - ▶ Dividing your investments among different risky assets can reduce risk without reducing return.
- Learn the easy way!
 - ▶ There is a lot of historical evidence to look at, you should not rely on your own personal experience.

Principles of Risky Investing (2)

- Don't try to beat the market!
 - ▶ Financial markets are efficient and very few individual investors can profit from personal trading.
- Watch the fees!
 - ▶ Fees and trading costs should be kept to a minimum.
- If something looks too good to be true, it is!
 - ▶ Only fraudulent investments claim to deliver extra return with no risk.

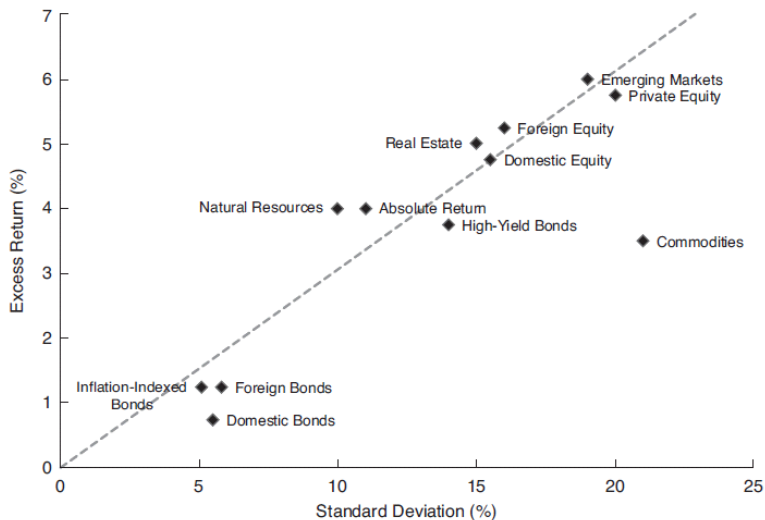
Housing and Insurance

- How should you think about the decision to rent or buy a house?
- What to do about a mortgage?
- What do about insurance?

Why Take Risk?

- Generally speaking risky asset classes offer higher average returns than safer asset classes.
- The next slide shows a plot of expected return against risk, based on an analysis done by Harvard Management Company a few years ago, and taken from my book *Financial Decisions and Markets: A Course in Asset Pricing* (Princeton University Press 2018).
- The vertical axis is the expected excess return over safe investments (bank savings accounts or money market funds), in percent per year.
- The horizontal axis is the risk measured by standard deviation. We will define standard deviation later, but for now just use the rule of thumb that if the standard deviation is $X\%$, then a gain or loss of more than $X\%$ in a year happens about one year in 3, and a gain or loss of more than $2X\%$ happens about one year in 20.

Risk and Return Across Asset Classes



The Benefits of Increasing Average Return

- A higher average return can have an enormous effect on wealth if you invest over many years (for retirement).
- With a 0% real return, \$1 invested today still has the purchasing power of \$1 even 20 or 30 years later.
- With a 1% real return, \$1 invested today has the purchasing power of \$1.22 in 20 years and \$1.35 in 30 years.
- With a 5% real return, \$1 invested today has the purchasing power of \$2.65 in 20 years and \$4.32 in 30 years.
- But you should remember that the average return may not be realized—that is what risk means.

Why Avoid Risk?

- Pure risk without reward is generally unappealing.
- Most people feel that the value of an extra dollar is lower, the more dollars you have already.
- If you are “risk neutral”, then this is not true: every dollar is equally valuable no matter how many dollars you already have. Economists say you have risk aversion of zero.
- If doubling your wealth would divide the value of an extra dollar by 2 ($= 2^1$) then you have risk aversion of 1.
- If doubling your wealth would divide the value of an extra dollar by 4 ($= 2^2$), then you have a risk aversion of 2.
- If doubling your wealth would divide the value of an extra dollar by 8 ($= 2^3$), then you have a risk aversion of 3... and so on.

Figure Out Your Risk Aversion

- A way to estimate your risk aversion is to ask yourself: how much would you pay to avoid an unrewarded gamble of 10% of your wealth?
- Toss a coin. If you win the toss, you get to spend 10% more throughout your life than you otherwise would have. If you lose, you spend 10% less throughout your life than you otherwise would have.
- If your risk aversion is γ , then you would give up $(\gamma/2)\%$ of your wealth to avoid this gamble. Equivalently, if you would give up $X\%$ of your wealth to avoid the gamble, your risk aversion $\gamma = 2X$.
- What is your risk aversion?

Defining Return

- The return on a risky investment over one period is defined as the money you get back next period if you sell, less the price (cost) of the investment today, divided by the price today.
- The money you get next period generally includes both income (a “coupon” in the case of a bond, a “dividend” in the case of a stock, rent in the case of a house) and the price at which you can sell the investment next period.
- Income is generally taxable in the period you receive it, but any increase in price (“capital gain”) is only taxable when you actually sell the investment.
- To measure returns correctly, you must always include both the income component and the capital gains component.

Defining Mean Return

- Suppose there is a risky investment that will either deliver a 20% return over the next year, or a -10% return. These two outcomes are equally likely.
- The mean return is the probability-weighted average of the two returns:

$$\bar{R} = (0.5 \times 0.2) + (0.5 \times -0.1) = 0.1 - 0.05 = 0.05 = 5\%.$$

- If the investment does well, the return is 15% above the mean; if it does badly, it is 15% below the mean.

Defining Risk: Variance and Standard Deviation

- If the investment does well, the return is 15% above the mean; if it does badly, it is 15% below the mean.
- The variance of the return is the probability-weighted average of the squares of these two deviations from the mean:

$$\sigma^2 = (0.05 \times (0.15)^2) + (0.05 \times (-0.15)^2) = (0.15)^2 = 0.0225.$$

- The standard deviation of the return is the square root of the variance:

$$\sigma = \sqrt{0.0225} = 0.15 = 15\%.$$

- In the case of a coin toss (a bet with two equally likely outcomes), the standard deviation equals the absolute value of the deviations from the mean.

How Much Risk to Take

- A standard rule of portfolio choice is that the share of your wealth you should invest in a risky asset (given that you have no risk to start with) is

$$\frac{\bar{R} - R_f}{\gamma \sigma^2}.$$

- Here $\bar{R}$ is the mean return (5% in our example), R_f is the riskless interest rate (close to 0% today), σ^2 is the variance (0.0225 in our example), and γ is risk aversion.
- This rule can be derived from various sets of assumptions, but take it as given for now.

How Much Risk to Take

- Suppose your risk aversion $\gamma = 2$, then the share of wealth to invest in risky assets is

$$\frac{\bar{R} - R_f}{\gamma \sigma^2} = \frac{0.05 - 0.00}{2 \times 0.0225} = 111\%.$$

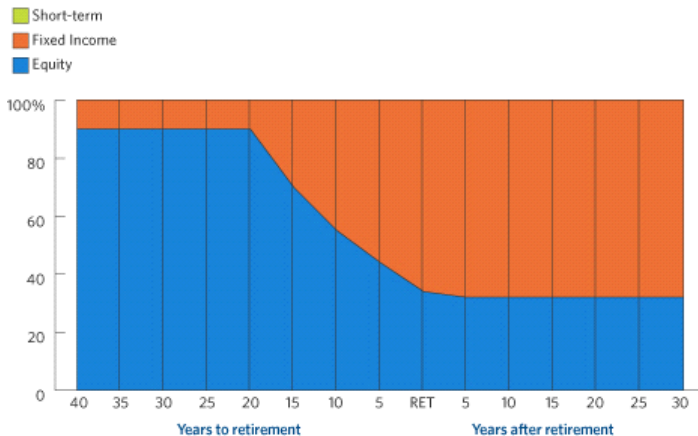
- ▶ In other words you should want to borrow to take even more risk than your wealth permits.
- If you are more risk-averse with $\gamma = 5$, you should invest 2/5 as much or 44% of your wealth in risky assets.
- No matter how risk-averse you are, the formula says you should always invest something in risky assets.
- In other words you should always participate in risky asset markets. Once you have set aside 3-6 months' income as an emergency fund (keep this in a savings account), you should start making some risky investments.

Risk and Age

- Standard advice is to invest more aggressively when you are young, and cut back risk as you get older. A common rule of thumb says the risky share should be $(100 - A)\%$, where A is your age. So about 80% for you, only 40% for me!
- This is not because older people necessarily become more risk-averse, but because young people have an enormous “hidden asset”: your future earning power. This is not entirely safe, but it is relatively safe compared to the stock market. Hence, you have a large implicit investment in safe assets, and you should compensate by concentrating risk in your financial portfolio.
- As you get older, your future earning power diminishes and your financial savings increase. Hence, you have a smaller implicit investment in safe assets and a larger financial portfolio, and you should cut back risk as retirement approaches.

Target Date Funds

- Target date funds are a way to implement this strategy. The details vary, but an illustrative “glide path” is shown below. Source: Investment Company Institute.



Two Independent and Identical Risky Opportunities

- Now suppose that instead of one risky investment that is equally likely to deliver a 20% return or a -10% return, there are two.
- The good and bad outcomes are determined by a separate coin toss for each investment, that is, these investments are independent of one another.
- Then with probability 1/4 you get two good outcomes, with probability 1/2 you get one good and one bad, and with probability 1/4 you get two bad outcomes.
- If you divide your money equally between the two investments, your returns are 20% with probability 1/4, 5% with probability 1/2, and -10% with probability 1/4.
- The mean return is unchanged:

$$\bar{R} = (0.25 \times 0.2) + (0.5 \times 0.05) + (0.25 \times -0.1) = 0.05 = 5\%.$$

- What happens to the variance?

Two Independent and Identical Risky Opportunities

- If you divide your money equally between the two investments, your returns are 20% with probability 1/4, 5% with probability 1/2, and -10% with probability 1/4.
- The mean return is unchanged at 5%.
- The variance is one-half smaller:

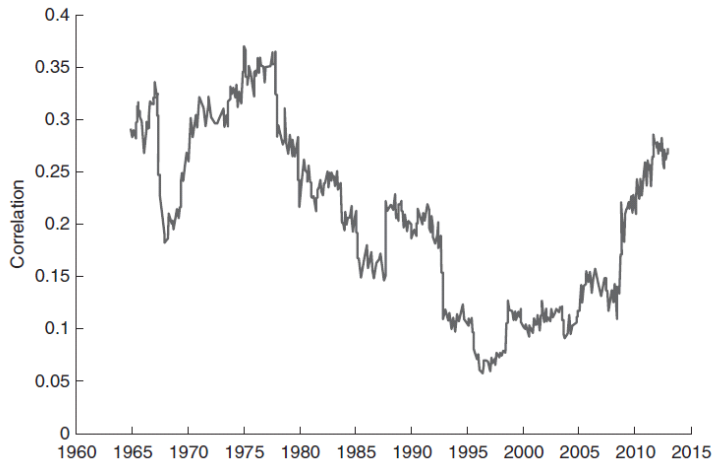
$$\begin{aligned}\sigma^2 &= (0.25 \times (0.15)^2) + (0.5 \times 0^2) + (0.25 \times (-0.15)^2) \\ &= 0.5 \times (0.15)^2 = 0.01125.\end{aligned}$$

- The standard deviation is divided by the square root of two:
 $\sigma = \sqrt{0.01125} = 0.106 = 10.6\% = 15\% / \sqrt{2}.$
- You now have a more attractive investment opportunity that has the same return and half the variance (hence the standard rule says you should invest twice as much in it).

Diversification in Practice

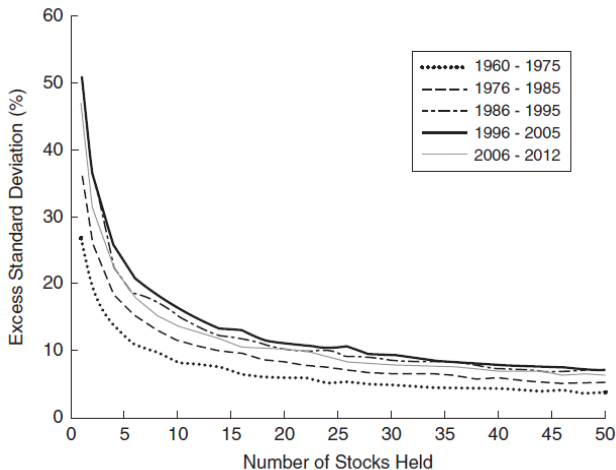
- In practice, diversification does not always work as well as this because different risky investments (e.g. stocks and corporate bonds) are not independent but correlated with one another.
- Correlation is 0 for independent investments and increases to 1 for investments that move perfectly together. (It can also be negative for investments that tend to move opposite one another.)
- Average correlation across individual stocks in the US market is normally in the range 0.1 – 0.3, as illustrated in the figure on the next slide (again taken from my book).
- Diversification always provides some benefit when correlations are less than 1.

Average Correlation Across US Stocks



The Benefit of Diversification Across Individual Stocks

- Suppose you pick stocks randomly and put them in a portfolio. How much extra risk are you taking, relative to a broadly diversified index?



Familiarity is not Safety

- Many people feel they can pick stocks without taking risk because they know certain companies are safe investments.
- Examples:
 - ▶ “I work for a good company, I would know if there were a problem with it”.
 - ▶ “I work in tech so tech stocks are not risky for me”.
 - ▶ “I see the company’s trucks on the street so I know it’s a solid business”.
 - ▶ “I have faith in the USA”.
- The problem: any company, sector, or even country can have unexpected bad news.
 - ▶ People who worked for Enron and put their retirement savings in its stock were financially devastated by the company’s accounting scandal.
 - ▶ Investing in the stock of your employer is particularly dangerous because your salary depends on the company too.
- To reduce risk, count on diversification not familiarity.

People Invest on the Basis of Their Own Experience

- It is a natural human tendency to be influenced by your own experience. This shows up in financial behavior too.
- People more often buy the stock of their employer when it has gone up recently (Benartzi 2001).
- And different cohorts of investors take more or less risk depending on the market conditions they lived through (Malmendier and Nagel 2011).

Investing on Experience (Malmendier and Nagel)

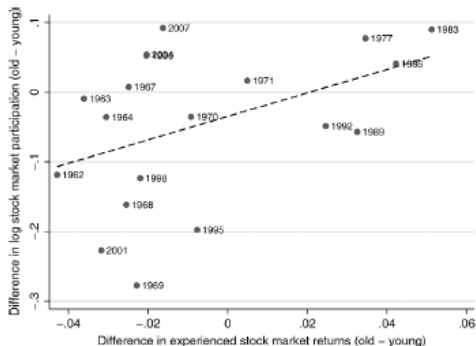


FIGURE 1

Differences in Log Stock Market Participation Rates of Old and Young Individuals Plotted against Differences in Experienced Stock Market Returns

Stock market participation rates are the fraction of households who invest in stocks, including stock mutual funds and stocks held in retirement accounts. The vertical axis shows the difference in the log participation rates of old (household head age > 60 years) minus young (household head age ≤ 40 years) households. The horizontal axis shows the average real stock market return (S&P 500 index) over the prior 50 years (as proxy for the return experienced by old households) minus the return over the prior 20 years (as proxy for the return experienced by young households). The years refer to the respective SCF survey waves. Observations are weighted with SCF sample weights. The 1960 and 2004 observations overlap in the plot.

Better to Use Long Run of History

- There is no need to rely on your own experience when financial market returns are so well recorded.
- Good books on long-run stock market performance:
 - ▶ Jeremy Siegel, *Stocks for the Long Run*
 - ▶ Elroy Dimson, Paul Marsh, and Richard Staunton, *Triumph of the Optimists*

Graphical Summary of US Stock Market History

2018 MATRIX: AVERAGE ANNUAL DATA

NOTES:

- 1) Numbers reflect the percentage annual rate of return from the starting period to the ending period
- 2) Returns include index returns, dividends, transaction costs/fees (bid/ask spread, commissions, fees, etc.), and taxes; real returns excluding inflation (see assumptions)
- 3) Red: <0%; Pink: 0% - 3%; Blue: 3% - 7%; Light Green: 7% - 10%; Dark Green: >10%
- 4) Black type reflects P/E ratio increasing over the period; White type reflects P/E ratio decreasing over the period
- 5) The black diagonal line reflects the boundary of 20-year periods
- 6) S&P 500 & P/E reflect the methodology popularized by Robert Shiller with average daily index annually and other related data (P/E10)
- 7) Other data and information developed from various sources and believed to be reliable

LEGEND

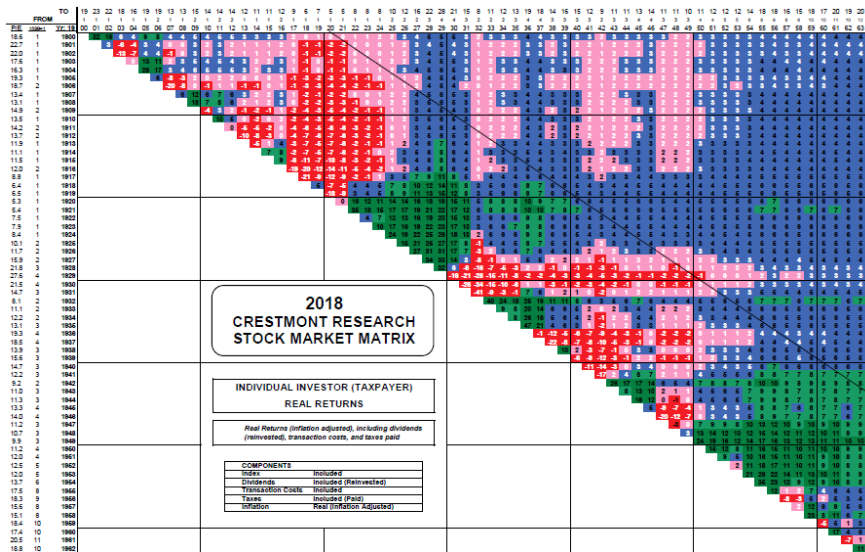
	Red	<	0.0%
	Pink	0.0%	- 3.0%
	Blue	3.0%	- 7.0%
	Light Green	7.0%	- 10.0%
	Dark Green	>	10.0%

White Numbers: Decreasing P/E Ratio

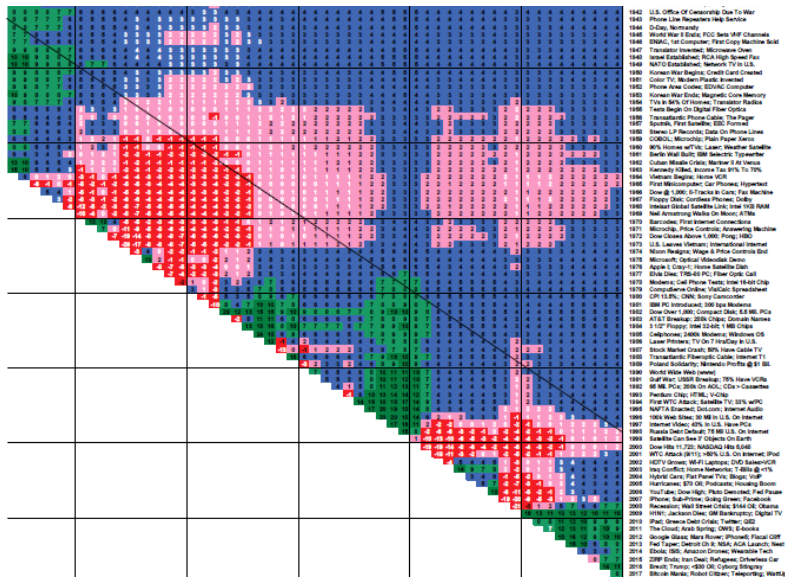


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Graphical Summary of US Stock Market History



Graphical Summary of US Stock Market History



Are There Better or Worse Times to Invest?

- To a large degree it is a matter of luck whether the stock market goes up or down immediately after you invest.
- However, there is a tendency for the market to do better when prices are low relative to corporate earnings (the profits available to be paid to investors), and worse when prices are high.
- This tendency for market cycles (low prices → high returns → high prices → low returns → low prices again) reduces risk for investors who can hold stock for many years.
 - ▶ Jeremy Siegel emphasizes this in his book *Stocks for the Long Run*.
 - ▶ It is another reason why the age pattern of a target date fund may make sense.

The CAPE Ratio

- The ratio of prices to a moving average of earnings is known as the Shiller or CAPE (cyclically-adjusted price-earnings) ratio. It is often used as a measure of stock market valuation following academic work I did with Robert Shiller in the 1980s.
- The green areas in the previous figures typically follow years when the CAPE ratio is low, the red areas typically follow years when the CAPE ratio is high.
- Currently, the CAPE ratio is high (just over 30) so one should not expect very high near-term returns—although remember that interest rates (the return on the alternative safe investment) are low so stocks may still be “the best of a bad bunch” of assets to invest in.

History of the CAPE Ratio

S&P 500 Price / 10-Year Average Earnings



The Market is Hard to Beat

- In the stock market, people trade on the information they have.
- As they do so, they move the price of each individual stock towards the level justified by the information.
- In this way stock prices come to “reflect” that information. We say the market is “efficient”.
- You may be able to profit (“beat the market”) if you have a unique piece of information, but individual investors hardly ever do.
- And it is illegal to trade on information that was stolen from its rightful owner (e.g. advance knowledge of a merger, revealed by a company employee—that information belongs to the company). Illegal insider trading is aggressively prosecuted.

The Iron Law of Active Investing

- In the stock market, there is a way to get the average return: buy and hold an index of all the stocks that exist.
- This is called passive investing. Any other strategy is active investing.
- Since passive investing guarantees the average return, for every dollar gained by active investing, there must be a dollar lost.
- Most of the dollars gained are by sophisticated professional investors, most of the dollars lost are by individuals.
- And this is before taking account of the costs that brokers charge you to trade.

Trading Lowers Return (Barber-Odean 2000)

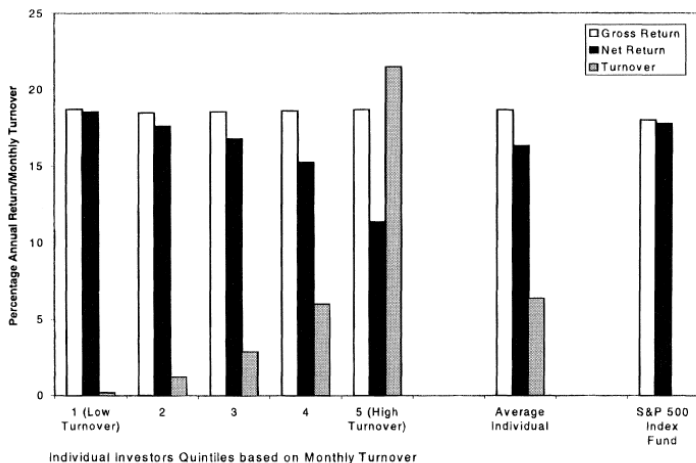


Figure 1. Monthly turnover and annual performance of individual investors. The white bar (black bar) represents the gross (net) annualized geometric mean return for February 1991 through January 1997 for individual investor quintiles based on monthly turnover, the average individual investor, and the S&P 500. The net return on the S&P 500 Index Fund is that earned by the Vanguard Index 500. The gray bar represents the monthly turnover.

The Problem with Fees and Expenses

- If you can't beat the market by trading yourself, you might try to hire someone to do it for you.
- The problem is the fees and expenses, which reduce the rate of return and have a compounding effect on your savings over time.
- Active mutual funds may charge 1% or more, while passive index funds often charge 0.1% or less.
- Some active funds beat the market before fees, but break even after fees. In effect, the fund managers benefit from their investment skill, not the investors. Skill is the scarce resource, not your savings!
- Other active funds break even before fees and do worse than the market after fees. These funds are marketed by brokers to naïve investors.
- The best approach for individuals is to look for passive funds with low fees. This is how I invest personally.

The Two Extremes: ETFs and Structured Products

- Exchange traded funds (ETFs) can have even lower fees than mutual funds. They also allow trading within the day (but individual investors should avoid this feature!) and are more tax efficient than traditional mutual funds.
- At the opposite extreme, complex structured products (popular in Europe, and gaining market share now in the US) have high “headline rates”, but also very high fees. The more complex products are sold to less sophisticated investors, and have higher headline rates and higher fees (Célérier-Vallée 2017).

Structured Product Example (1)

For example, the product Fixeo, sold in 2010 by Credit Agricole with a volume larger than €50 million, offers a headline rate of 8% if a set of conditions is satisfied:

This is a growth product linked to the DJ Eurostoxx50. After 1.5 years of investment, if the level of the index is at or above its initial level, then the product terminates on that date and offers a capital return of 112% at that time. At maturity, the product offers a capital return of 124%, as long as the final index level is at or above its initial level. Otherwise, the product offers a capital return of 100%, as long as the final index level is at or above 60% of its initial level. In all other cases, the product offers a capital return of 100%, decreased by the fall in the index over the investment period.

Structured Product Example (2)

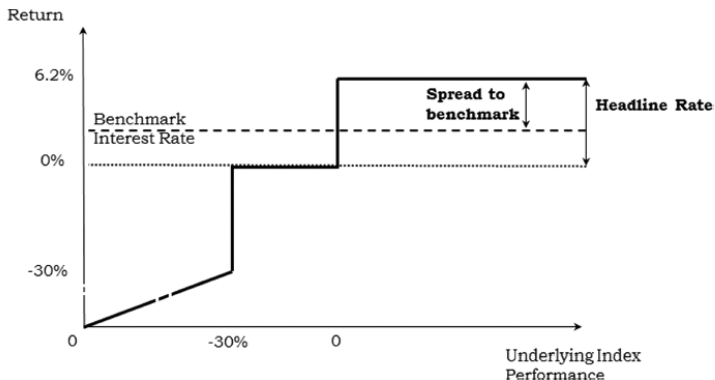
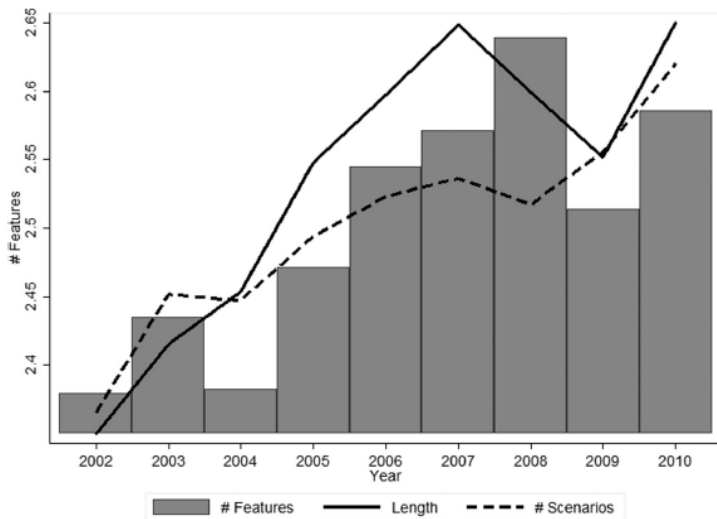


FIGURE II

Example of a Retail Structured Product Payoff

This diagram presents an example of a retail structured payoff and displays its related headline rate. The product offers a yearly coupon of 6.2% and a 100% capital return at maturity if the final performance of the underlying is positive (Euro Stoxx 50) but 100% participation in the negative performance of the underlying asset if its final level is below 70% of its initial level.

Growing Complexity of Structured Products



Why Are Structured Products So Complex?

- They are designed to be able to extract fees, but simple tricks for doing this no longer work.
- **Trick 1:** Promise a floor of 0% return, less than the safe interest rate. Add a little upside and take most of the spread in fees.
 - ▶ Problem: the safe rate has been very low in recent years.
- **Trick 2:** Promise at least the price return on a stock index, less than the total return because the dividend yield is not paid. Add a little downside protection and take most of the spread in fees.
 - ▶ Problem: the dividend yield has been very low in recent years.
- **Trick 3:** Generate income by selling out-of-the-money options that lose large amounts of money very rarely.
 - ▶ Problem: volatility has been very low in recent years, so these options do not command high prices.
- Since these simple tricks no longer work, more complex products are marketed.

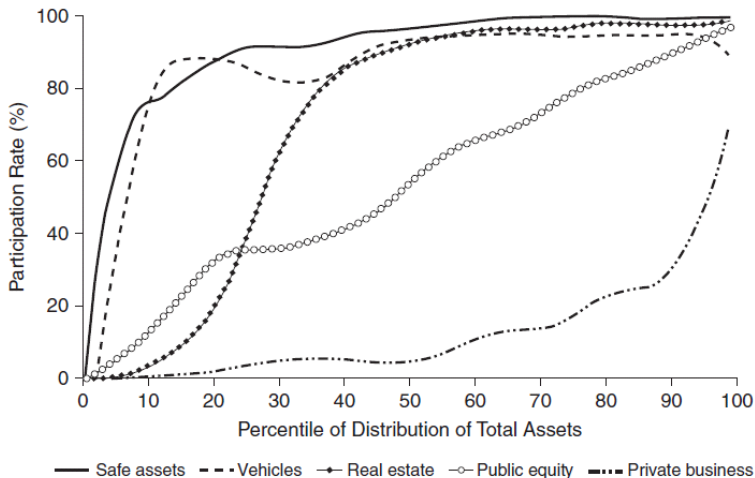
Risk has a Downside

- It is possible to increase return in financial markets by taking risk.
- But risk has a downside: there are periods when you do worse than a riskless investment.
- Any investment that promises only the upside is fraudulent, and you should run a mile.
- If the track record seems to have only upside, there are two explanations:
 - ▶ It is fictional (Bernie Madoff), with old investors paid off using money from new investors (Ponzi scheme).
 - ▶ It has hidden risks that have not shown up yet.
- Examples of hidden-risk strategies:
 - ▶ Sell long-odds bets on unlikely horses to win races. Almost all the time you make money, but occasionally you lose a lot of money when a longshot wins a race.
 - ▶ Sell out-of-the-money put options that pay off only when the stock market crashes.

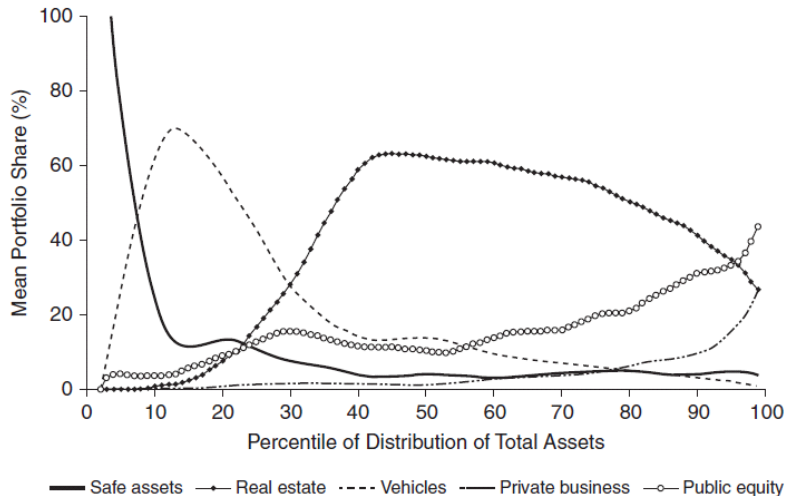
Housing: The Biggest Risky Asset

- We have talked a lot about the stock market, but for most middle-class people the biggest asset they own is a house.
- What are the pros and cons of renting vs. buying a house?
- Buying a house typically requires taking out a mortgage. How to handle this?

Participation Rates in Asset Classes



Wealth Shares in Asset Classes



Advantages of Buying a House

- Different housing stock (single-family houses vs. apartments).
- Security of residence (particularly important when you have children in local schools).
- Tax advantage from the fact that mortgage interest is tax-deductible, and rent you pay to yourself (implicitly) as an owner is not taxed.
- Taking out a mortgage with regular monthly payments is a way to set up an automatic savings plan. Provided you pay off the mortgage without further borrowing along the way, 15 or 30 years later you own the full value of the house which can help to fund retirement if you downsize in later years.

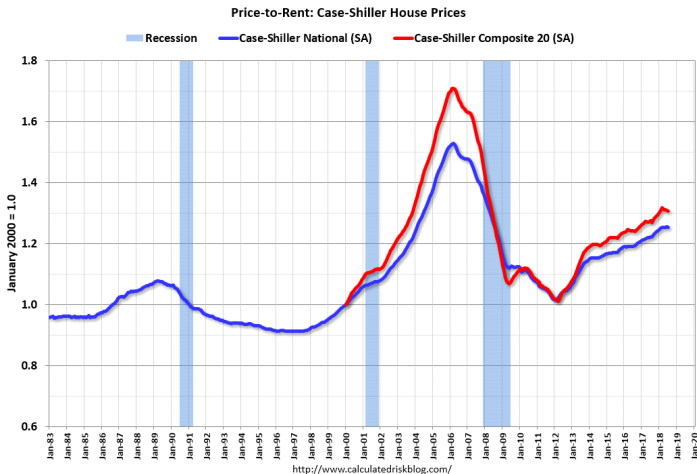
Disadvantages of Buying a House

- You need to have saved the downpayment (which will depend on credit conditions, but plan for 20% of house value).
- There are very large transactions costs of buying and selling (5-6% commissions have been standard for realtors, although they are beginning to come down). Therefore you should not buy a home unless you plan to stay in it for five years or more.
- People often buy a larger house than they were previously renting. This means that the amount you spend on housing goes up. It might be better to pay rent on a cheaper place and save for retirement in a 401(k) plan.

Housing Risks

- The risk to a homeowner is that house prices fall.
 - ▶ If prices fall far enough, your mortgage debt may exceed the value of your house. This makes it hard to move.
 - ▶ If in addition you lose your job, you may be unable to make your mortgage payments and the bank may foreclose on your house. This is personally traumatic and seriously damages your credit score.
 - ▶ The combined risk is greater if you live in an area where your income is very likely to move in the same direction as house prices (a company town as opposed to a large city).
- The risk to a renter is that rents rise, forcing a move to a cheaper area. Homeownership is a form of insurance against this risk.
 - ▶ This risk is greater if your income is only weakly related to the fortunes of the area you live in.
- Houses like stocks are volatile assets that are less likely to deliver high returns when they are expensive. The housing equivalent of the CAPE ratio is the price-rent ratio.

Recent History of US House Price-Rent Ratio



Mortgage Basics

- Mortgages vary in many respects. The most important dimensions of choice are as follows.
- How much to borrow.
 - ▶ Rates are normally lower at a lower loan-to-value (LTV) ratio, i.e. if you borrow a smaller fraction of the value of the house.
 - ▶ Similarly, you can get a lower rate if you pay “points” (put in some extra money up front), and you pay a higher rate if you take points (get some extra money up front).
- Maturity.
 - ▶ 15 years or 30 years are standard terms.
 - ▶ A longer mortgage means lower monthly payments, but higher total interest paid over the life of the mortgage.
- Fixed or adjustable rate.
 - ▶ A fixed-rate mortgage (FRM) has a rate that stays unchanged for the life of the mortgage.
 - ▶ An adjustable-rate mortgage (ARM) has a rate that moves with market interest rates.

Adjustable vs. Fixed Mortgages (1)

- A FRM offers protection against interest-rate increases in the future.
- If interest rates fall, you have the right to refinance the mortgage (pay it back and take out a new one at a lower rate).
 - ▶ This is advantageous if you can reduce your rate by say 1% or more, and you should remember to do it! (Not everyone does.)
 - ▶ It only works if your house maintains its value and you maintain your credit score.
- An ARM typically has a lower initial rate, but that rate can rise.
 - ▶ Sometimes ARMs offer caps that protect against rate increases that are too fast or too large. But these add to the cost.

Adjustable vs. Fixed Mortgages (2)

- The US government promotes the use of FRMs through its housing agencies (FNMA "Fannie Mae" and FHLMC "Freddie Mac" are the largest). This lowers the cost of FRMs for prime borrowers whose mortgages are not too large ("conforming mortgages").
- Wise to use a FRM if you can, an ARM if either
 - ▶ You can only afford a house if you can get the lowest possible rate now, and you expect your income to grow rapidly over the next few years; or
 - ▶ You live in an expensive area and are buying a large house with a "jumbo" mortgage that is not conforming and hence doesn't benefit from the government subsidy to FRMs.

Basics of Insurance

- The basic idea of insurance is to transfer money from times and circumstances where an extra dollar is not worth too much to you, to times and circumstances where it is worth more.
- Dollars are normally worth more when your wealth and income are lower, and/or your expenses are higher.
- Examples:
 - ▶ Homeowners insurance pays out when your house burns down (you have lost a valuable asset and face high costs to rebuild your home).
 - ▶ Medical insurance pays out when you have high medical expenses (and may also have lower income).
 - ▶ Annuities pay out if you live longer than average and have to finance a long retirement.
- Insurance is attractive if fairly priced, but for various reasons it can become expensive.

Why Insurance Can Be Expensive (1)

- There are fixed costs of marketing and issuing insurance policies. These tend to make insurance for small risks extremely expensive.
 - ▶ The insurance equivalent of the problem with payday loans.
- The risks are correlated across insurance buyers (e.g. earthquake insurance in California), and insurance companies must have sufficient funds to pay out in the case of a catastrophic event.
- Once people are insured, they become careless (“moral hazard”), forcing insurance companies to pay out more often and raising the cost of insurance.
 - ▶ To limit this problem, insurance companies often require safety measures (e.g. smoke detectors) or install monitoring technology (speed detectors in trucks).

Why Insurance Can Be Expensive (2)

- Some people know in advance that they are high-risk (“adverse selection”). They disproportionately buy the insurance, increasing payouts and driving up the price.
 - ▶ As prices rise, more and more low-risk people drop out of the market, forcing insurance companies to raise prices further.
 - ▶ This can lead to a “death spiral” in which only the highest-risk people find it worthwhile to buy insurance.
 - ▶ A major problem in health insurance.

Annuities: Too Little Insurance Demand

- Economists are puzzled that more people do not buy annuities to insure against the risk of living to extreme old age.
- Possible explanations:
 - ▶ Almost everyone has some annuity income through Social Security or equivalent pension programs.
 - ▶ Private annuity pricing is unattractive because of adverse selection (long-lived people know who they are better than insurance companies do).
 - ▶ People want to conserve liquid wealth in case of unexpected medical expenses.
 - ▶ People want to leave money to their children.
 - ▶ People think of annuities as risky investments instead of as insurance policies (Brown, Kling, Mullainathan, and Wrobel 2008).
- My recommendation: a deferred payout annuity is a good option. It starts paying out at an advanced age (say 80 or 85), but you buy it at a much younger age. The deferral of the payout lowers the cost.

Small Losses: Too Much Insurance Demand

- Many people overinsure against small losses by demanding low deductibles although low-deductible policies are very expensive.
 - ▶ Even Harvard faculty do this!
- Policies against small losses tend to be expensive because of
 - ▶ Moral hazard: high claim rates by people with low deductibles.
 - ▶ Fixed costs of processing numerous small claims.
- Why do people insist on insuring small losses?
 - ▶ It can't be risk aversion, because small losses have a trivial effect on wealth and hence on the value of an extra dollar.
 - ▶ But small losses are disruptive if you don't have an emergency fund to handle these events.
 - ▶ In some cases, small-loss policies are aggressively sold at high prices when people buy big-ticket items. The costs seem small relative to the total cost of the item.

The Bottom Line: Insure Large Risks, Not Small Ones

- Some insurance (auto, homeowners) will be forced on you by state law or mortgage lenders.
- The other major types of insurance to buy are
 - ▶ Health (for everyone, with a high deductible if needed to reduce the cost)
 - ▶ Life (for those with dependents—buy simple term life insurance, not complex whole life insurance)
 - ▶ Annuities (for older people, probably with a deferred payout)
- You may also want to consider disability and long-term care insurance if affordable.
- Small “extended warranty” insurance policies are almost never worth buying.
 - ▶ It’s cheaper to manage the risks of repair expenses with your emergency fund.