Basic Investing

Key Principles

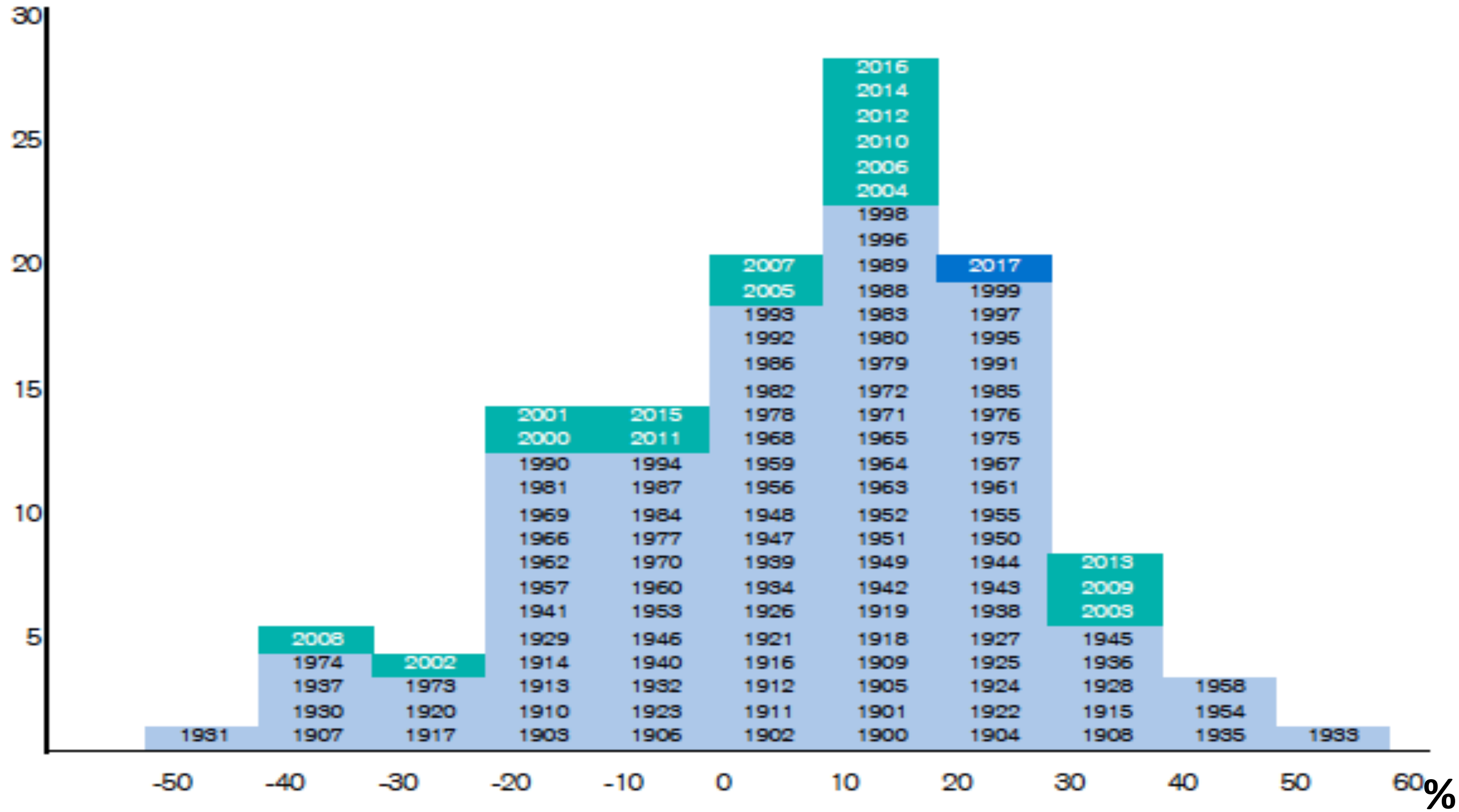
1. Think long-term
2. Diversify
3. Keep fees down
4. Invest in a tax-efficient manner
5. Respect market prices
   (*Passive investing + rebalancing*)
6. Take sensible risks (TBD)

Taken together these principles will support a simple yet effective investing approach

Idea 1: Think Long-Term

Should you think this way?

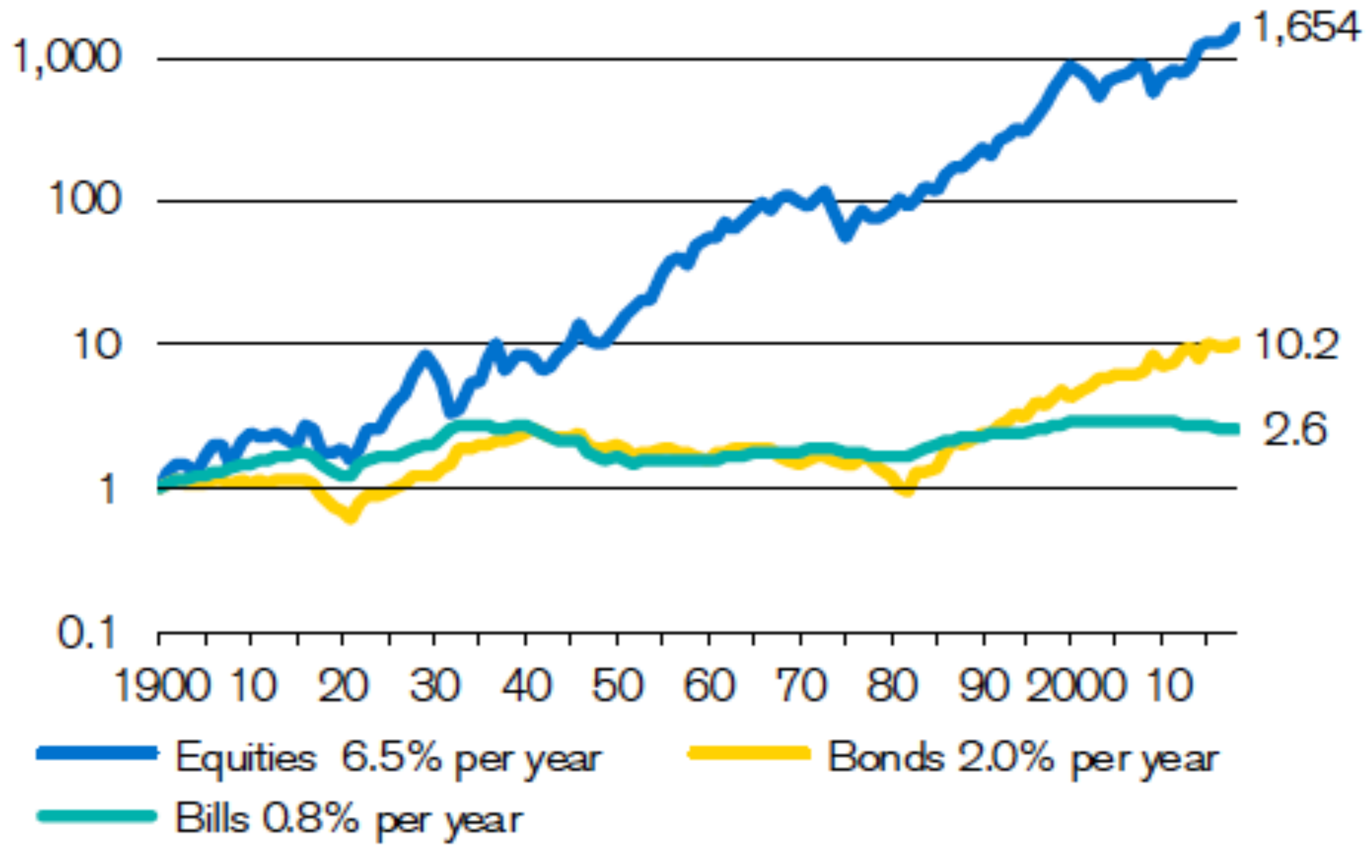
Annual US Equity Returns vs. Bills (1900-1917)



Idea 1: Think Long-Term. -2

Or this way?

Cumulative Real Returns on US Assets (1900-2017)



Source: Dimson, Marsh & Staunton, Credit Suisse

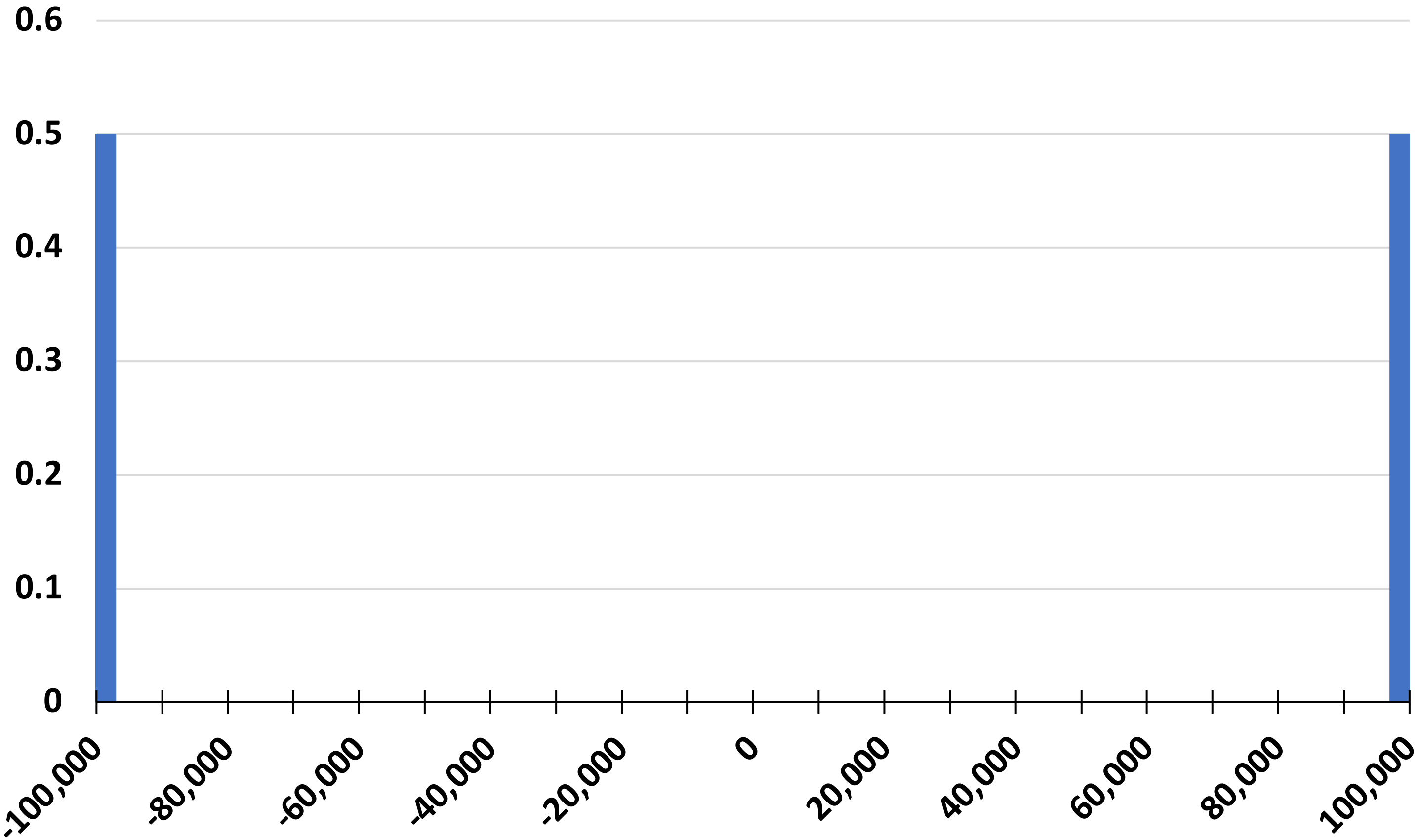
Idea 2: Diversify

Four different ways of betting $100,000

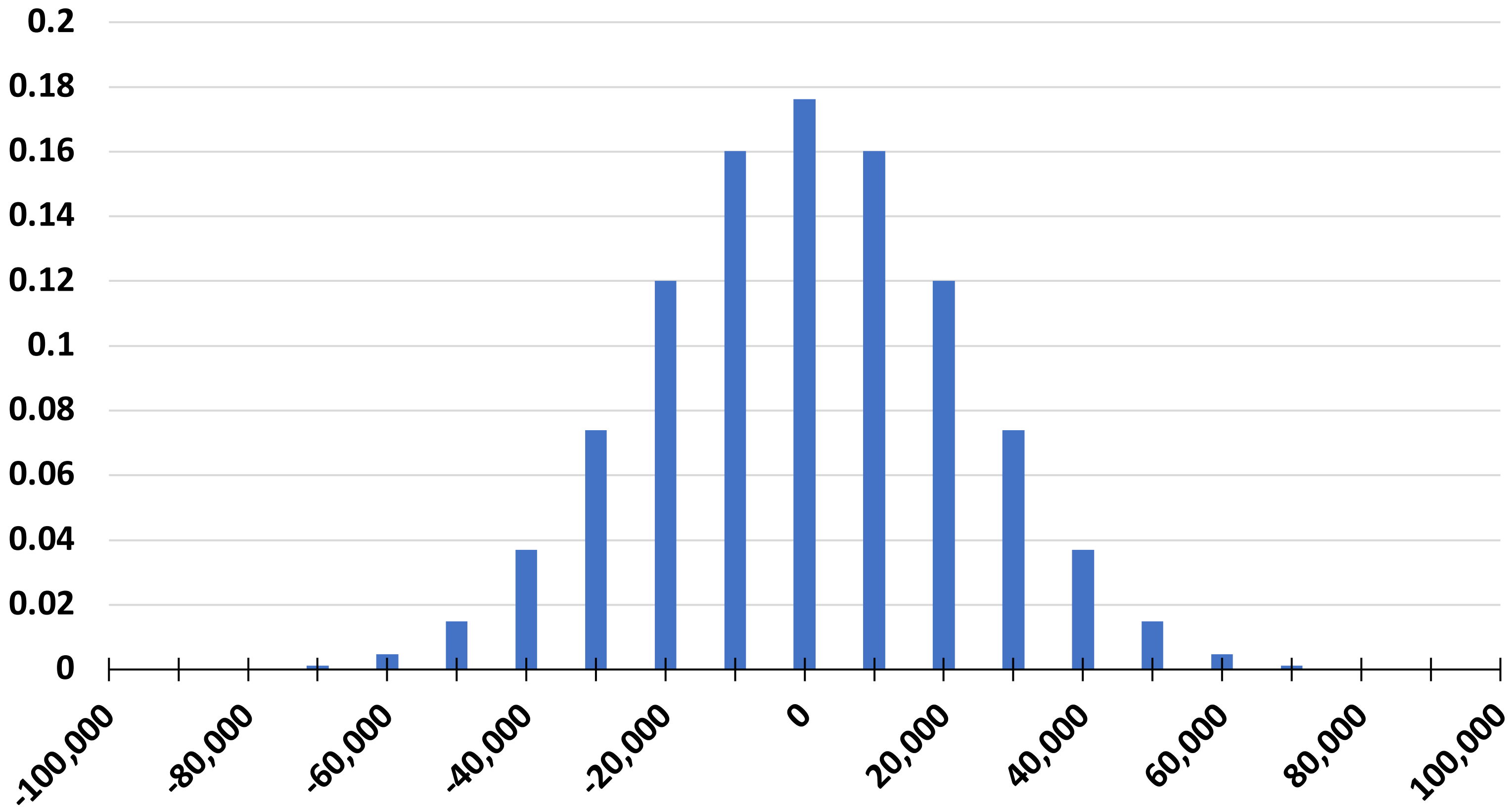
- Bet $100,000 on a single coin flip
- Place $50,000 bets on 20 different coin flips
- Place $1,000 bets on 100 different coin flips
- Place $100 bets on 1,000 different coin flips

Are these four strategies are equally risky?

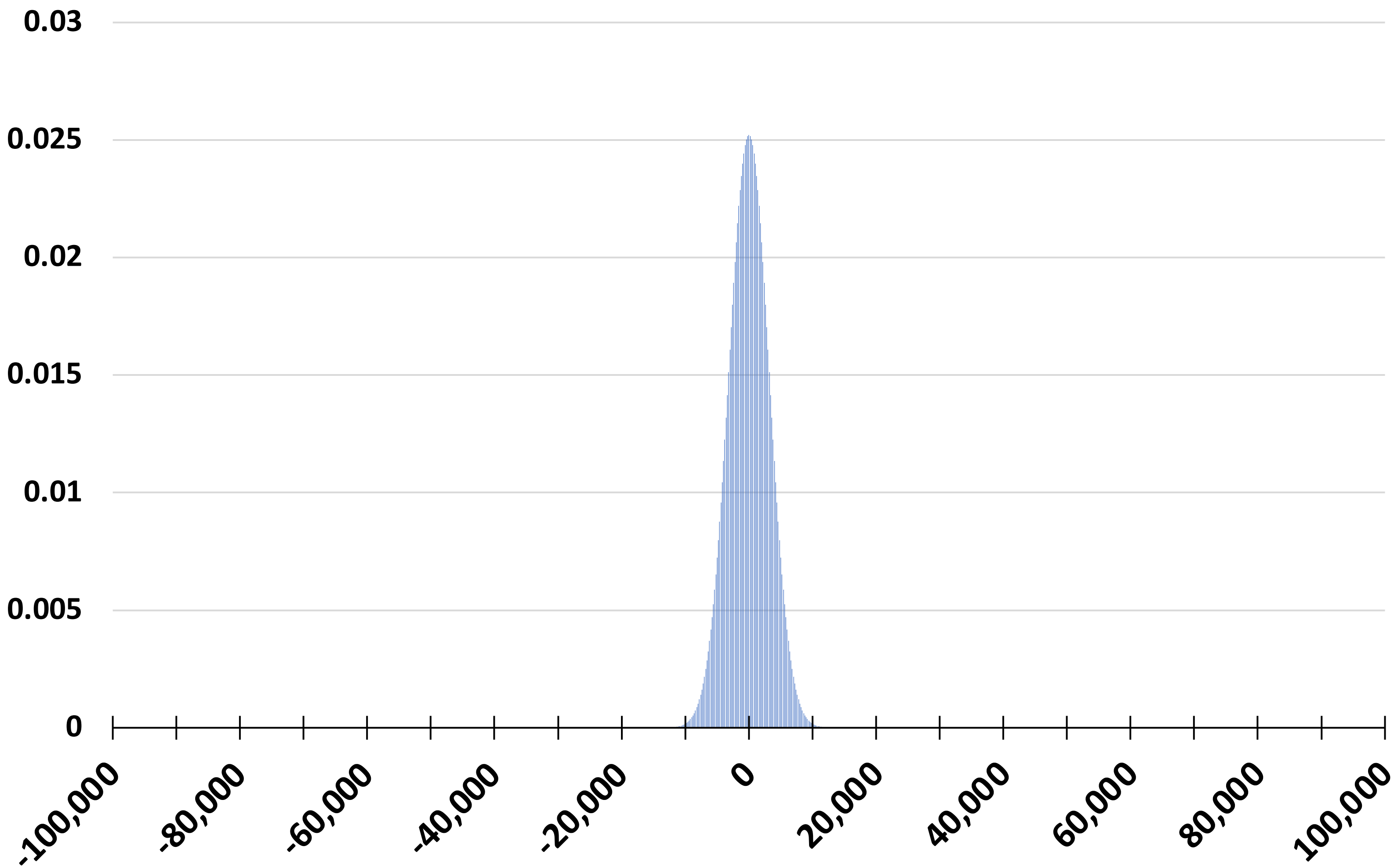
One Coin Toss for $100,000



Twenty Coin Tosses for $5,000 Each

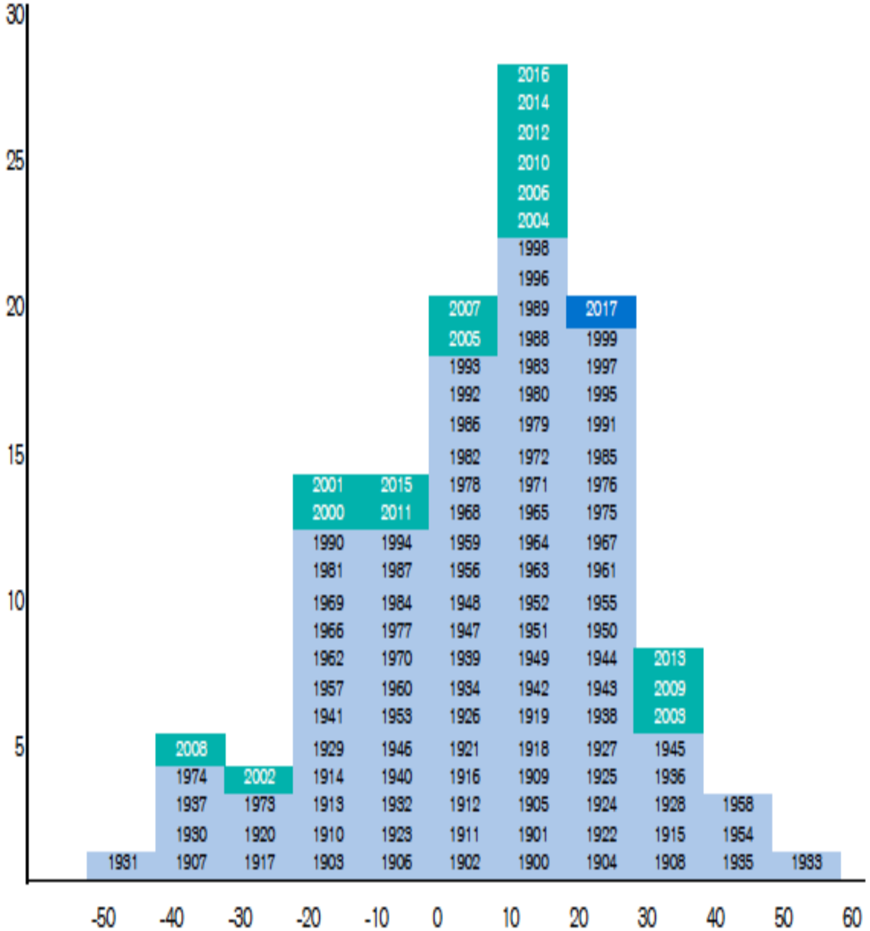


One Thousand Coin Tosses for $100 Each



So Why Do We See This?

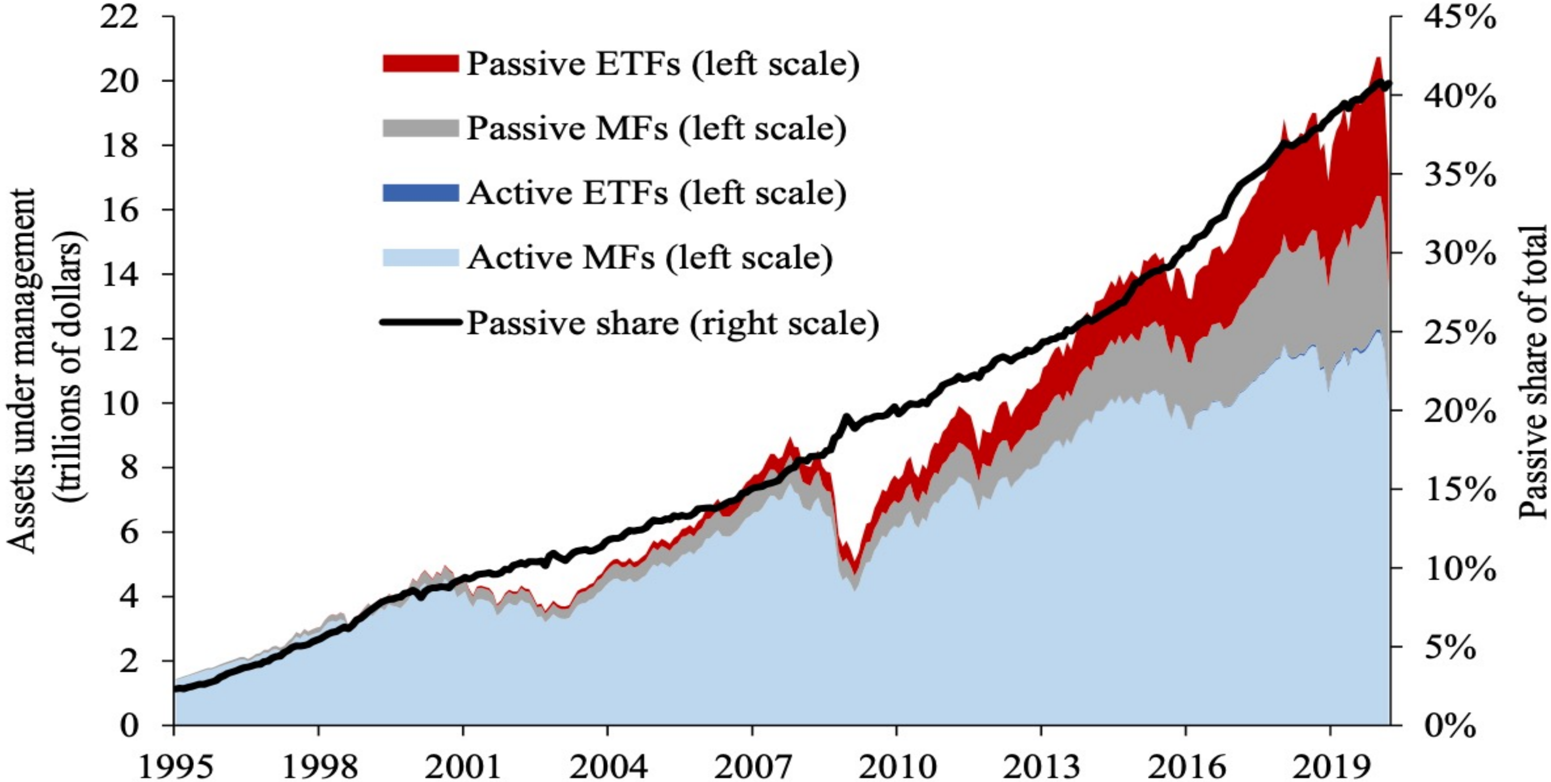
Annual US Equity Returns vs. Bills (1900-2017)



- Securities have two different sources of risk
  - Idiosyncratic risks – which we can diversify away
  - Systematic risks – which we can't diversify away
- We want to hold diversified portfolios to eliminate an unnecessary source of risk.

An Easy Way To Get Diversification – Use Funds

US Assets Held By Funds (March 2020)



Source: FRB Boston Working Paper SRA 18-4, revised May 2020
Data from Morningstar

Background to Ideas 3-5

- ***Key idea: It is not what you make, it is what you keep***

- Determining what you keep

	Start with market-wide return	
+	***Any extra return from active investing***	(*hard*)
-	***Fees***	(*easy*)
-	***Taxes***	(*easy*)
=	***Net, after-tax, after fee return (what you keep)***	

Idea 3: Focus on Fees

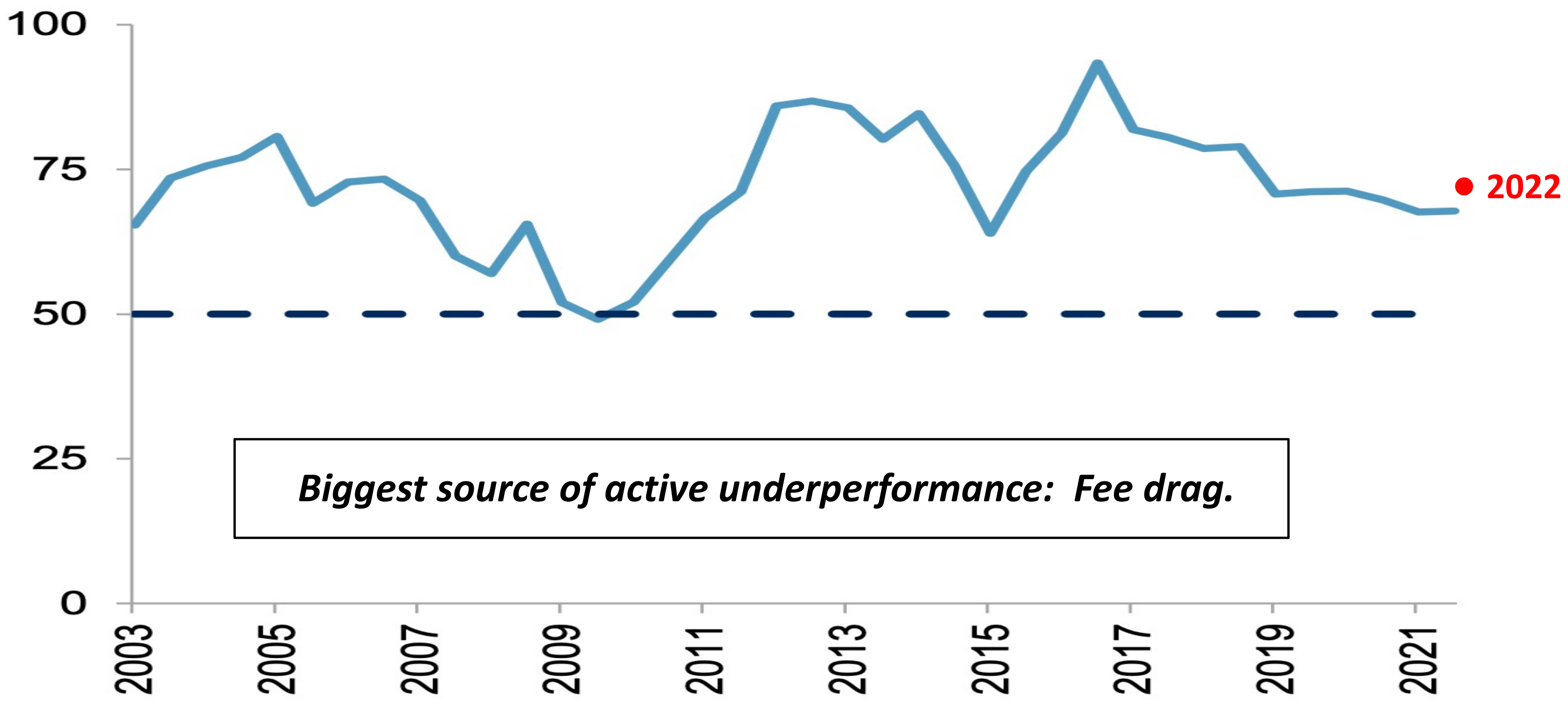
% of Active US Equity Funds Outperforming Its Benchmark
(Data as of 12/31/2022)

Category	Comparison Index	1-Year	3-Year	5-Year	10-Year	15-Year
Large-Cap Core Funds	S&P 500	48.9%	25.7%	13.5%	8.6%	6.6%
Mid-Cap Core Funds	S&P Mid-Cap 400	37.4%	22.0%	35.2%	18.5%	6.8%
Small-Cap Core Funds	S&P Small-Cap 600	43.1%	33.1%	29.5%	10.9%	5.4%

Source: S&P Dow Jones Indices, LLC

SPIVA U.S. Scorecard – Rolling 3-Year Returns

% of US Large Cap Core Equity Funds Underperforming the S&P500



Source: S&P Dow Jones Indices, LLC
Data as of 12/31/2021

Fees To Watch Out For

- Active Managers
  - Loads
  - Investment management fees
  - 12b-1 fees

- Brokers
  - Commissions, bid-ask spreads
  - Discount vs. full-service brokers

- Financial advisors
  - AUM-based fees
  - Asset manager reimbursements

Idea 4: Be Tax Smart

- The government offers you many ways to be tax efficient when building retirement savings (among other things)
    - Using these programs can have a huge impact on your eventual retirement next egg.

- Investment vehicles we will discuss today
    - Roth IRA (*i.e. Individual Retirement Account*)
    - Standard IRA
    - Corporate 401k plans

How A Roth IRA Works

Features

- **You save after-tax income (*i.e. no tax deductions on initial investments*)**
- **But you don't pay taxes on investment income while funds are in the IRA**
- **And you pay no taxes on any withdrawals made after age 59½**
  - *As long as account has been in place 5 years*
  - *But you face a 10% tax penalty on earlier withdrawals plus potential income taxes*.

How A Roth IRA Works

Features

- **You save after-tax income (*i.e. no tax deductions on initial investments*)**
- **But you don't pay taxes on investment income while funds are in the IRA**
- **And you pay no taxes on any withdrawals made after age 59½**
  - *As long as account has been in place 5 years*
  - *But you face a 10% tax penalty on earlier withdrawals plus potential income taxes.*

Wealth From Contributing $4,000/Year for 40 Years

(*assuming 8% pre-tax return*)

Pre-tax r earned in Roth IRA	Tax Bracket	After tax r if No IRA (1-t)•8%
8%	0%	8%
8%	25%	6%
8%	50%	4%

How A Roth IRA Works

Features

- You save after-tax income (*i.e. no tax deductions on initial investments*)
- But you don't pay taxes on investment income while funds are in the IRA
- And you pay no taxes on any withdrawals made after age 59½
  - *As long as account has been in place 5 years*
  - *But you face a 10% tax penalty on earlier withdrawals plus potential income taxes.*

Wealth From Contributing $4,000/Year for 40 Years

(*assuming 8% pre-tax return*)

Pre-tax r earned in Roth IRA	Tax Bracket	After tax r if No IRA (1-t)•8%	Roth IRA	No IRA
8%	0%	8%	$1,036,226	$1,036,226
8%	25%	6%	$1,036,226	$619,048
8%	50%	4%	$1,036,226	$380,102

How A Standard IRA Works

Features

- **You save before-tax dollars**
  (*That is, you get to deduct contributions to your standard IRA from taxable income*)
- **You don't pay taxes on investment income while it is in the IRA**
- **But you do pay taxes on investment income on all withdrawals from your IRA**
  - *And you will normally face a 10% tax penalty on withdrawals made before age 59½.*

How A Standard IRA Works

Features

- You save before-tax dollars
  (*That is, you get to deduct contributions to your standard IRA from taxable income*)
- You don't pay taxes on investment income while it is in the IRA
- But you do pay taxes on investment income on all withdrawals from your IRA
  - *And you will normally face a 10% tax penalty on withdrawals made before age 59½.*

Wealth From Contributing $4,000/Year (pre-tax) for 40 Years

(*assuming 8% pre-tax return*)

Tax Bracket	IRA Contri-bution	Return in IRA	After tax saving (No IRA)	Return if no IRA
0%	$4,000	8%	$4,000	8%
25%	$4,000	8%	$3,000	6%
50%	$4,000	8%	$2,000	4%

How A Standard IRA Works

Features

- You save before-tax dollars
  (*That is, you get to deduct contributions to your standard IRA from taxable income*)
- You don't pay taxes on investment income while it is in the IRA
- But you do pay taxes on investment income on all withdrawals from your IRA
  - *And you will normally face a 10% tax penalty on withdrawals made before age 59½.*

Wealth From Contributing $4,000/Year (pre-tax) for 40 Years

(*assuming 8% pre-tax return*)

Tax Bracket	IRA Contri-bution	Return in IRA	After tax saving (No IRA)	Return if no IRA	Pre-tax IRA Funds	After-tax IRA funds	Balance if No IRA
0%	$4,000	8%	$4,000	8%	**$1,036,226**		**$1,036,226**
25%	$4,000	8%	$3,000	6%	**$1,036,226**		**$464,286**
50%	$4,000	8%	$2,000	4%	**$1,036,226**		**$190,051**

How A Standard IRA Works

Features

- You save before-tax dollars
  (*That is, you get to deduct contributions to your standard IRA from taxable income*)
- You don't pay taxes on investment income while it is in the IRA
- But you do pay taxes on investment income on all withdrawals from your IRA
  - *And you will normally face a 10% tax penalty on withdrawals made before age 59½.*

Wealth From Contributing $4,000/Year (pre-tax) for 40 Years

(*assuming 8% pre-tax return*)

Tax Bracket	IRA Contri-bution	Return in IRA	After tax saving (No IRA)	Return if no IRA	Pre-tax IRA Funds	After-tax IRA funds	Balance if No IRA
0%	$4,000	8%	$4,000	8%	$1,036,226	**$1,036,113**	**$1,036,226**
25%	$4,000	8%	$3,000	6%	$1,036,226	**$777,170**	**$464,286**
50%	$4,000	8%	$2,000	4%	$1,036,226	**$518,113**	**$190,051**

Roth IRA vs. Standard IRA

Income Taxes On			
	Contributions	Investment Returns	Withdrawals
Roth	Taxed	Untaxed	Untaxed
Standard	Untaxed	Untaxed	Taxed

Basic strategy:

- *Use Roth IRA if your income tax bracket is lower when making contributions than when making withdrawals*
- *Use Standard IRA if your income tax bracket is higher when making contributions than when making withdrawals.*

Financial health warning:

- *Your financial adviser will point out several other important differences, including the different tax treatment given to after-tax contributions to a standard IRA.*

Standard IRAs: Digression and Caveat

- You are allowed to make post-tax, as well as pre-tax, contributions to a standard IRA
- The post tax contributions are not taxed when withdrawn
- But this means you will need to keep highly detailed accounting of all contributions for tax purposes in this case.
  - And earnings on those contributions are subject to tax when withdrawn, just like pre-tax contributions
  - While in a Roth IRA those earnings would not be taxed.

401(k) Plan vs. Traditional IRA

- 401(k) plan is set up by your employer
  - Works the same way tax-wise as a standard IRA
  - Indeed, can convert a 401k into an IRA later on

- Differences
  - Contribution limits
  - Employer matches
    - Employer often either contributes to the plan directly or matches your contributions up to a certain % of your income.
    - New feature (Secure 2.0 bill). Starting 2024, potential for employer matches to include student loan payments

- Key takeaway:
  - Be sure to take advantage of this benefit if your employer offers it.
  - And max out the employer contribution if you can

Note: 403 plans are like 401ks but for nonprofit organizations
529 plans are tax-advantaged ways to save for educational expenses

Contribution Limits (2023)

- Roth IRA + Standard IRA
  - Maximum $6,500 (*$7,500 if age ≥ 50*)
  - Can't contribute more than your earn
  - Roth max depends on income level*
  - Standard IRA deductibility depends on income level*
  - *Note: Standard IRAs subject to RMD (required minimum distribution) after age 70 ½*

- 401(k)
  - Maximum by you $22,500 (*$30,000 if you are 50 or over*)
  - This is in addition to what you contribute to an IRA
  - If you have a 401k match, maximum combined limit is lesser of
    - $66,000 ($73,500 if over 50)
    - 100% of your salary
  - Can impact your ability to contribute to an IRA*

*See IRS publications or Investopedia - 401(k) vs IRA Contribution Limits

Backdoor and Mega-Backdoor Roth IRAs

- Mega Backdoor IRA is possible if
  - You exceed certain income limits (*2023*)
    - $153,000 (*single or head of household*)
    - $214,000 (*married filing jointly*)
  - You max out your employer's IRA plan
    - See earlier contribution limit
  - And your employer allows for "in service distributions"
    - i.e. withdrawals

- Then you may be able to invest in a mega backdoor IRA
  - Contribution limit
    - $66,000 in 2023
    - Minus your pre-tax contributions to your 401(k). ($22,500)
    - Minus employer contributions to your 401(k) plan.

- Be sure to consult financial advisor/tax advisor before you do this.
  - Otherwise risk large tax penalties
  - *Note: I got this information from the Motley Fool website (What is Mega Backdoor Roth IRA?}*

Tax Features of Different Plans

	Income Taxes On		
	Contributions	Investment Returns	Withdrawals
Roth IRA	Taxed	Untaxed	Untaxed
Standard IRA	Untaxed	Untaxed	Taxed
401(k) Plan	Untaxed	Untaxed	Taxed
???	Untaxed	Untaxed	Untaxed

Note: Can convert standard IRAs and 401ks into Roth IRAs
We will discuss a triple tax-advantaged option when we get to insurance.

Tax Features of Active vs. Passive Funds

- *No issue if inside an IRA or 401k*
- *But can have different tax consequences in a taxable portfolio*

Passive Funds

- Very little turnover (for funds with broad indices)
- So few realized capital gains

Active Funds

- Many funds run without tax consequences in mind
- So lots of capital gains in a rising market
- Issues
    - Lots of short-term gains if traded actively
    - Can have very large long-term gains if stock has been held for a long time (*Potential big deal if gains being realized happened before you bought the fund*)

Five Questions

1. How should we position ourselves in "bull" and "bear" markets?

2. Can we improve our returns by investing with high performing managers?

3. If stock prices fall should you "buy the dip" or regard the drop as a permanent loss?

4. How active should you be with your personal investing?

5. How risky are stocks in the long run?
   What is the right balance of stocks and other securities for you?
   How should you change your strategic portfolio over time? (*all TBD*)

Idea 5: Respect Market Prices

- Alternative formulation: Respect passive management

- Empirical background:
  - Repeated studies from 1890 to 1970 showed that stock prices (& returns) followed a random walk.

- Implications of a random walk
  - Stock prices have no history
    - Best predictor of tomorrow's price is today's price
    - Can't extrapolate past trends in returns (so no bull or bear trends)
  - Future (risk-adjusted) returns are not predictable
  - No mean reversion in returns
    - So range of outcomes grows with time.
    - And a drop should be viewed as permanent, not temporary

- Why would we see this: The Efficient Markets Hypothesis

The Efficient Markets Hypothesis - 1

- Claim: Market prices reflect all publicly available information
- Why: Competition among active managers squeezes out all exploitable investment opportunities.
- Initial Implications:
  - Asset prices reflect information gathering and analysis done by "smart money"
  - These prices move almost instantly in response to unexpected news
  - Active managers will not be able to "beat the market" (risk adjusted)
  - Passive management is a low cost, tax-efficient way of "piggy-backing" off the research and analysis of the smart money (*since market prices are highly informed prices*)
  - Trying to time your purchases and sales doesn't work
    - *The case for "buy and hold"*
    - *The case for portfolio re-balancing*

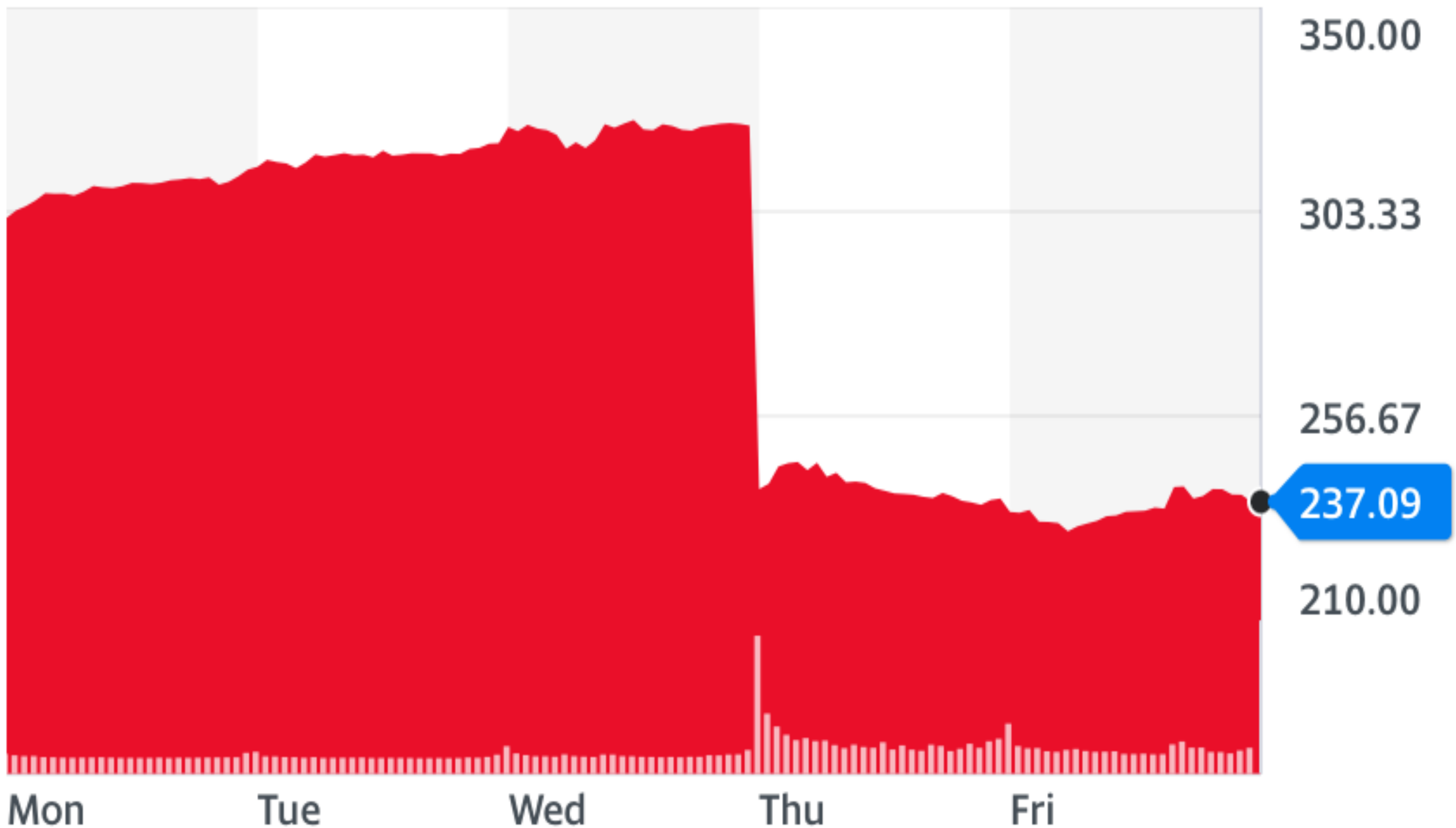
The Efficient Markets Hypothesis - 2

- Further Implication of EMH: *Passive Investing Works!*
  - Market prices incorporate highly informed views of future prospects & risks
    - Making it extremely hard to beat the market on a risk-adjusted basis.
  - Passive investing "free rides" off the smart money.
  - Passive portfolio weights reflect sensible asset allocations, on average
    - *We get the last bit from conditions for market equilibrium*

- Result: If EMH is true then passive management results in
  - Less effort, lower fees, higher after-fee returns, and lower taxes than active management
  - And even if EMH does not hold completely we still face "The Iron Law of Active Management"

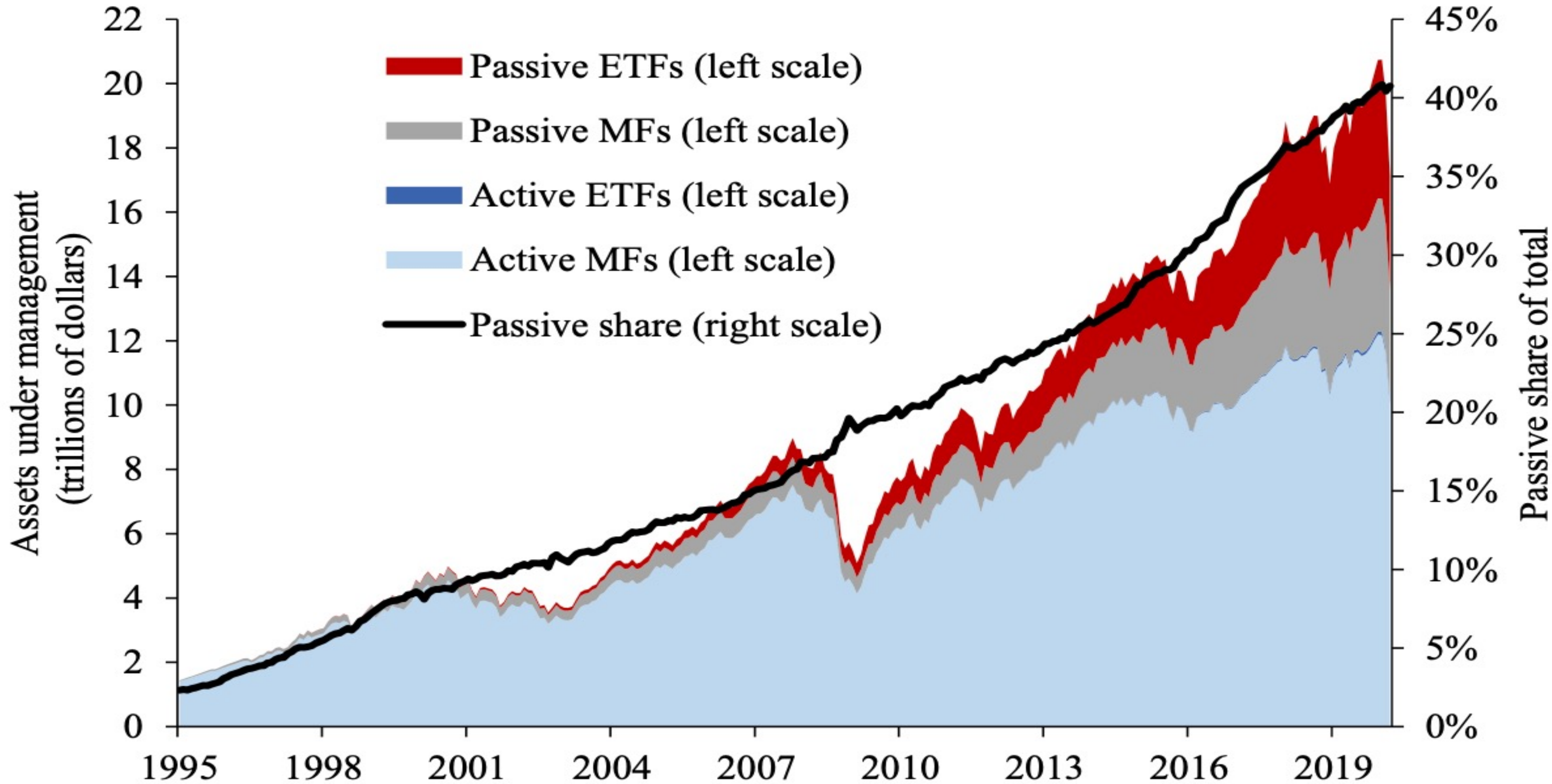
Price of Meta Stock: 1/31 – 2/4/2022

Note: Meta is the new name for Facebook



Use of Passive vs. Active Funds

US Assets Held By Funds (March 2020)



Source: FRB Boston Working Paper SRA 18-4, August 2018 (revised May 2020) Data from Morningstar

What If You Only Invest in High Performing Funds?

- Possible reasons for past outperformance.
  - Luck
  - Risk level
  - Skill

- Predictability of past performance/manager ratings
  - Econ180 homework assignment.
  - My story as an institutional asset manager
  - Morningstar ratings
    - Define (risk adjusted, 1-5 stars, *note changing risk measure*)
    - Impact on fund flows
    - Predictability of future returns
  - Expense ratios as a predictor of future performance

- Why every fund advertisement must include the words:
  "Past performance is not a predictor of future performance"

The Iron Law of Active Management

- Another reason why active managers – as a group - can't out perform the market
  - Claim: For every active buyer there must be an active seller.
  - So the combined performance of all active investors must net out, and active management as a whole must match passive management.

- Implication: For some active managers to outperform regularly someone else must steadily underperform.
  (*a.k.a. the dummy*)

- Question: *Who is the dummy?*

The Dummy is You!

Odean (1999)

- Analyzed trades of 10,000 individual investors between 1987-93
- Stocks bought typically underperform stocks sold by 23bps per month over the next 12 month *(i.e. 2.8% annual rate of underperformance)*

Barber & Odean (2000)

- Analyzed trades & holdings of 65,000 investors from 1991-96
- Divided investors into quintiles based on trading rates.
- Adjusting for systematic risk (FF 3 factor model), the average investor underperformed the benchmark by 31 bps a month, net of trading costs *(i.e. 3.7% annual rate of underperformance)*
- The most active trading quintile underperformed the benchmark by 86.4 bps a month net of trading costs *(i.e. 10.4% annual rate of underperformance)*
- BTW – the most active trading quintile turned over their portfolios at a rate of 258% a year!

Concluding Points:

You don't have to be a rocket scientist to be a good investor

- Diversify your risks
- Take a long run view
- Maximize the use of IRAs, 401k(s) and other tax-efficient vehicles for your retirement savings
  - Like an IRA, 401k, etc.
- Invest passively
- Rebalance portfolio weights when they deviate from your long run targets
- And start early

Remaining Questions For Next Lecture

- Idea 6: Take sensible risks
  - Two sharply different pieces of investing advice
  - How do we decide between them?
    - What risks do we face?
    - What risks should we care about?
    - How do we strike a proper balance between risk and reward?
    - What can we say about expected returns & risks in the future?

- Why do we get investing so wrong?
  (*i.e. Why are we so often the dummy?")*
  - What are the key mistakes we tend to make?
  - Why do we persist in making this mistakes?
  - And what should we be asking to protect ourselves from these mistakes?

What About Hiring A Financial Advisor?

Services include

- Asset allocation (*but remember next lecture's argument*)
- Manager selection (*but what about EMH?)*
- Financial, tax and estate planning
- Anxiety reduction, hand-holding, steadiness

Considerations

- Cost (*adds a second layer of fees*)
- Asset minimums/Account tailoring
- Automated alternatives
- Common sense and the 80/20 rule at this time in your life
  - Real issue for today: Knowing ourselves and the world we live in well enough to protect us from making bad decisions.

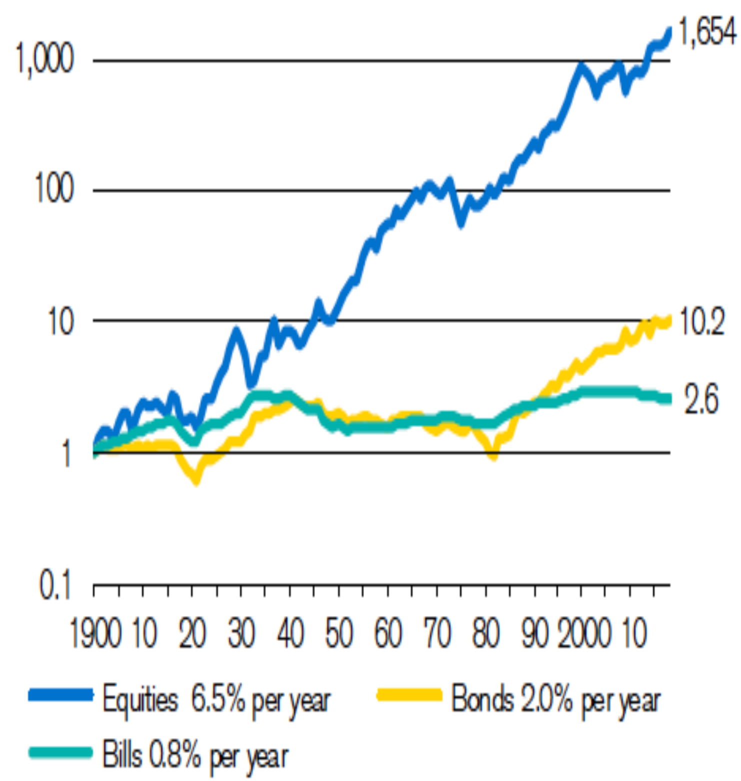
Idea 6: Take Sensible Risks

A Dangerous Strategy

- Start with savings rate and retirement goals.
- Back out your required rate of return.
- Set risk levels (asset mix) consistent with your needed expected returns.

- Issue: We also know:
  - Markets are demanding these risk premia for a reason.
  - And overly high exposures can be unsustainable in bad times.
- Examples:
  - Leverage, illiquidity and forced sale risks.
  - Bad decades and withdrawal needs.
  - LR unpredictability

Cumulative Real Returns on US Assets (1900-2017)



Source: Dimson, Marsh & Staunton, Credit Suisse

Two World Views

- Random Walks and the Merton-Samuelson Rule
  - Don’t change your investment strategy as you get older
  - Recursive thinking & the cone of investment outcomes
  - Stock dangers (Kotlikoff)

- Financial adviser thinking (age dependent, risk pays in LR)
  - Harvest LR return advantages
    - Changing ability to adjust to shocks
    - Mean reversion in returns?
  - Rules of thumb
  - Issue: What is risk to you? (TBD)
    - Example: Bad decades

Some Asset Allocation Rules of Thumb

- Pension funds
  - Typical allocation was 60% stocks, 40% bonds in early 1990s
  - But weight on stock kept getting higher, and many funds now incorporate a diversified mix of risky assets/strategies other than stocks

- The "100 rule"
  - Recommended % allocation to stocks = 100 – your age
    - High stock allocations imply that roll of bonds is to "be there" in times stocks are under stress
    - Creating a case for pairing high stock allocations with high quality bonds.
  - Issues:
    - Very simple two asset allocation.
    - Some advisors advocate higher stock allocations to reflect rising longevity.
    - But we will see this can be dangerous if risks are not fully understood.
  - Result
    - Can start with this rule but will return to it after we discuss risk further.

Concluding Points:

You don’t have to be a rocket scientist to be a good investor

- Maximize the use of IRAs, 401k(s) and other tax-efficient vehicles for your retirement savings
    - Like an IRA, 401k, etc.
- Take a long-run view in determining your strategic asset allocation (*even something as simple as a modified rule of 100 allocation*)
- Invest passively
- Rebalance portfolio weights when they deviate from your long run targets
- And start early

Concluding Points:

You don’t have to be a rocket scientist to be a good investor

- Maximize the use of IRAs, 401k(s) and other tax-efficient vehicles for your retirement savings
  - Like an IRA, 401k, etc.
- Take a long-run view in determining your strategic asset allocation (*even something as simple as a modified rule of 100 allocation*)
- Invest passively
- Rebalance portfolio weights when they deviate from your LR targets
- And start early

So why don’t people do this?

(Topic for the next lecture)