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# Dividend Investing

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## Why Invest in Dividend-Paying Stocks?

- ▶ Investors are experiencing a decline in income levels of many asset classes amid low interest rates and low government bond yields.
  - ▶ Current yields on 10-year Treasuries are at 2.5% as of December 2016, significantly lower than where they were 20 years ago (6.3% as of December 1996).
  - ▶ Average rates on a 6-month Certificate of Deposit (CD) were around 0.6% as of December 2016 (5.0% as of December 1996).
  - ▶ In 1996, a \$100,000 investment in a 6-month CD for a period of one year would return about \$5,040 whereas today that same investment yields about \$630.
- ▶ Fixed-income instruments such as Treasuries, cash, and cash equivalents may not provide income growth to stay ahead of inflation.
- ▶ Dividend-paying stocks may provide current income and the potential to participate in capital appreciation.



## Impact of Dividend Reinvestment Over Time

Growth of \$10,000: Principal versus Reinvested Distributions

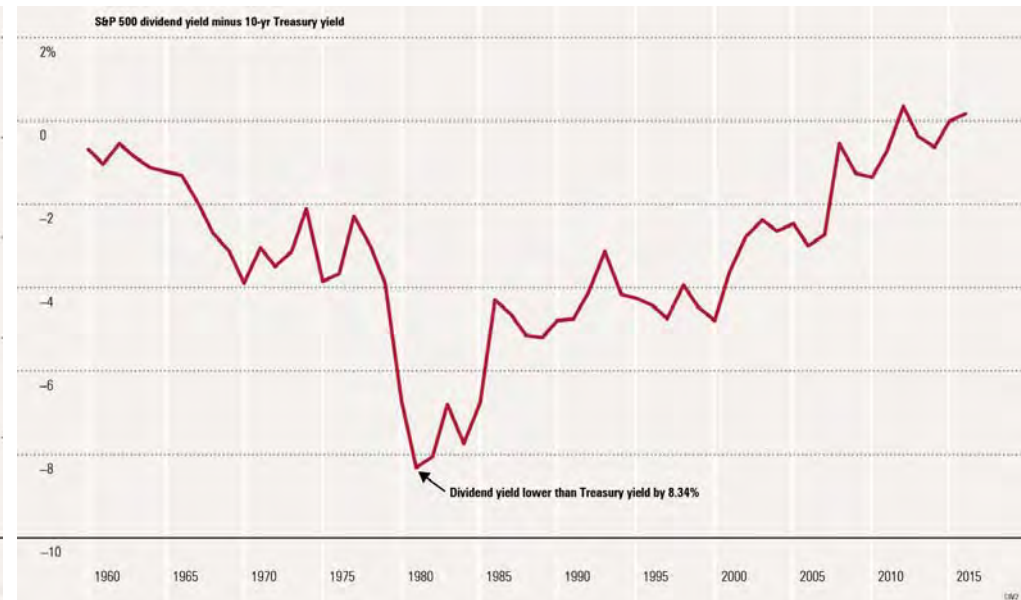


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## Trend in Yields Over Time

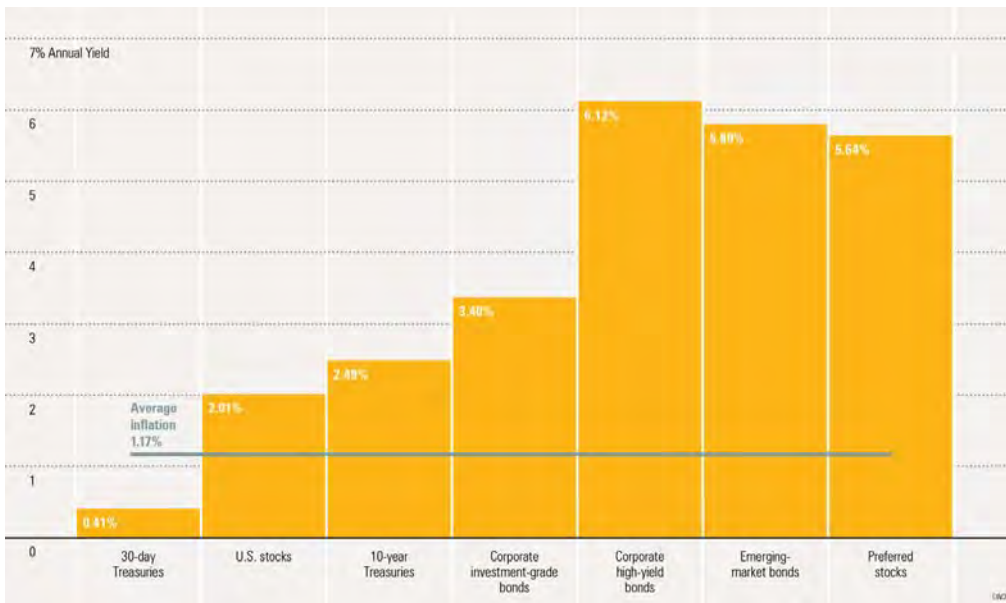
Difference in yield between S&P 500 and Treasuries, 1960-2016\*



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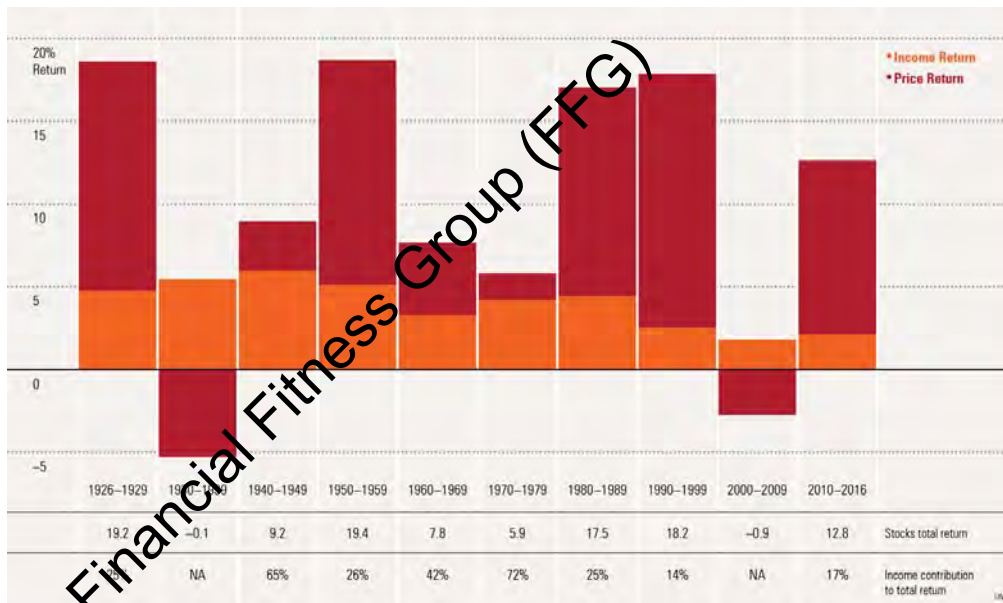
## Current Yield Landscape As of December 2016



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## Dividend Contribution to Total Return Compound annual returns by decade, 1926–2016



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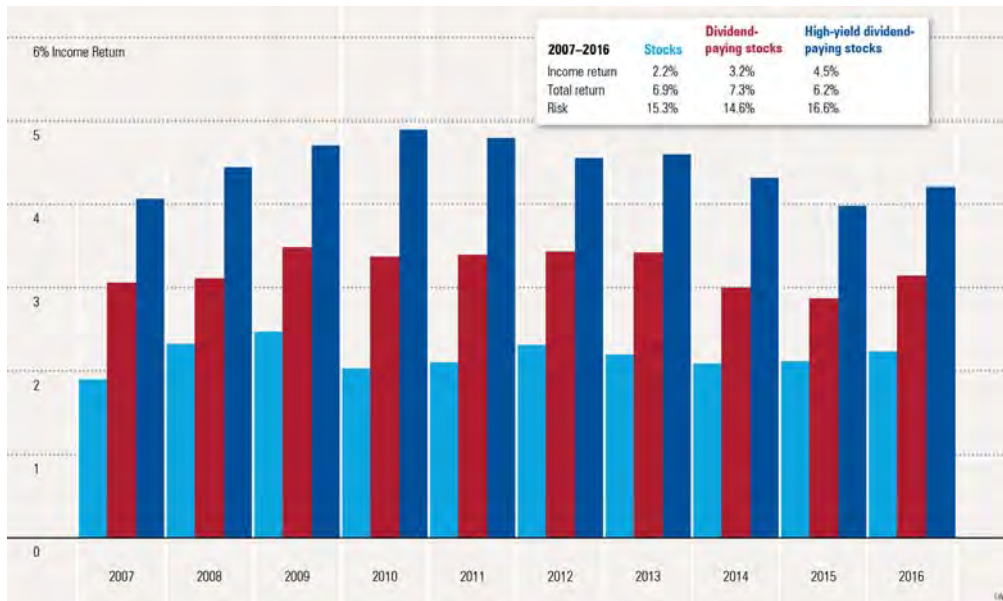
## Historical Performance of Dividend Stocks 1998–2016



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## Income Return Comparison 2007–2016



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## Dividend Stocks: Asset Class Characteristics

July 1997–December 2016

	Return (%)	Risk (%)	Sherpe Ratio (%)	Correlation to stocks	Correlation to bonds
REITs	9.6	20.7	0.45	0.58	-0.07
Stocks	6.9	15.3	0.38	1.00	0.58
High-yield dividend-paying stocks	10.2	15.5	0.58	0.64	-0.11
Dividend-paying stocks	8.4	13.9	0.51	0.89	-0.21
Bonds	4.9	4.3	0.67	-0.29	1.00

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## Dividends and Inflation

Stocks, bonds, and REITs, 1972–2016

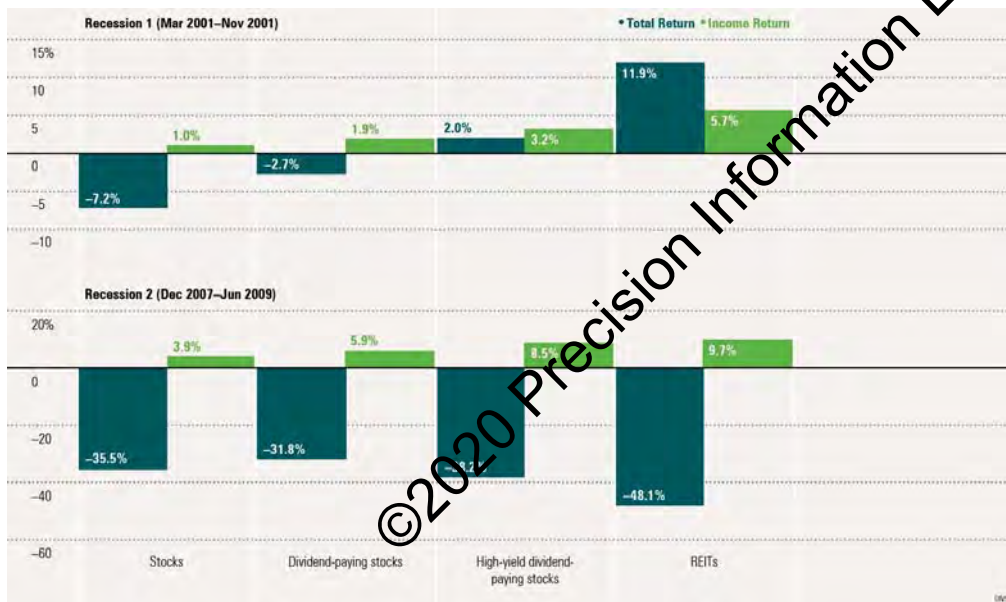


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## Dividend Income During Downturns

Returns of stocks, dividend-paying stocks and REITs



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## Takeaways: Dividend Investing

- ▶ Current income from Treasuries, cash, and cash equivalents may not be enough because inflation has the effect of eroding purchasing power.
- ▶ Dividend-paying stocks can generate income, grow income, and offer the potential for capital appreciation.
- ▶ Dividend-paying stocks may provide better risk attributes, such as lower volatility and some level of downside protection when markets decline.
- ▶ Even for investors not focused on income, dividend stocks may offer advantages for long-term capital growth:
  - ▶ Dividend growth has been a driver of total return in the long run.
  - ▶ Reinvesting dividends may help boost long-term equity returns.

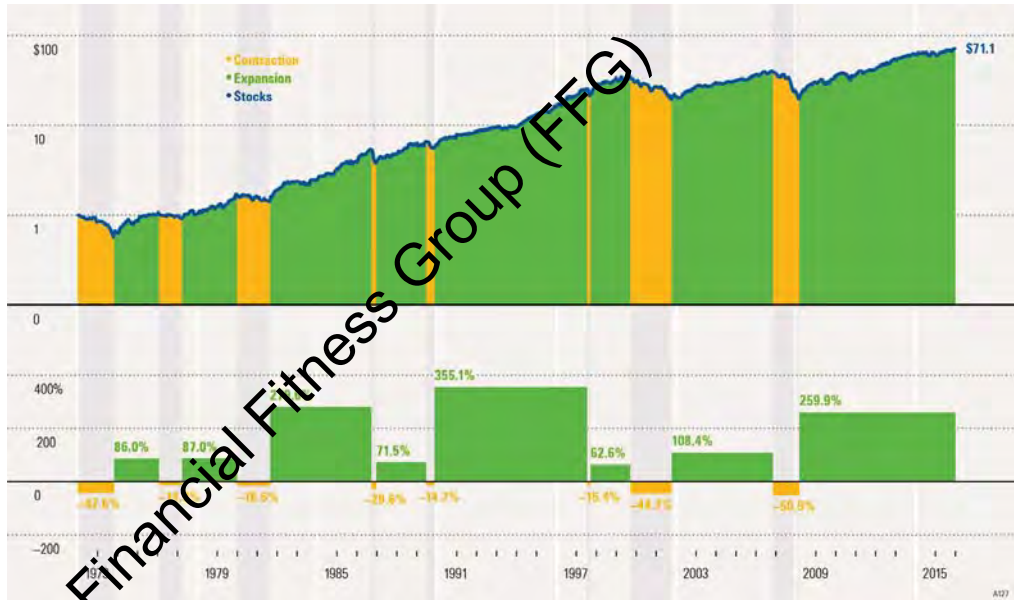


# Downturns and Recoveries

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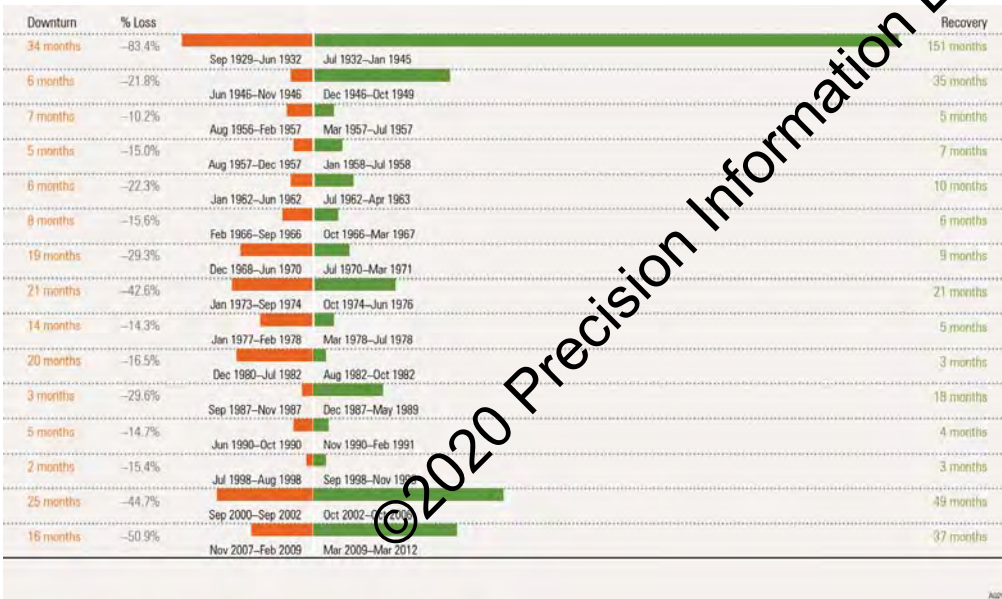
## Stock Market Contractions and Expansions 1973-2016



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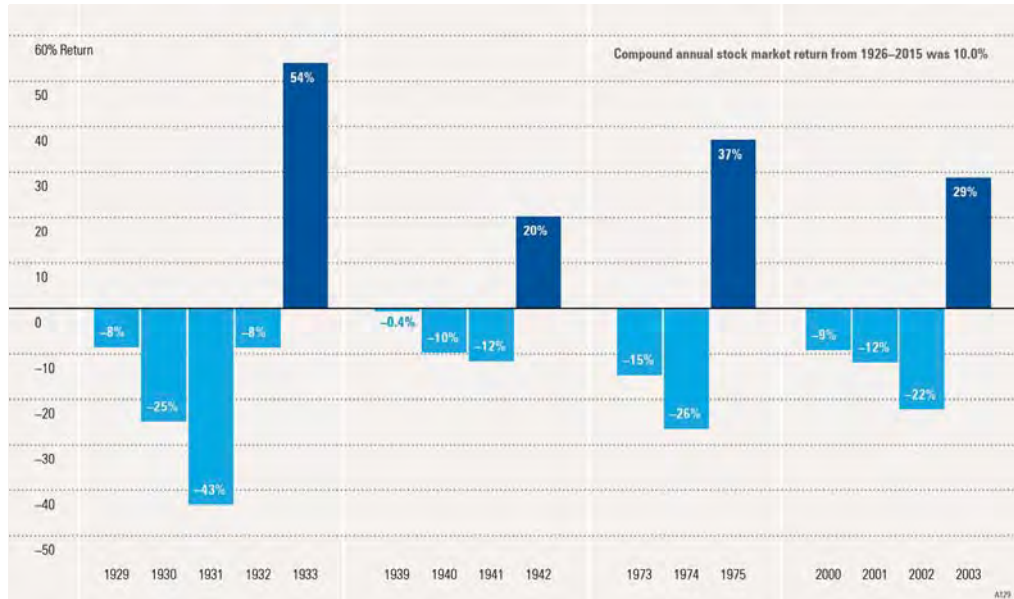
## Market Downturns and Recoveries 1926-2016



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## Periods of Consecutive Negative Stock Returns 1926-2016

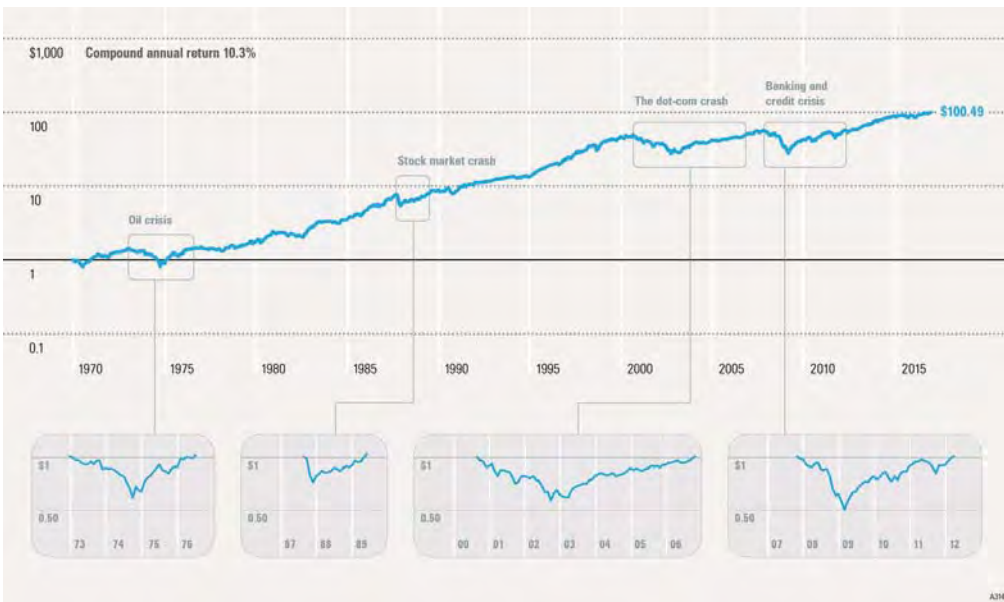


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## Crises and Long-Term Performance

Market declines in historical context, Jan. 1970–Dec. 2016

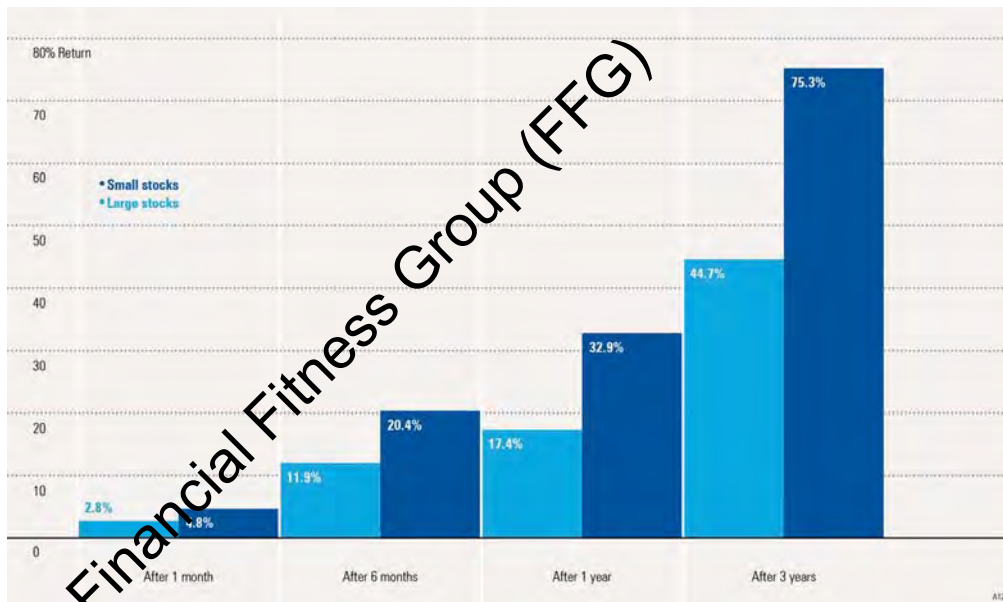


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## Stock Performance After Recessions

1953–2016

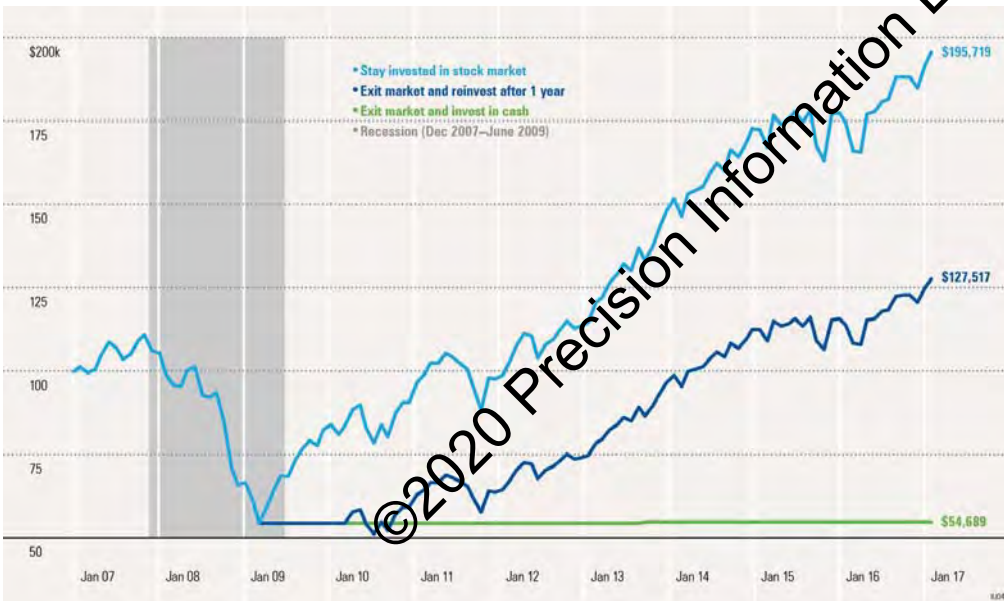


Past performance is no guarantee of future results. Cumulative returns of large and small stocks after recessions 1953–2016. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## The Importance of Staying Invested

Ending wealth values after a market decline

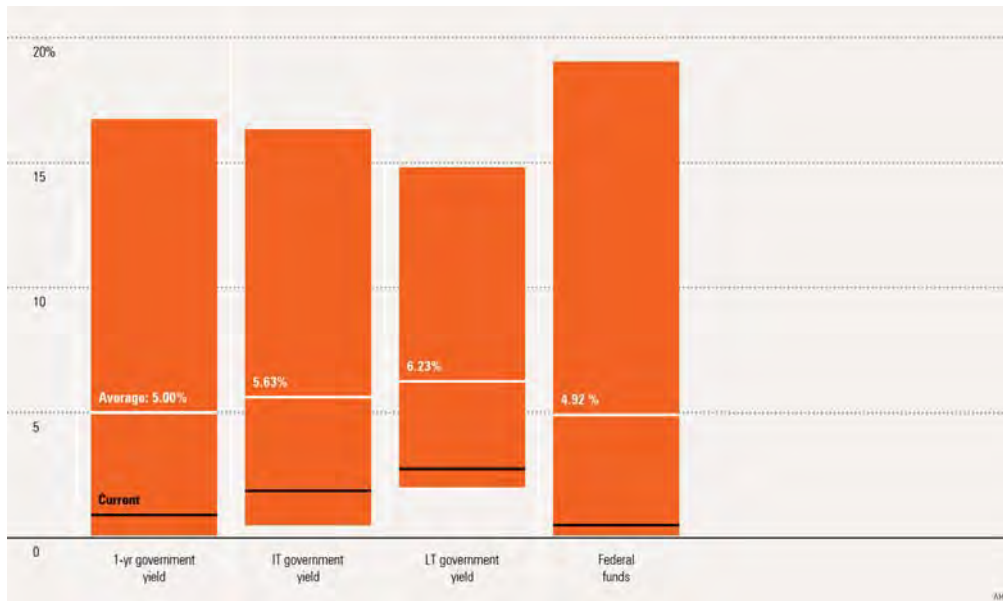


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## History of Interest Rates

July 1954–December 2016



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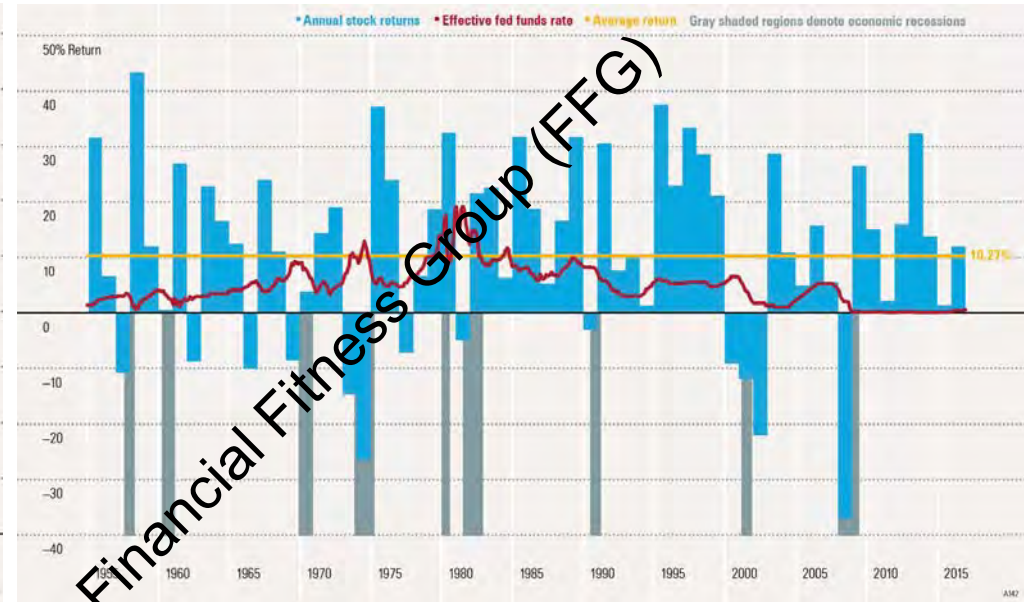
## Bond Yields During Recessions 1946–2016



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## Stock Returns and Monetary Policy Annual returns, 1955–2016



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## Correlations of Various Asset Classes with the Market January 1980–December 2016

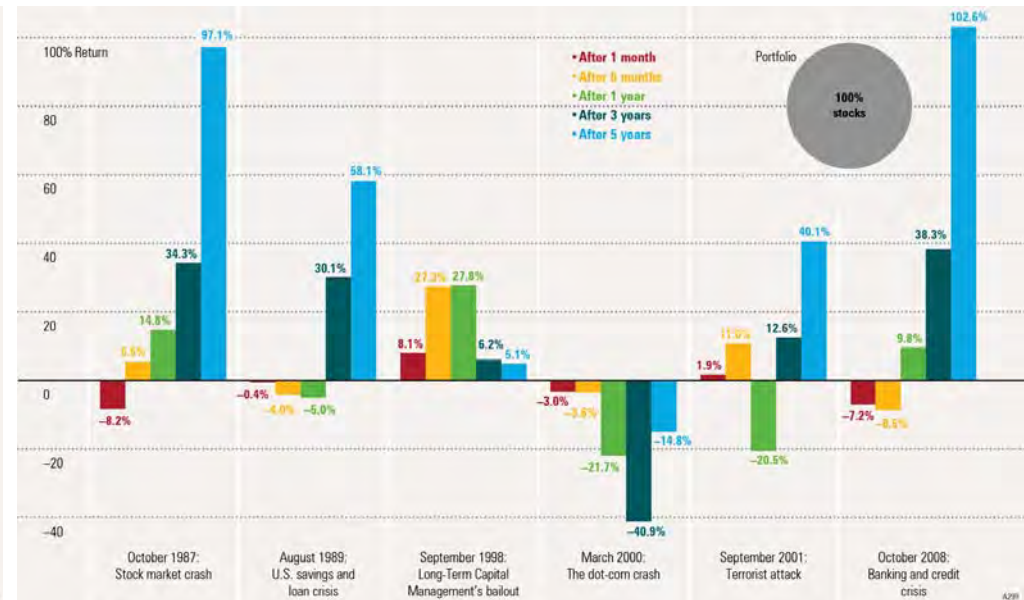
	Before recession Jan 1980–Nov 2007	During recession Dec 2007–Jun 2009	Entire period Jan 1980–Dec 2016
Small stocks	0.72	0.95	0.77
International stocks	0.57	0.93	0.67
Commodities	0.08	0.51	0.21
REITs	0.47	0.75	0.56
Gold	0.05	-0.06	0.04
Long-term corp bonds	0.23	0.34	0.19
Long-term govt bonds	0.18	0.03	0.05
Intermediate-term govt bonds	0.21	-0.32	0.04
Treasury bills	0.00	-0.11	0.02

\* Low \* Medium \* High

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## U.S. Market Recovery After Financial Crises Cumulative return of all-stock portfolio after various events

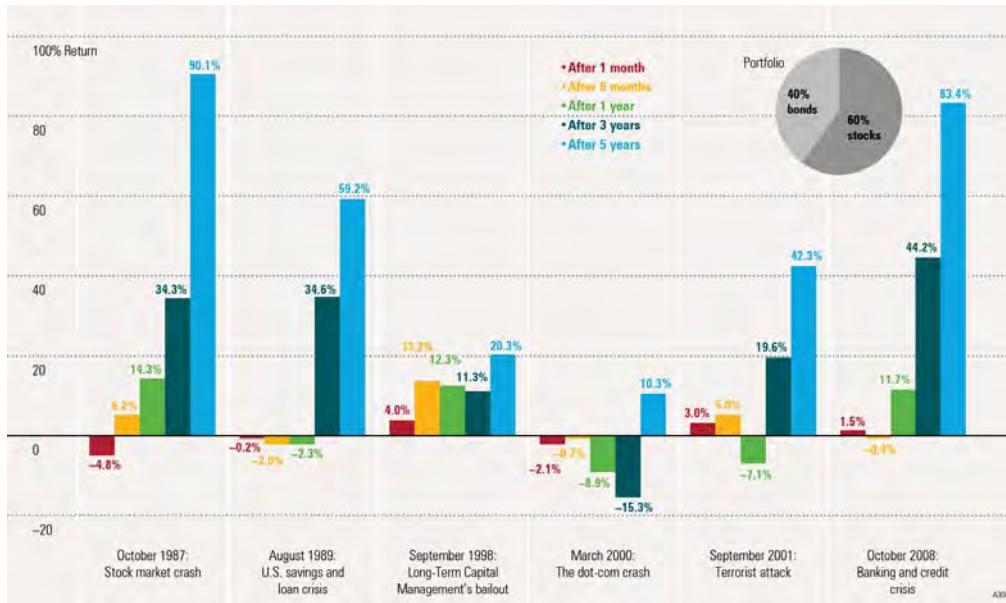


Past performance is no guarantee of future results. Returns reflect the percentage change in the index level from the end of the month in which the event occurred to one month, six months, one year, three years and five years after. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## U.S. Market Recovery After Financial Crises

Cumulative return of balanced portfolio after various events



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# Exchange-Traded Funds

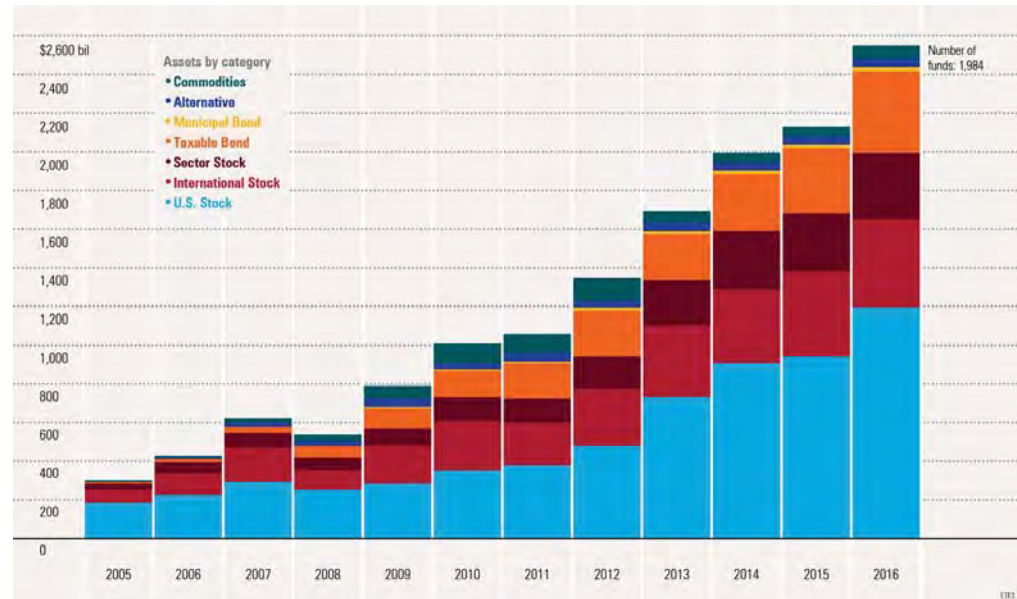
## Comparing ETFs with Index Funds and Mutual Funds

	ETFs	Index Mutual Funds	Mutual Funds (actively managed)
Ownership	<ul style="list-style-type: none"> <li>Purchased on the exchange</li> </ul>	<ul style="list-style-type: none"> <li>Purchased directly from the fund</li> </ul>	<ul style="list-style-type: none"> <li>Purchased directly from the fund</li> </ul>
Management Style	<ul style="list-style-type: none"> <li>Typically passively managed; some are actively managed</li> </ul>	<ul style="list-style-type: none"> <li>Passively managed</li> </ul>	<ul style="list-style-type: none"> <li>Actively managed</li> </ul>
Pricing	<ul style="list-style-type: none"> <li>Traded throughout the trading day</li> <li>Limit orders, short selling, margin buying and options trading available</li> </ul>	<ul style="list-style-type: none"> <li>NAV once per day after market close</li> <li>May require a minimum initial investment</li> </ul>	<ul style="list-style-type: none"> <li>NAV once per day after market close</li> <li>May require a minimum initial investment</li> </ul>
Cost	<ul style="list-style-type: none"> <li>Ongoing management fees</li> <li>Brokerage and trading cost</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing management fees</li> <li>Possible sales charges and redemption fees</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing management fees</li> <li>Possible sales charges and redemption fees</li> </ul>
Transparency	<ul style="list-style-type: none"> <li>Underlying holdings disclosed daily</li> </ul>	<ul style="list-style-type: none"> <li>Holdings generally disclosed monthly or quarterly</li> </ul>	<ul style="list-style-type: none"> <li>Holdings generally disclosed monthly or quarterly</li> </ul>
Taxes	<ul style="list-style-type: none"> <li>Fund shareholders generally not subject to any tax liabilities related to the redemptions of other shareholders</li> </ul>	<ul style="list-style-type: none"> <li>Fund shareholders face tax consequences related to the redemptions of other shareholders</li> </ul>	<ul style="list-style-type: none"> <li>Fund shareholders face tax consequences related to the redemptions of other shareholders</li> </ul>

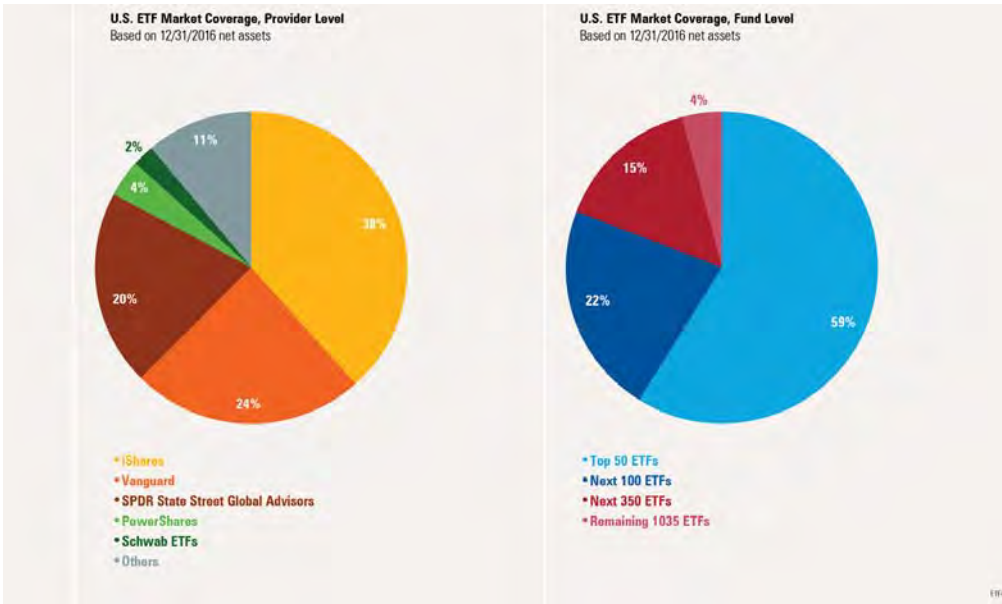
## Comparing ETFs and Stocks

## ETFs Are a Fast-Growing Investment Vehicle Assets by category 2005–2016

	ETFs	Stocks
Ownership	<ul style="list-style-type: none"> <li>Ownership of ETF shares; no ownership of the underlying securities</li> </ul>	<ul style="list-style-type: none"> <li>Partial ownership of an individual company</li> </ul>
Trading	<ul style="list-style-type: none"> <li>Traded throughout the trading day</li> <li>Limit orders, short selling, margin buying and options trading available</li> </ul>	<ul style="list-style-type: none"> <li>Traded throughout the trading day</li> <li>Limit orders, short selling, margin buying and options trading available</li> </ul>
Liquidity	<ul style="list-style-type: none"> <li>Number of shares available flexible</li> </ul>	<ul style="list-style-type: none"> <li>Fixed number of shares available</li> </ul>
Diversification	<ul style="list-style-type: none"> <li>Diversification within broad markets or sectors</li> </ul>	<ul style="list-style-type: none"> <li>No diversification</li> </ul>



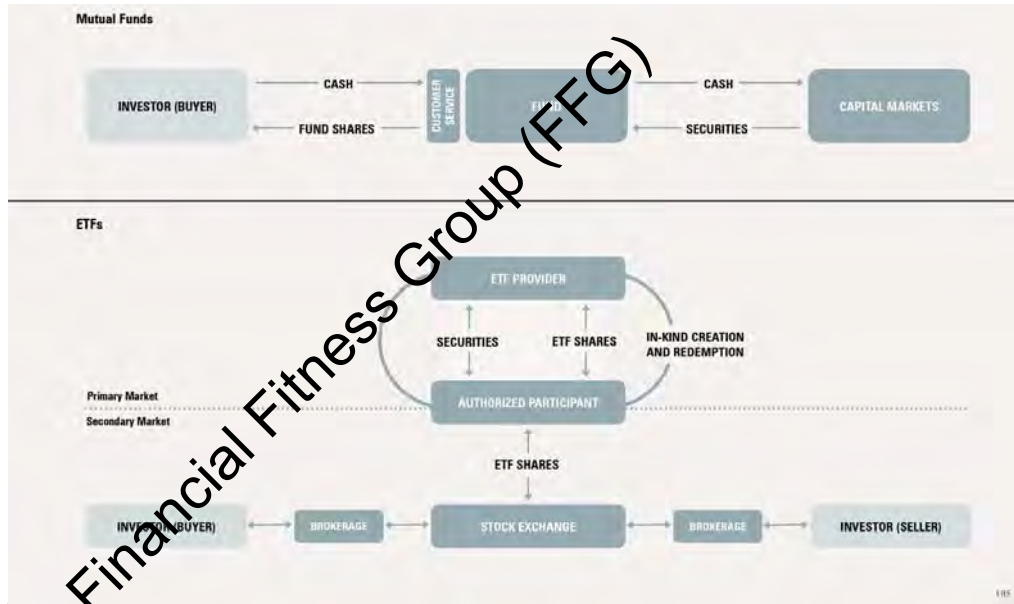
## The Top-Heavy ETF Market



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## The Creation/Redemption Mechanism Mutual Funds vs. ETFs

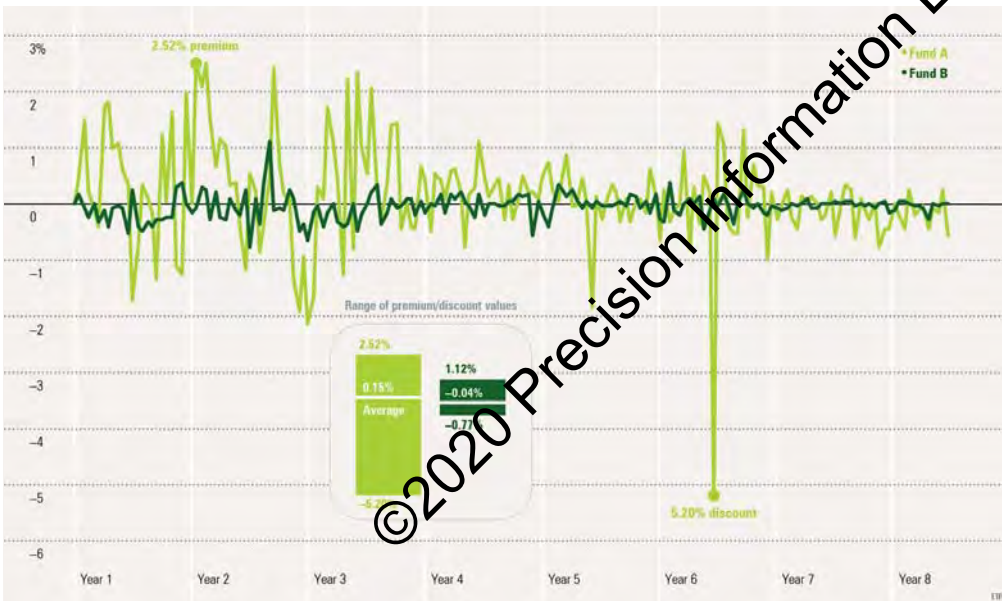


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## Why Do ETFs Trade at a Premium or Discount?

Variation in monthly premiums/discounts for two ETFs

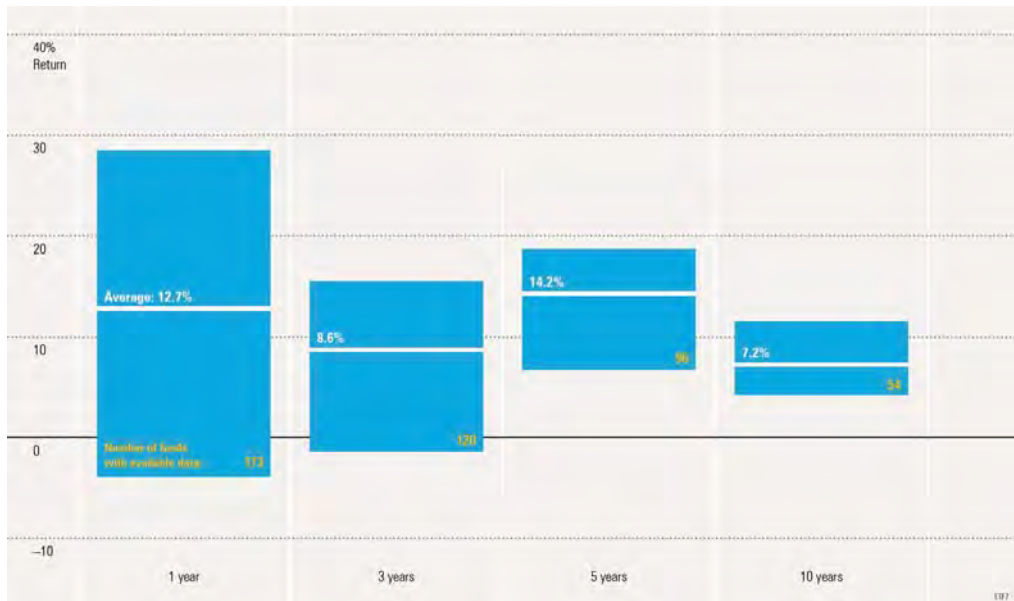


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## Performance of Large-Cap ETFs over Various Time Periods

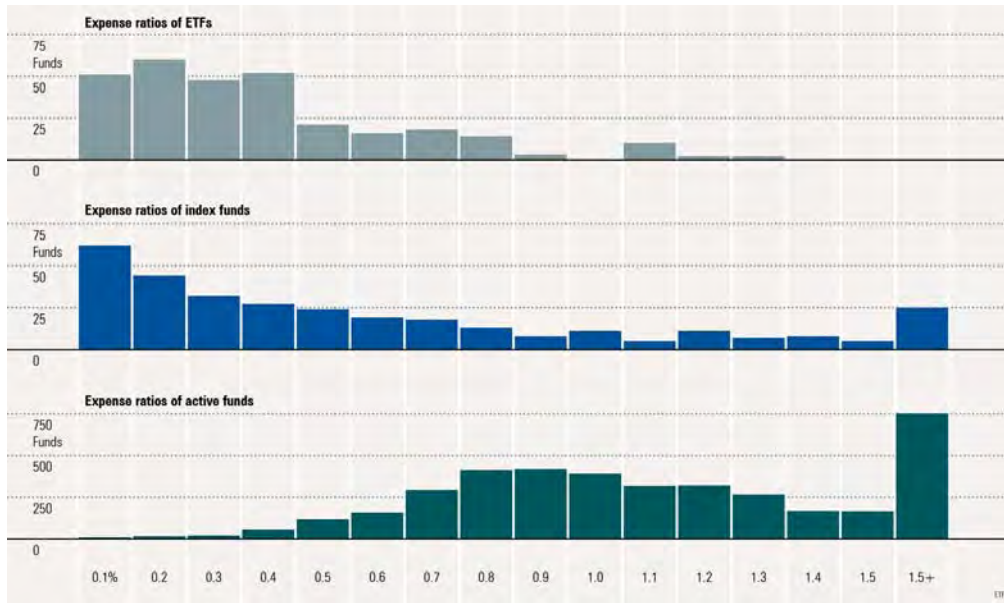
Ranges of return as of December 2016



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## Expense Ratios of Large-Caps: ETFs, Index Funds, and Active Funds As of December 2016



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## The Total Cost of an ETF A hypothetical buying scenario

### 4 main costs to owning an ETF

- ▶ Expense ratio
- ▶ Trading commissions
- ▶ Premiums or discounts
- ▶ Bid/ask spreads

Hypothetical ETF data		
NAV	\$100	
Market price (bid)	\$100.10	
Market price (ask)	\$100.20	
Bid/ask spread	\$0.10	
Premium	0.2%	
Investment	\$10,000	
Number of shares bought at market price (\$100.20)	99	
Duration of holding	1 year	
Hypothetical annual return	5%	
		<b>Cost</b>
Expense ratio	0.09%	\$9.45
Commission	\$10	\$10
Premium	\$0.20	\$19.80
Bid/ask spread	\$0.05	\$4.95
<b>Approximate total cost (in addition to the \$10,000)</b>		<b>\$44.20</b>

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## Pros and Cons of ETFs

Pros	Cons
▶ Tool for implementing asset allocation strategies	▶ Brokerage costs may vary
▶ Passive diversification	▶ Liquidity varies across funds
▶ Transparency of price	▶ Relatively new (with) limited track record
▶ Tax efficiency	▶ Limited selection in certain categories
▶ Potential cost advantages	
▶ Protection against cash drag	

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## How ETFs Can Be Used in Your Portfolio

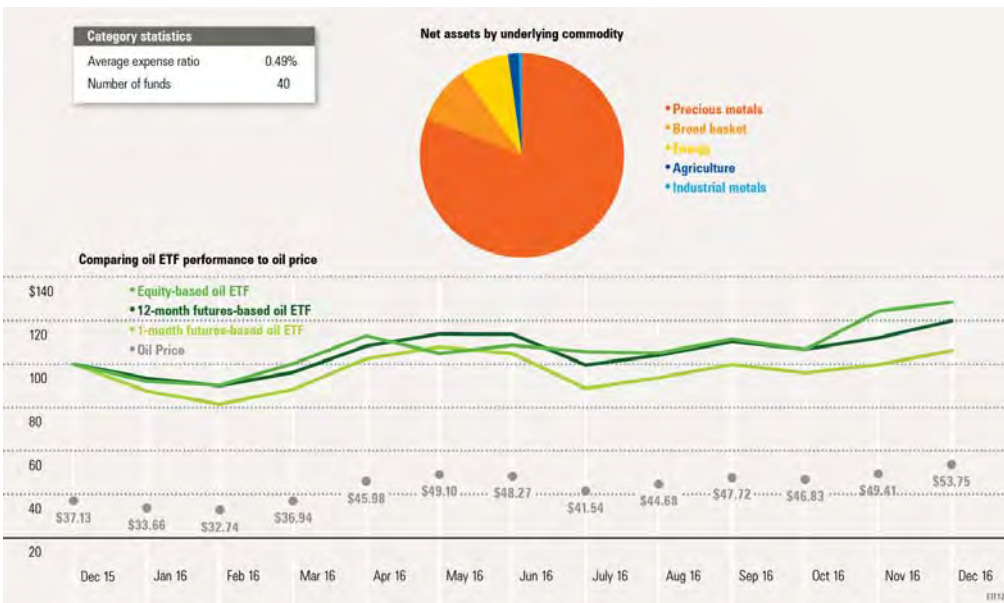
- ▶ Build diversified portfolios
- ▶ Complement existing diversified portfolios
- ▶ Hedge risk
- ▶ Cash equitization

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## Advanced: Commodity ETFs

Category statistics, net assets, and hypothetical performance



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## Advanced: Leveraged and Inverse ETFs

Hypothetical one day strategies



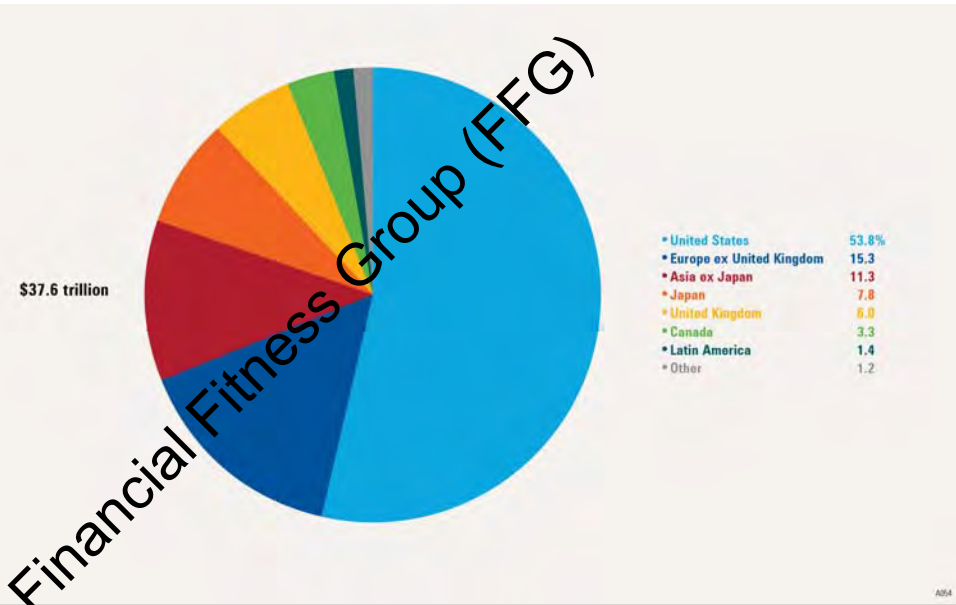
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# Global Investing

## World Stock Market Capitalization Year-end 2016



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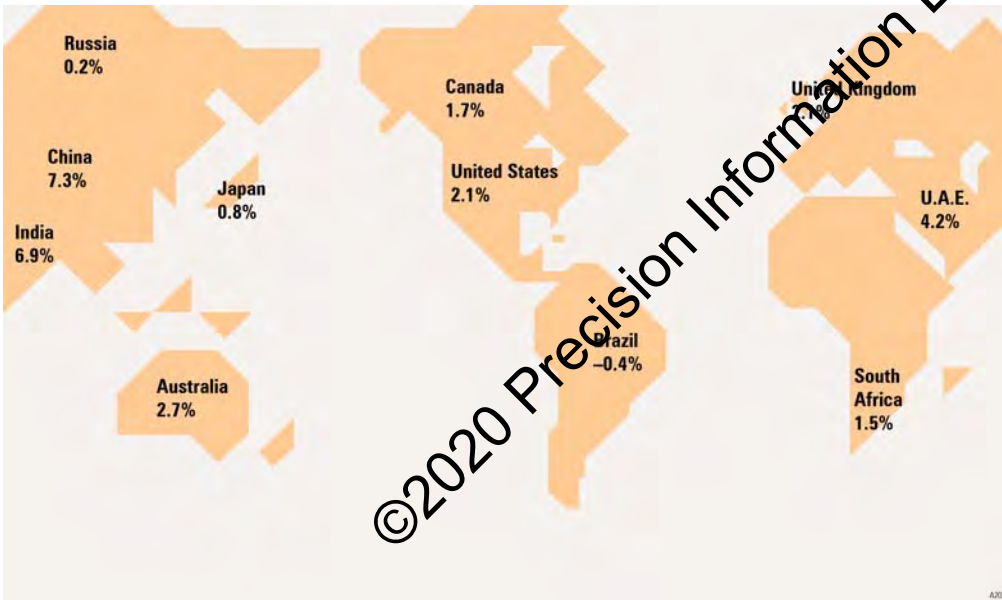


Capitalization calculated at year-end 2016. Total market capitalization is \$37.6 trillion. Estimates are not guaranteed. © Morningstar. All Rights Reserved.



## GDP Growth by Region

Five-year average annual percentage change 2012–2016

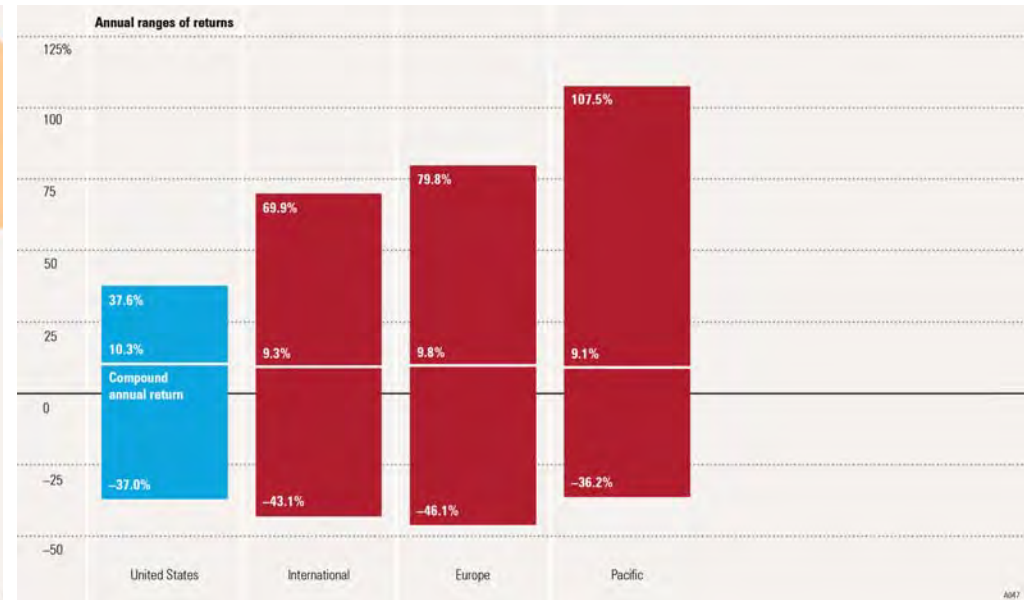


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## Global Stock Market Returns

Highest and lowest historical annual returns for each region, 1970–2016

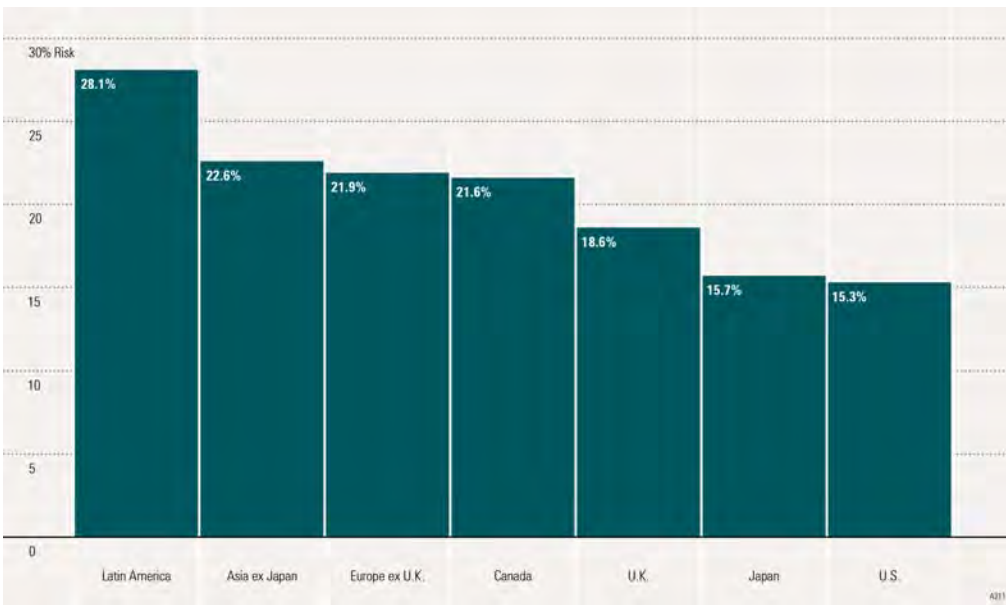


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### Risk Level by Region

Annual standard deviation 2007–2016

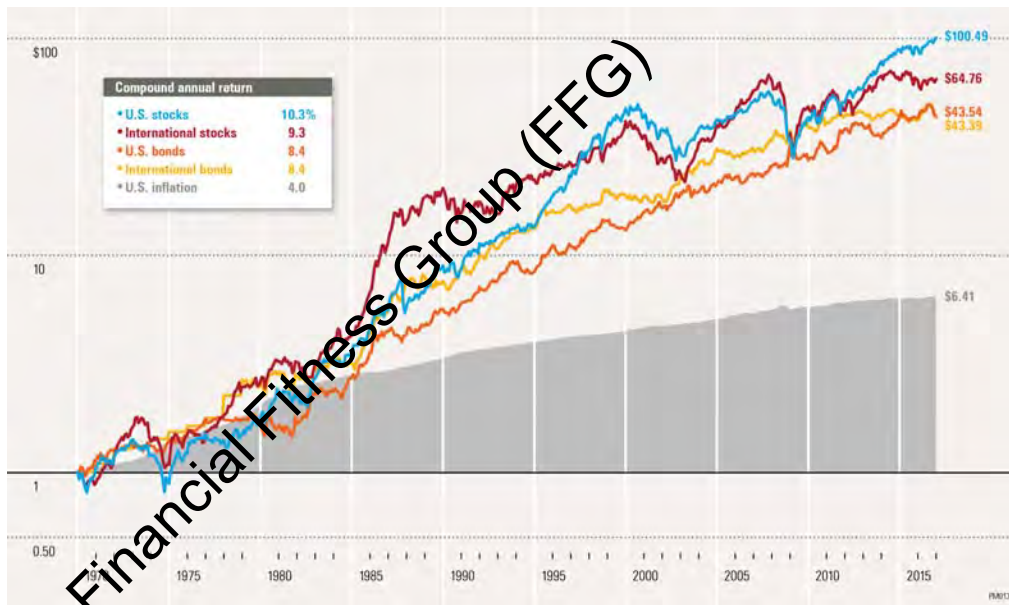


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### Global Investing

1970–2016



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### Growth Through Global Investing

Annual returns of top-performing developed global stock markets

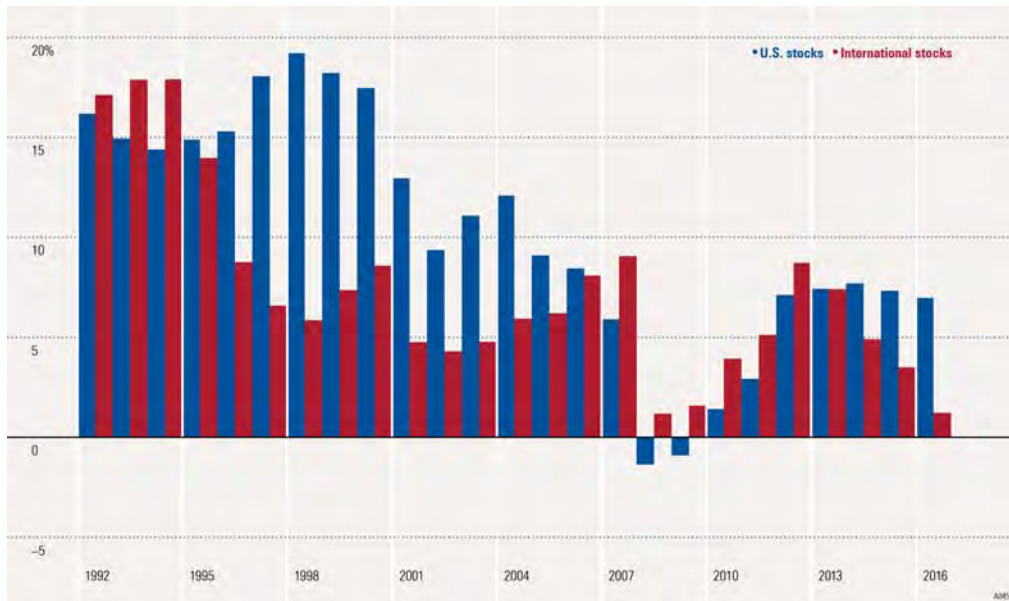


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### Comparing U.S. and International Stock Performance

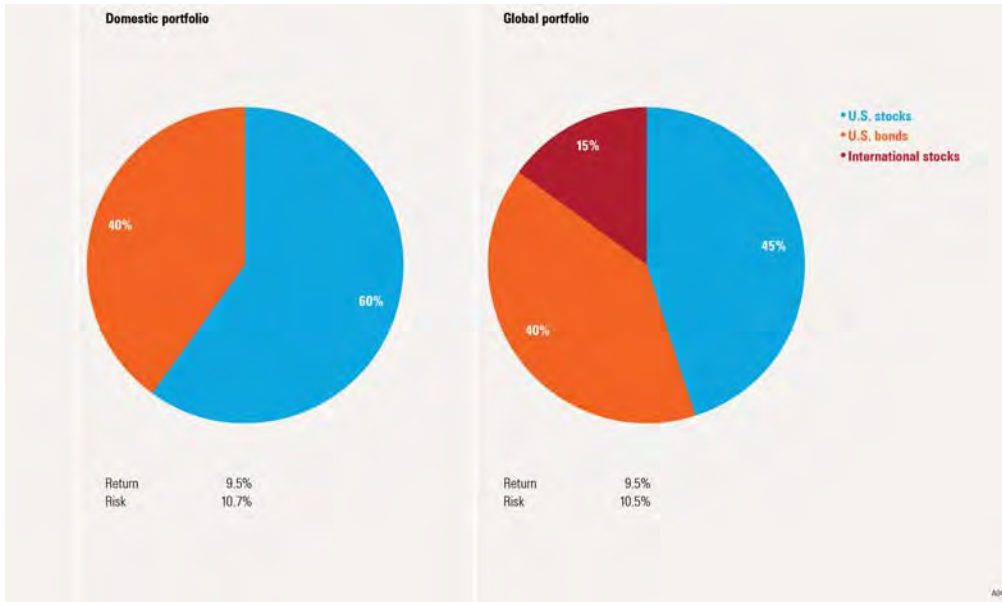
Average returns over 10-year holding periods



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## Domestic Versus Global 1970–2016



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## Key Differences Between Developed and Emerging Markets

### Developed countries

- Established and stable economies with strong consumption activities and ample resources.
  - Ex. Australia, Canada, Japan, Germany, U.K., U.S.

### Emerging countries

- Countries that are starting to participate globally by implementing reform programs and undergoing economic improvement.
  - Ex. Brazil, China, Mexico, Thailand, Russia, India

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## Regional Performance

Growth of \$1,000 from 1988–2015

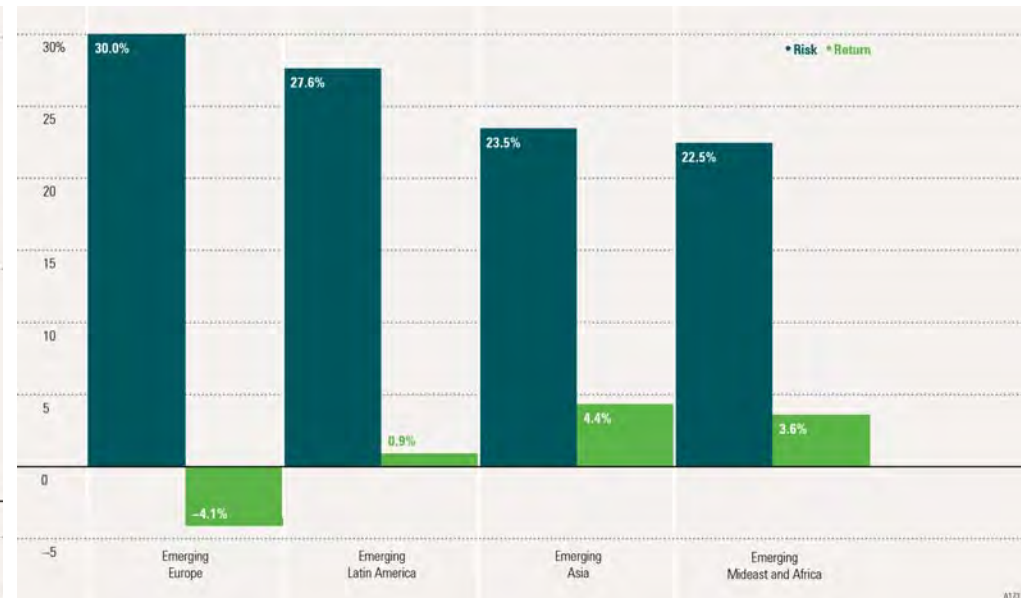


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## Emerging Market Performance

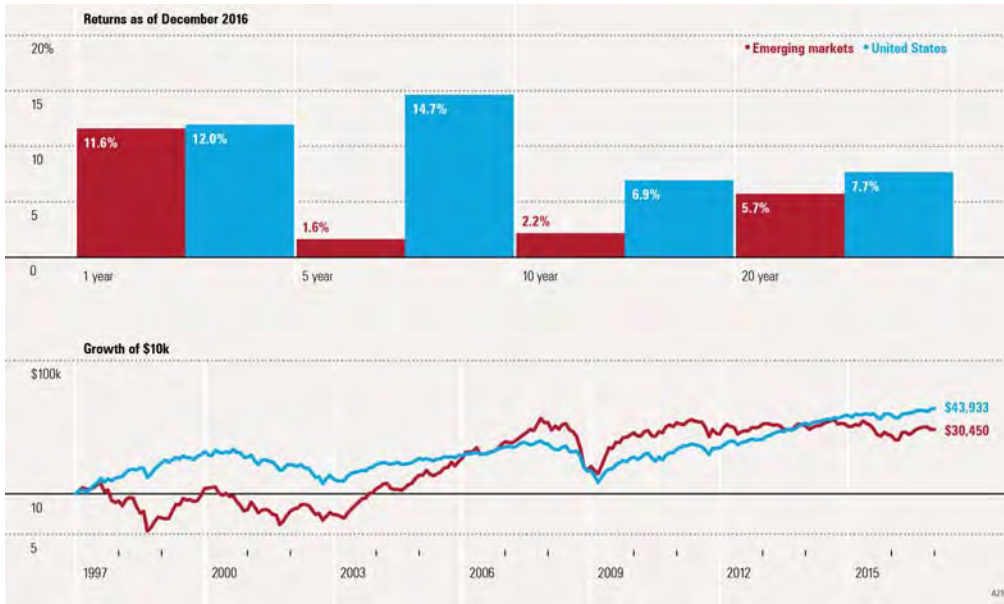
Risk and return 2007–2016



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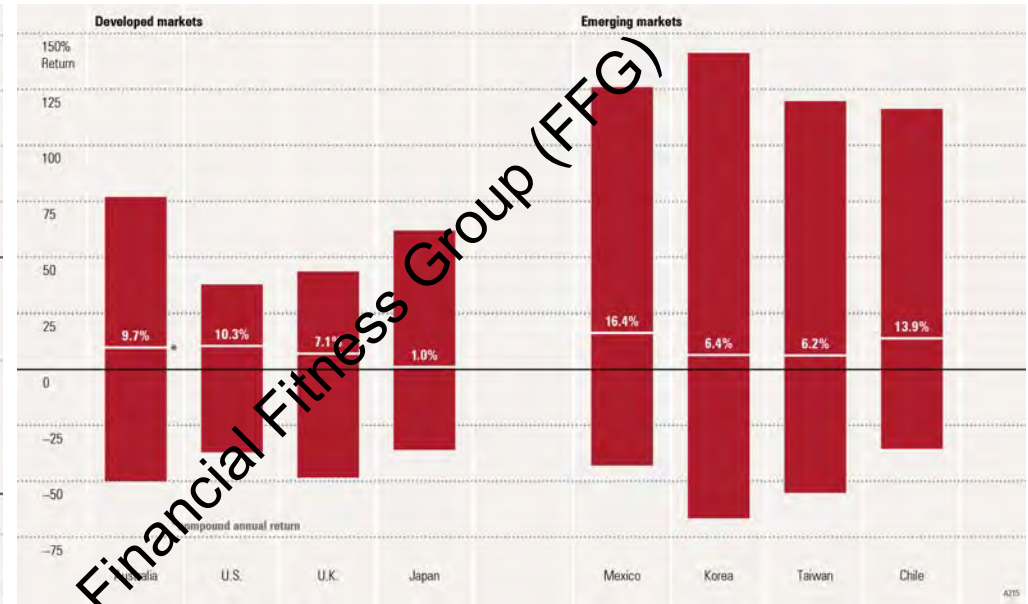
## Undeveloped Opportunities 1997–2016



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## Emerging Markets Experience a Wider Range of Returns 1988–2016



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## Global Market Downturns and Recoveries Periods of turbulence, 1988–2016

Market	Region	Number of downturns	Greatest decline	Average decline	Average decline duration in months	Recovery duration in months*
Emerging markets	Asia	3	-73%	-57%	25	64
	Europe	5	-75%	-53%	15	27
	Latin America	7	-61%	-37%	5	19
Developed markets	International stocks	3	-56%	-45%	21	41

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## Correlations by Region 2007–2016

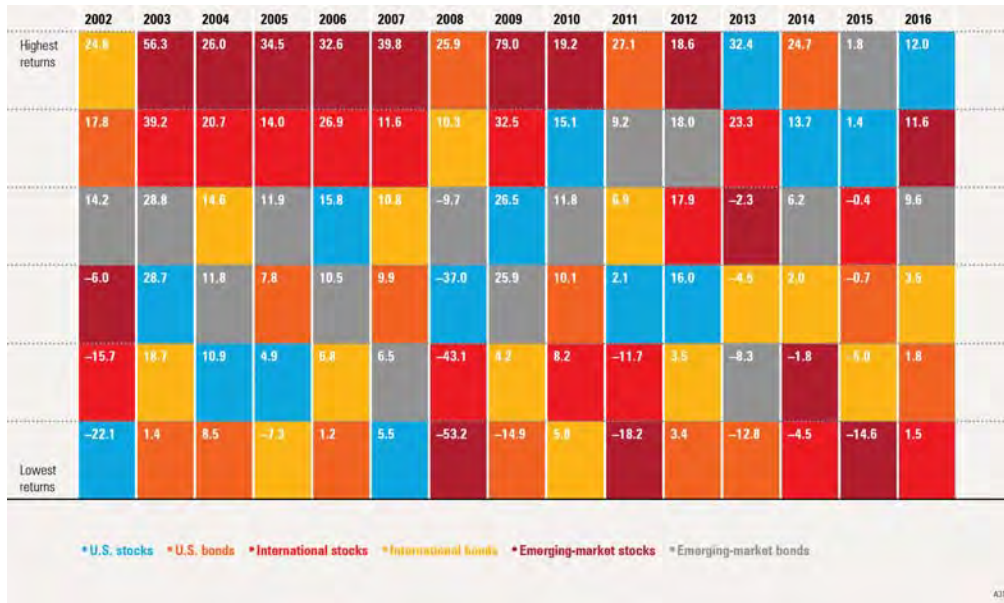
		Emerging			Developed	
		Asia	Europe	Latin America	U.S. stocks	International stocks
Emerging	Asia	1.00				
	Europe	0.83	1.00			
	Latin America	0.84	0.85	1.00		
Developed	U.S. stocks	0.76	0.75	0.70	1.00	
	International stocks	0.85	0.86	0.79	0.89	1.00

Past performance is no guarantee of future results. Correlation ranges from -1 to 1, with -1 indicating that the returns move perfectly opposite to one another, 0 indicating no relationship, and 1 indicating that the asset classes react exactly the same. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.





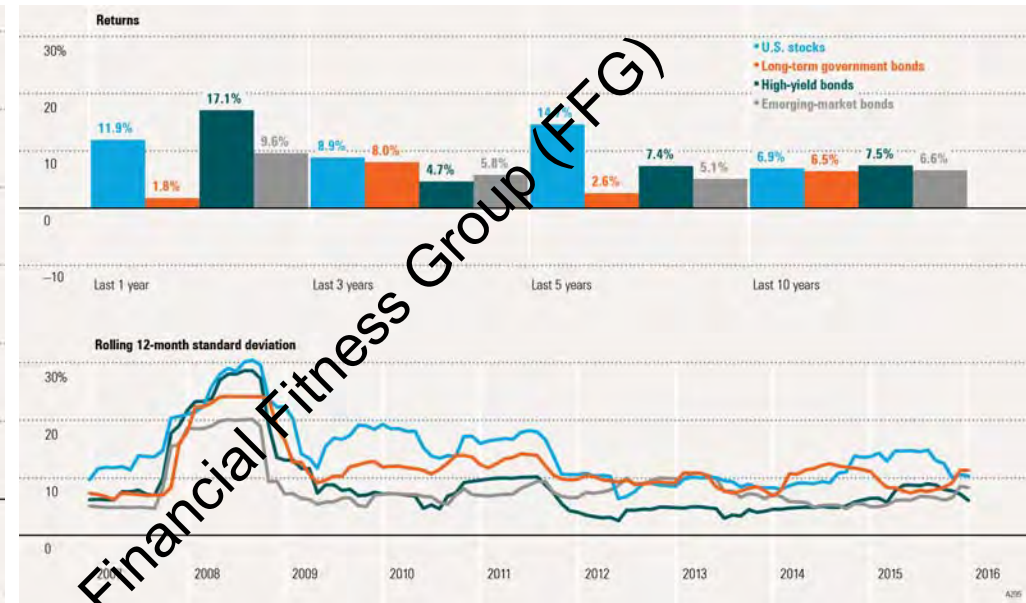
## Global Winners and Losers 2002–2016



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## The Case for Emerging-Market Bonds 2007–2016



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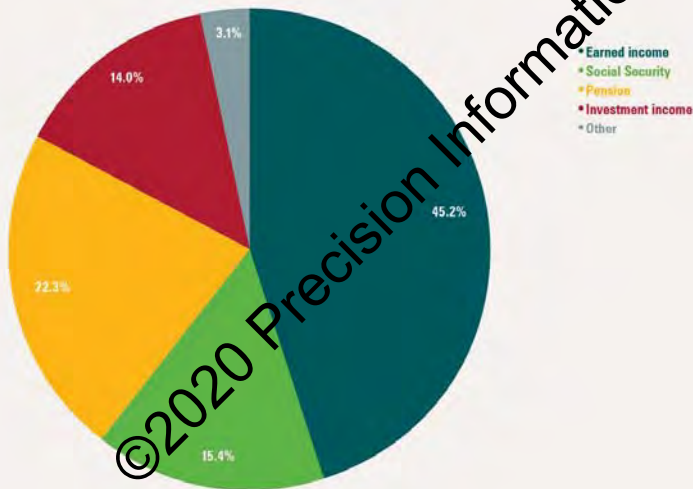
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# Investing for Retirement

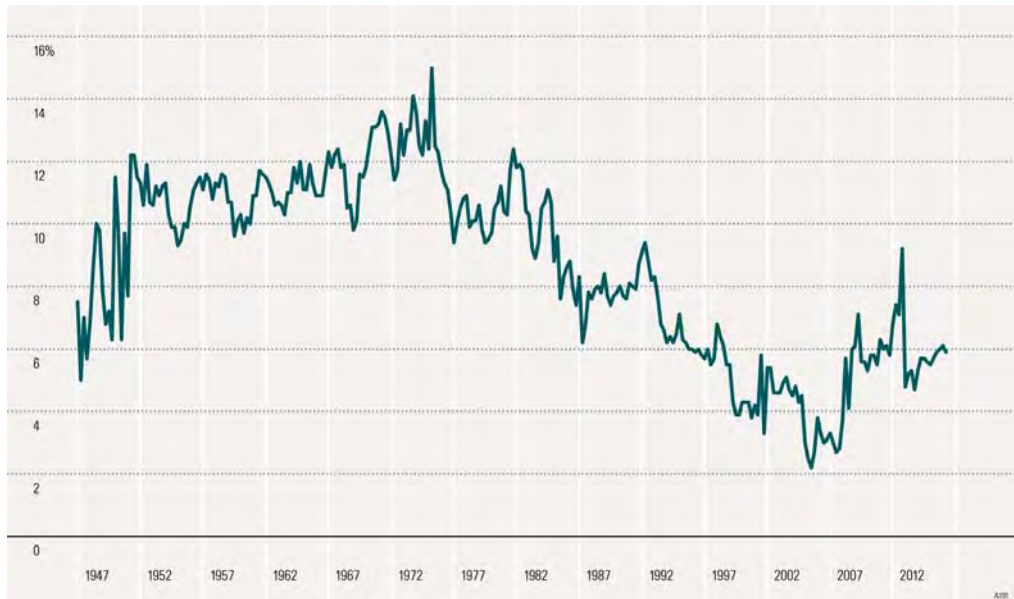
## Advantages of 401(k) Investing

- ▶ Participant control
  - ▶ Amount invested
  - ▶ Asset mix
  - ▶ Ownership of assets
- ▶ Pre-tax investing
- ▶ Tax deferral
- ▶ Tailored investment plan

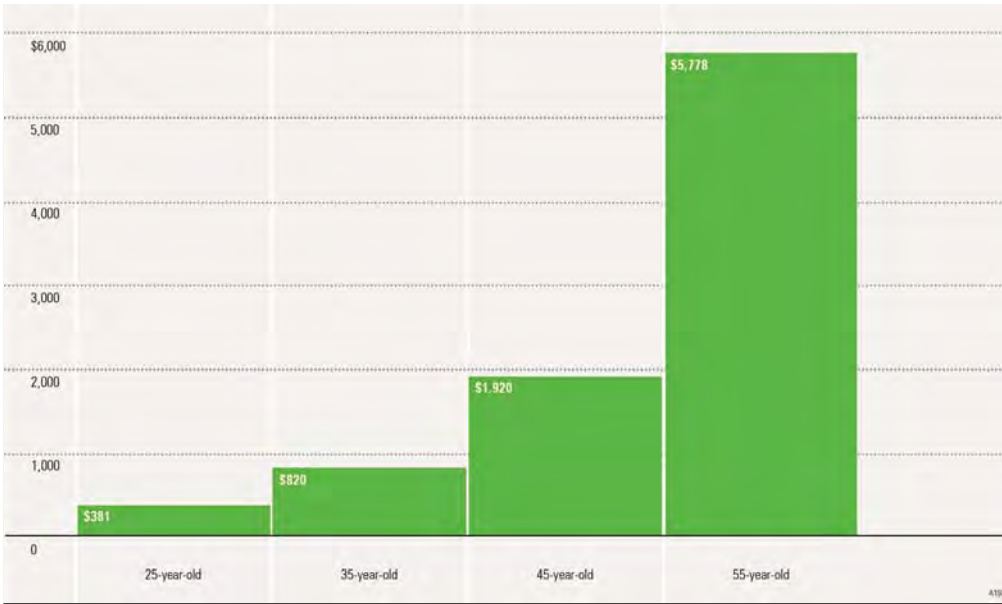
## Sources of Retirement Income



## Most Americans Are Not Saving Enough for Retirement Personal savings rate 1947–2016



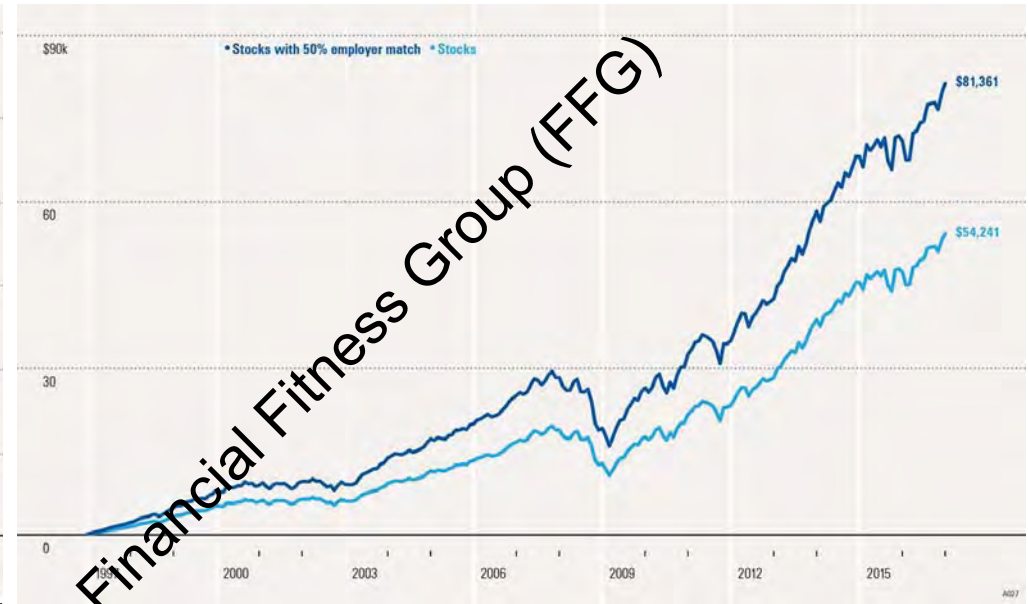
**The Earlier You Start Investing, the Easier It Is to Reach Your Goals**  
 Monthly savings needed to accumulate \$1 million by age 65



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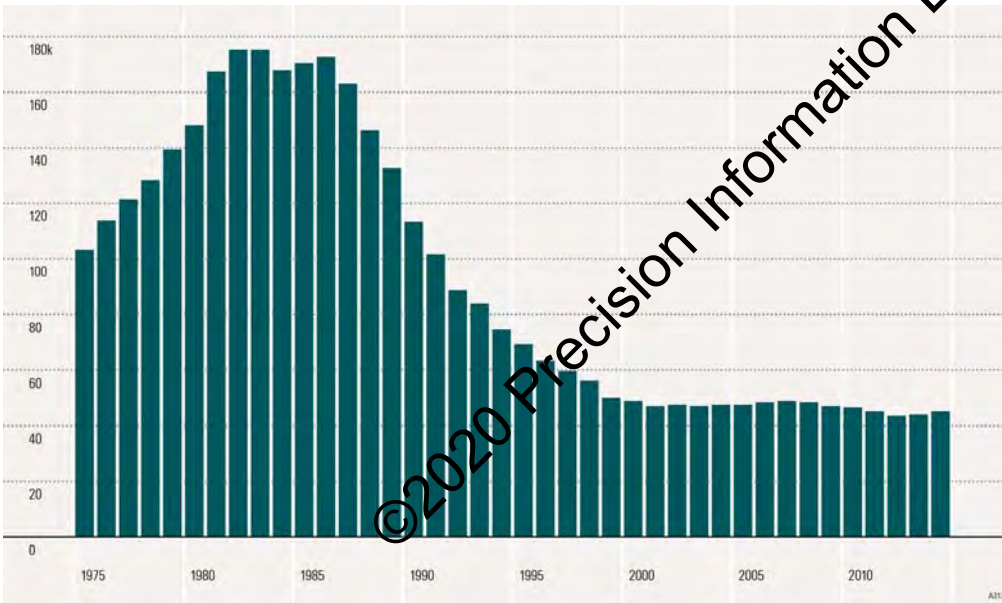
**Enhancing Your Wealth: Employer Match**  
 Hypothetical value of \$100 invested each month 1997–2016



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**Employers Are Cutting Defined Benefit Pension Plans**  
 Number of defined benefit plans 1975–2014



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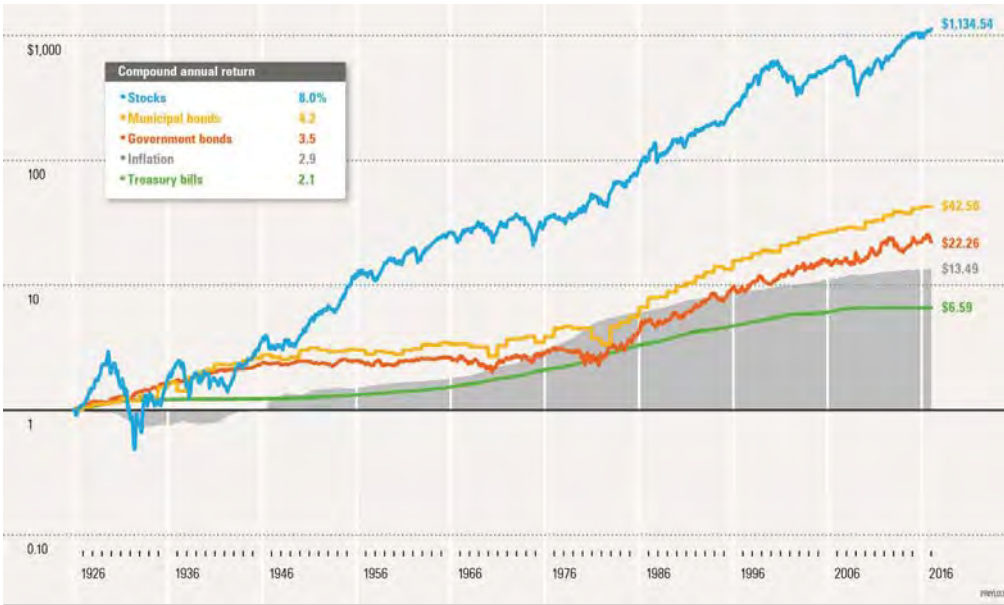


**Ibbotson® SBBI®**  
 Stocks, Bonds, Bills, and Inflation 1926–2016



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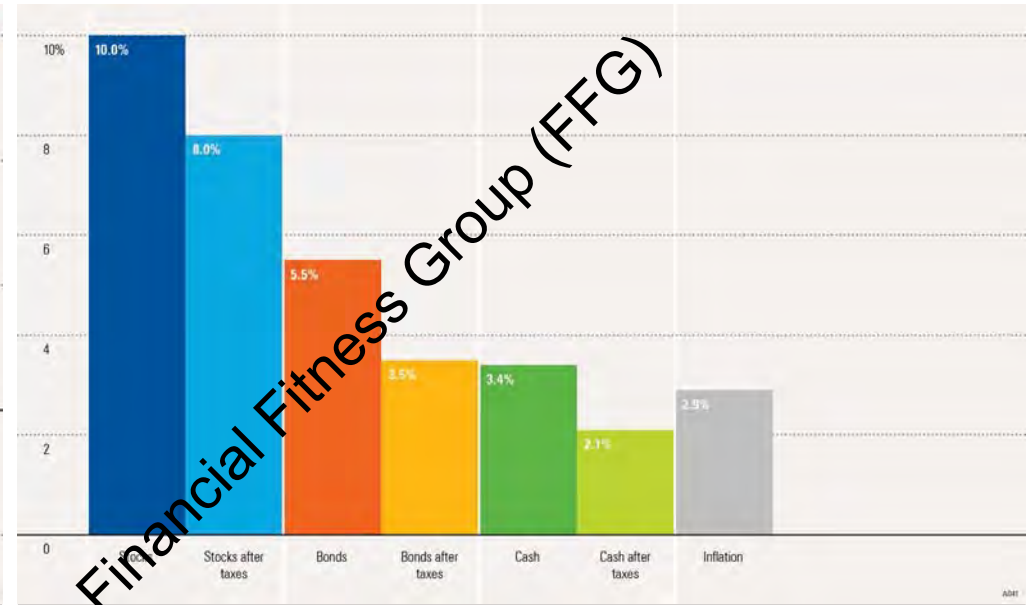
**Ibbotson® SBBI® After Taxes**  
1926–2016



Past performance is no guarantee of future results. Hypothetical value of \$1 invested at the beginning of 1926, with taxes paid monthly. No capital gains taxes are assumed for municipal bonds. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. Assumes reinvestment of income and no transaction costs. © Morningstar. All Rights Reserved.



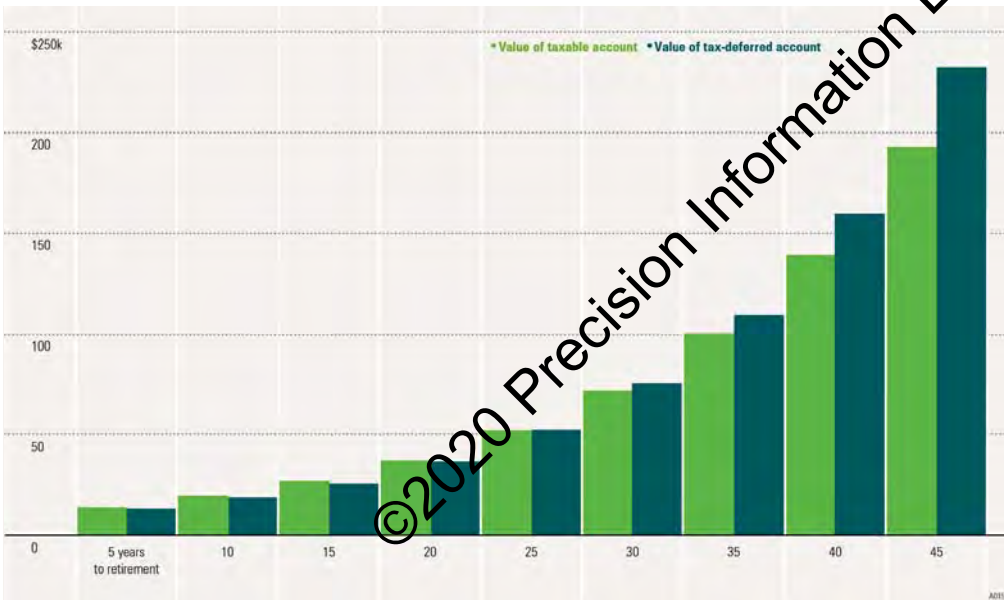
**Taxes Significantly Reduce Returns**  
1926–2016



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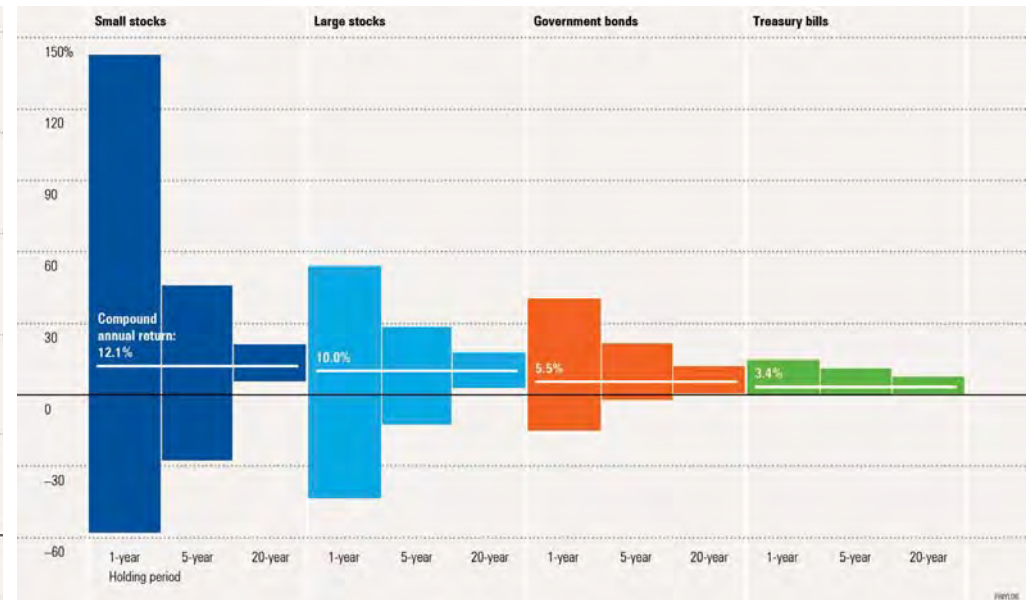
**Benefits of Deferring Taxes**



Hypothetical value of \$10,000 invested in stocks. This example is for an investor in the 28% bracket using the 2016 tax code. Assumes an 8% annual total return. Estimates are not guaranteed. This is for illustrative purposes only and not indicative of any investment. © Morningstar. All Rights Reserved.



**Reduction of Risk Over Time**  
1926–2016

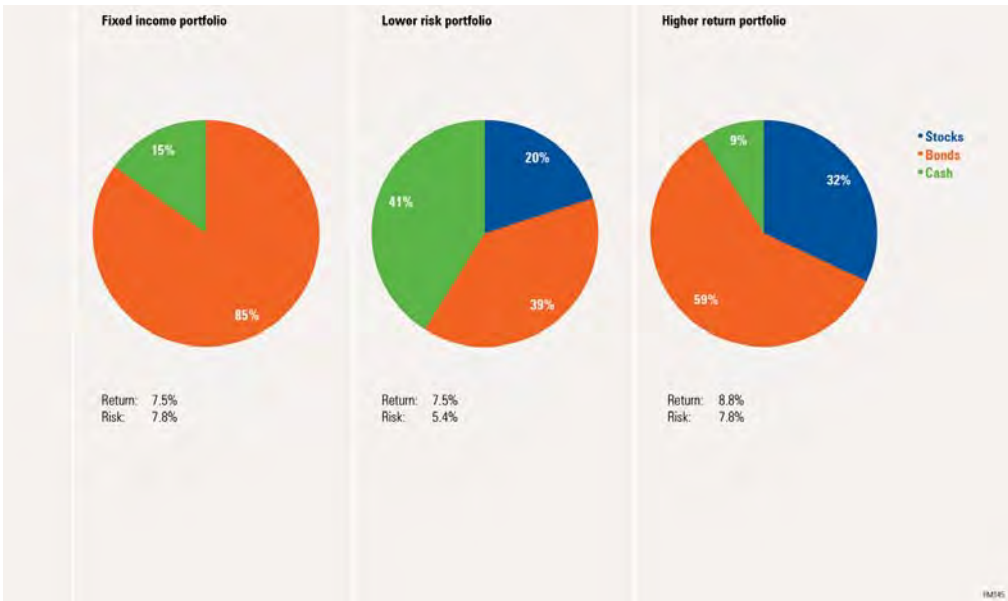


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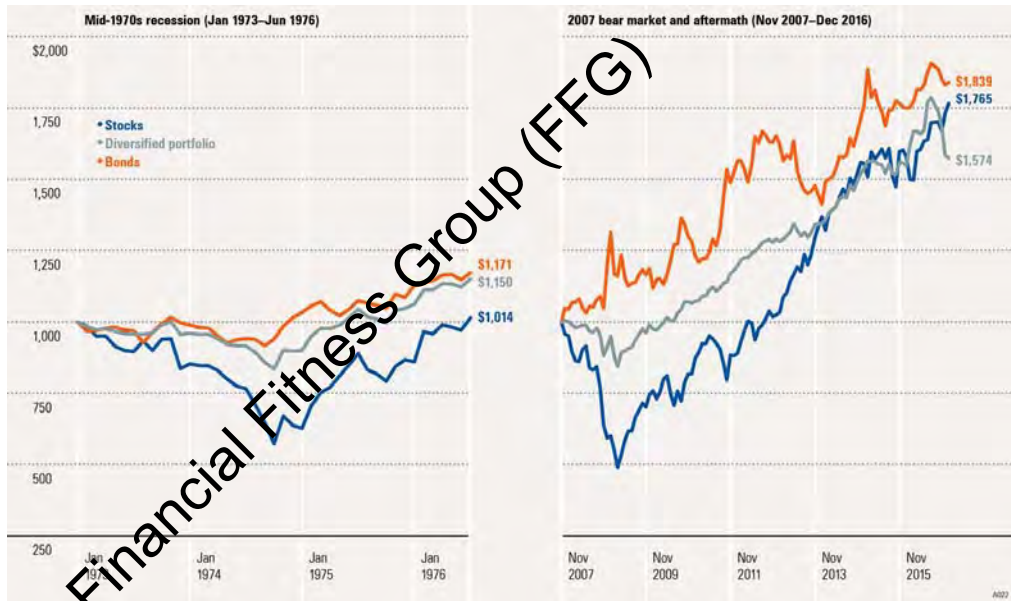
**Potential to Reduce Risk or Increase Return  
1970–2016**



Past performance is no guarantee of future results. Risk and return are measured by standard deviation and compound annual return, respectively. They are based on annual data over the period 1970–2016. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



**Diversified Portfolios in Various Market Conditions  
Performance during and after select bear markets**

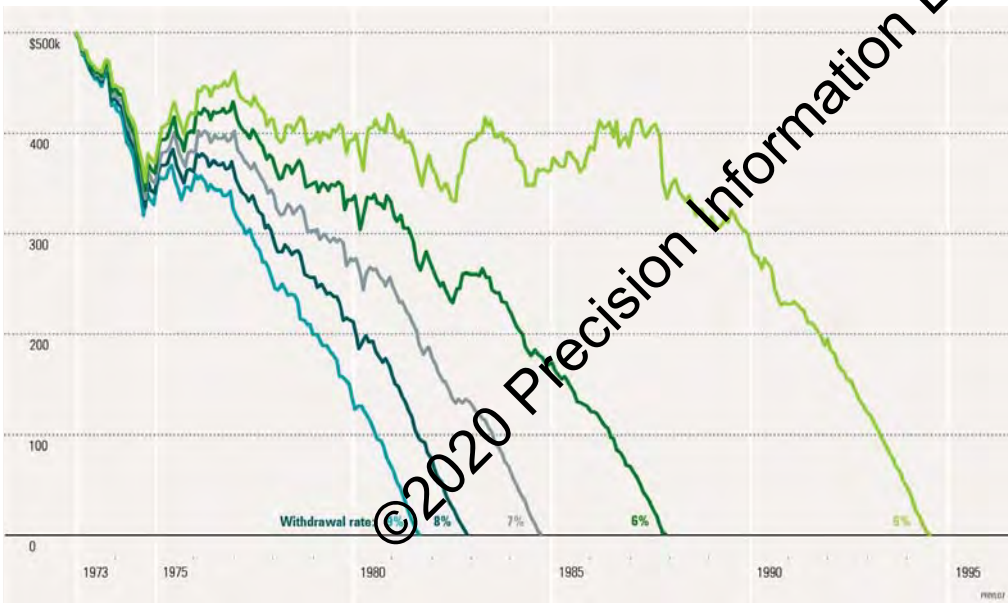


Past performance is no guarantee of future results. Diversified portfolio: 35% stocks, 40% bonds, 25% Treasury bills. Hypothetical value of \$1,000 invested at the beginning of January 1973 and November 2007, respectively. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



**Potential Shortfall: The Risk of High Withdrawal Rates**

Annual inflation-adjusted withdrawal as a % of initial portfolio wealth



Past performance is no guarantee of future results. Hypothetical value of \$500,000 invested at the beginning of 1973. Portfolio: 50% large stocks/50% intermediate-term bonds. Assumes reinvestment of income and no transaction costs or taxes. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



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# Growth and Value Investing

## Equity Investment Classification

### Large-cap

- ▶ 3,772 mutual funds
- ▶ 2,487 stocks

### Mid-cap

- ▶ 1,389 mutual funds
- ▶ 2,760 stocks

### Small-cap

- ▶ 1,808 mutual funds
- ▶ 7,403 stocks

## What Are Growth and Value Stocks?

### Growth stocks

- ▶ High growth rate of earnings, sales
- ▶ Low book-to-market, high price-to-earnings ratios
- ▶ Paying lower or no dividends

### Risks

- ▶ Future growth does not occur as expected
- ▶ Book-to-market ratios rise unexpectedly, price-to-earnings ratios decline unexpectedly

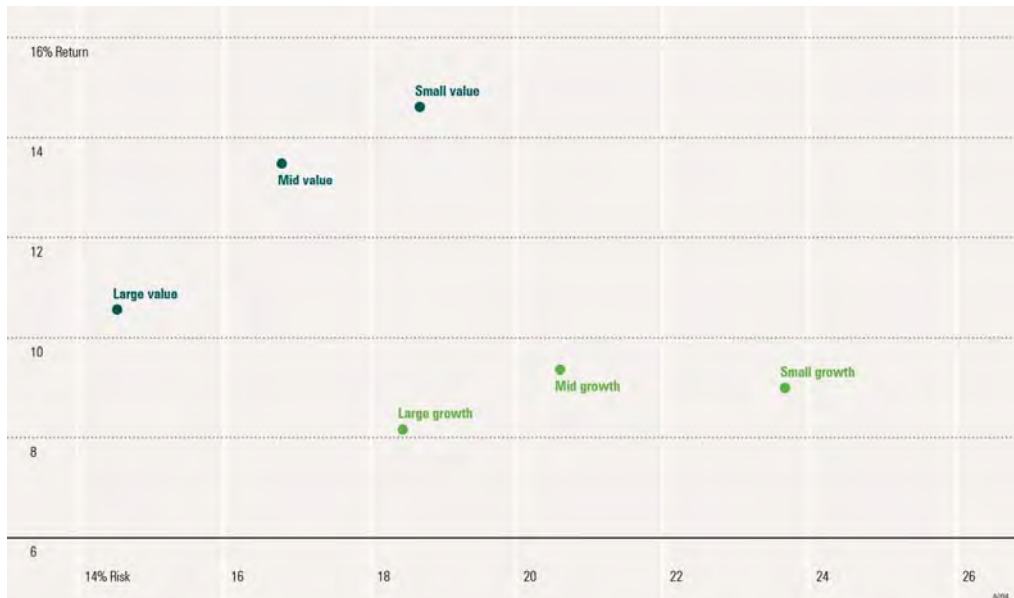
### Value stocks

- ▶ Slower growth of earnings and sales
- ▶ High book-to-market, low price-to-earnings ratios
- ▶ Higher dividend yields
- ▶ Turnaround opportunities

### Risks

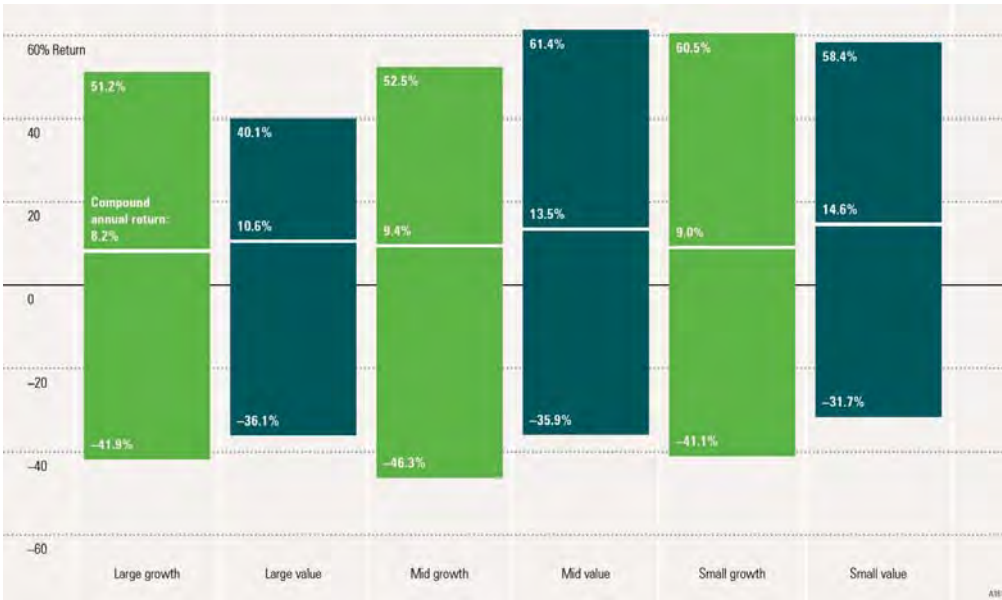
- ▶ Evaluation of stocks as good value is misread
- ▶ Difficult to stick to value policy when prices are driven down

## Risk and Return by Size and Style Growth and value stocks 1970–2016



## Range of Annual Returns

Growth and value stocks 1970–2016



Past performance is no guarantee of future results. Each bar shows the range of compound annual returns for each asset class over the time period analyzed. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## Growth and Value Investing

1970–2016

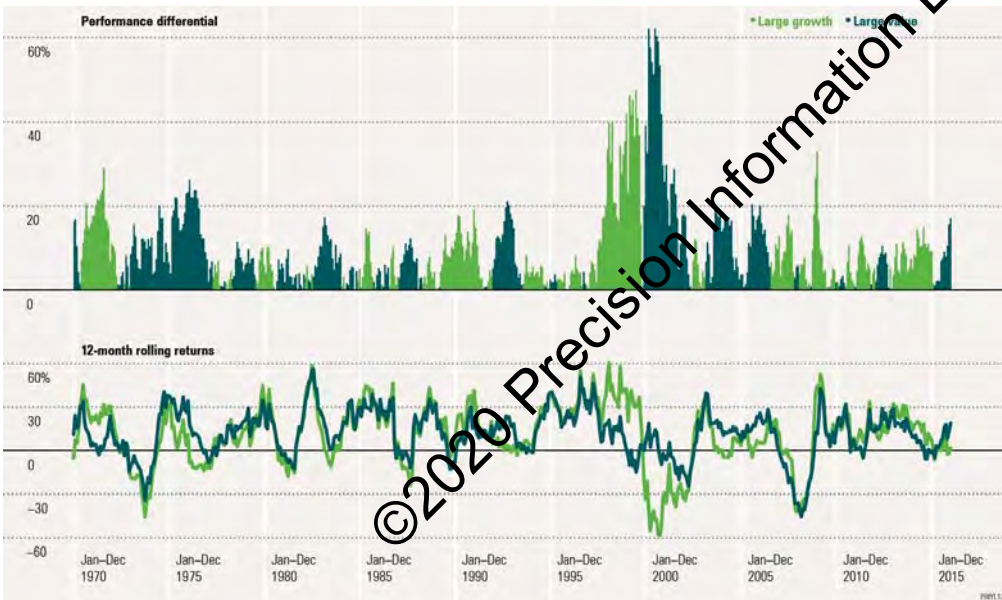


Past performance is no guarantee of future results. Hypothetical value of \$1 invested at the beginning of 1970. Assumes reinvestment of income and no transaction costs or taxes. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## One-Year Growth and Value Cycles

1970–2016

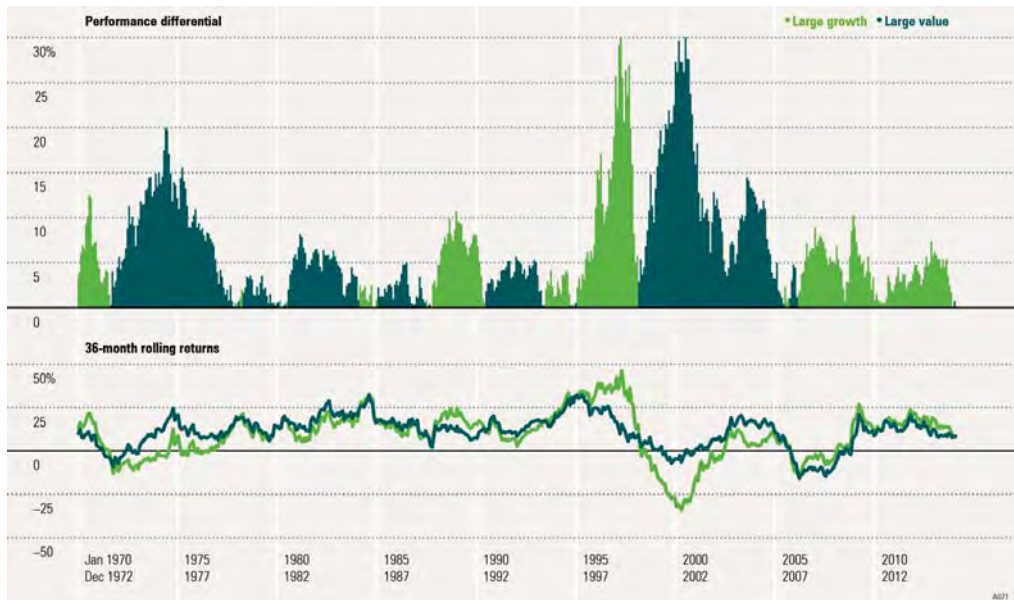


Past performance is no guarantee of future results. Performance differential measures the outperformance of each asset class over one another on a 12-month rolling basis. Each 12-month rolling return represents the annualized return over the prior 12 months. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## Three-Year Growth and Value Cycles

1970–2016

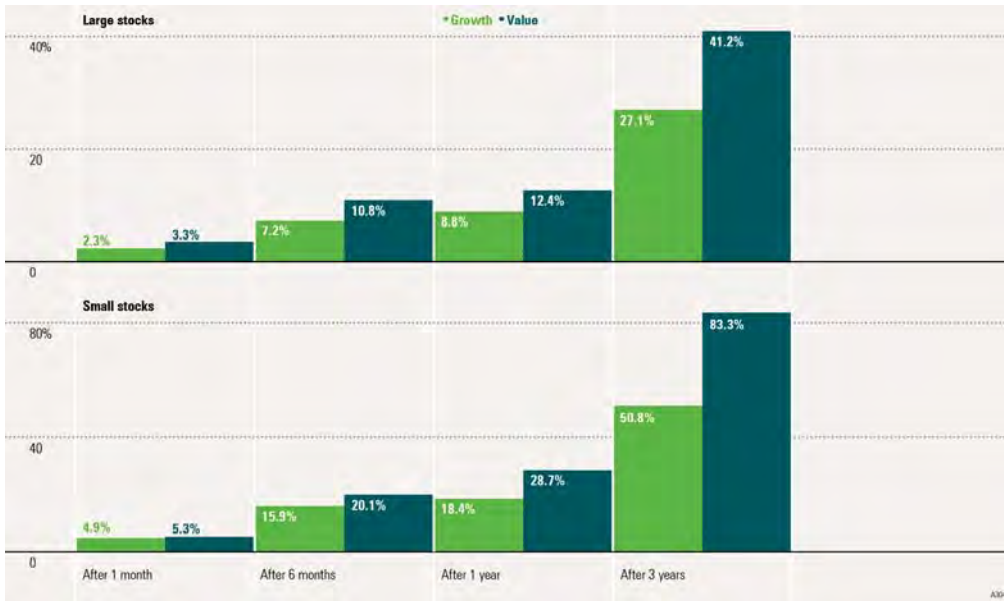


Past performance is no guarantee of future results. Performance differential measures the outperformance of each asset class over one another on a 36-month rolling basis. Each 36-month rolling return represents the annualized return over the prior 36 months. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



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## Growth and Value Performance After Recessions 1970–2016



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## Blending Growth and Value

- ▶ Balance growth investments with those that produce income
- ▶ Invest in both large and small companies, as well as a mix of well established and new companies
- ▶ Consider investments that are currently out of favor and have potential to increase in value
- ▶ Blending effectively may cushion against the many ups and downs in the market

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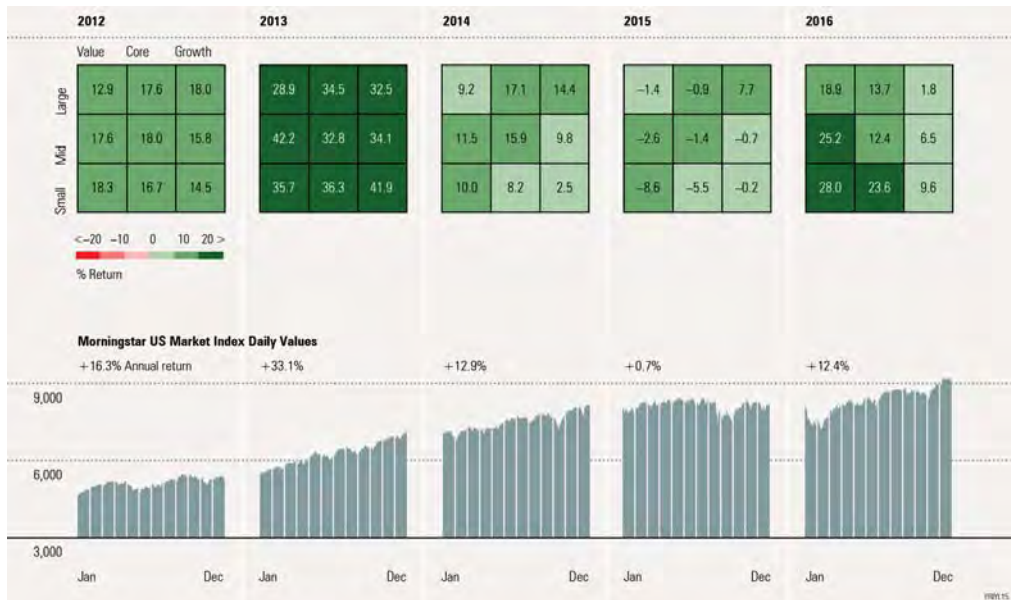
## Style Winners and Losers 2007–2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Highest returns	19.7 MG	-31.7 SV	44.4 LG	31.3 SG	2.2 LV	18.3 SV	42.2 MV	14.4 LG	7.7 LG	28.0 SV
	12.3 LG	-35.9 MV	42.0 MG	27.7 MG	1.5 LG	18.0 LG	41.9 SG	11.5 MV	1.2 LV	25.2 MV
	11.1 SG	-36.1 LV	40.3 SV	26.0 SV	-0.7 DP	17.6 MV	35.9 DP	10.7 LV	-0.7 MG	18.9 LV
	4.8 DP	-38.6 DP	36.0 MV	22.2 DP	-1.0 SG	16.2 DP	35.7 SV	9.8 MG	-1.0 DP	15.0 DP
	-0.4 LV	-39.9 SG	34.5 DP	20.6 MV	-1.8 SV	15.8 MG	14.1 MG	9.6 DP	-1.4 LV	9.6 SG
	-5.5 MV	-41.9 LG	33.0 SG	14.7 LV	-2.3 MG	1.5 SG	32.5 LG	9.2 LV	-2.6 MV	6.5 MG
Lowest returns	-8.1 SV	-46.3 MG	11.4 LV	12.9 LG	17.6 MV	12.9 LV	28.9 LV	2.5 SG	-8.6 SV	1.8 LG

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## Morningstar Market Barometer 2012–2016



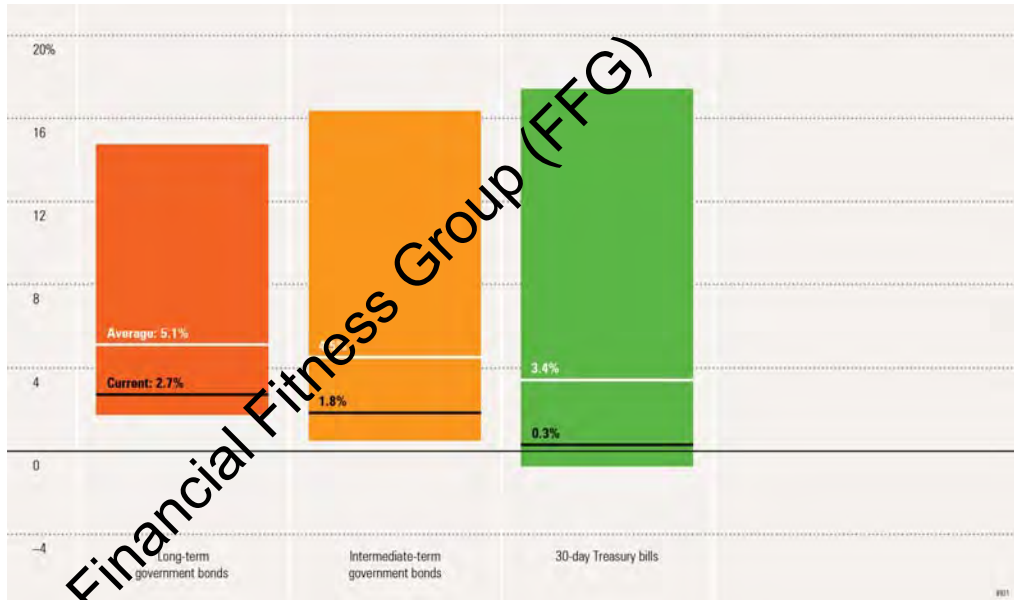
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# Investing in a Rising-Interest-Rate Environment

## History of Interest Rates January 1926–December 2016



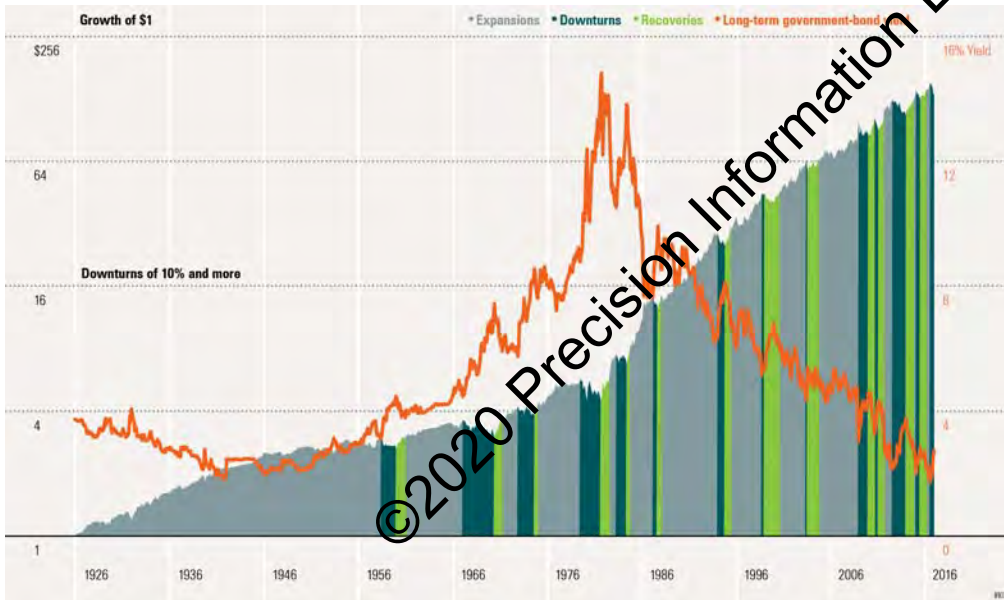
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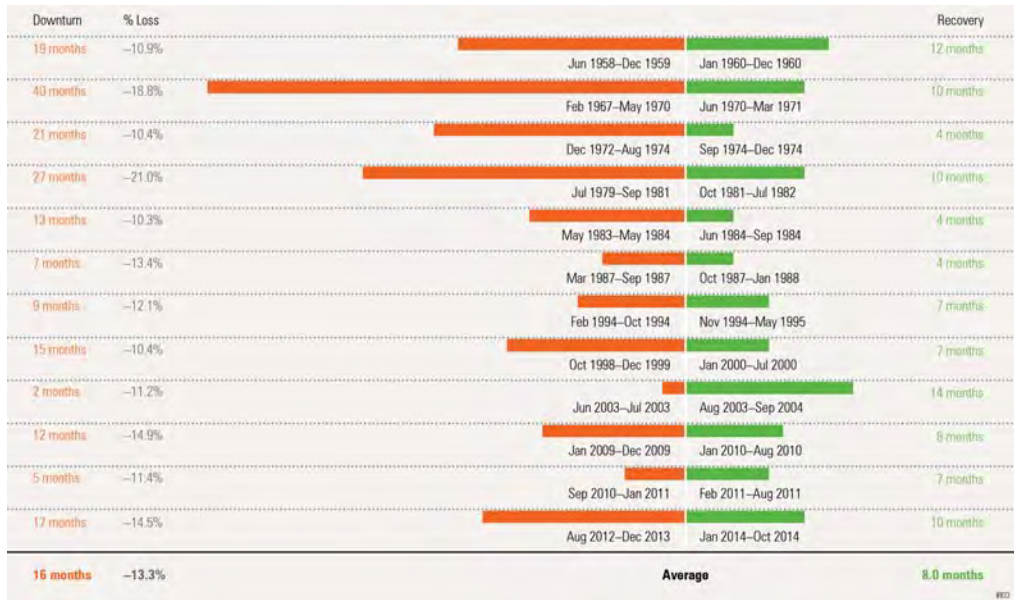
## Long-Term Government Bonds' Downturns and Recoveries January 1926–December 2016



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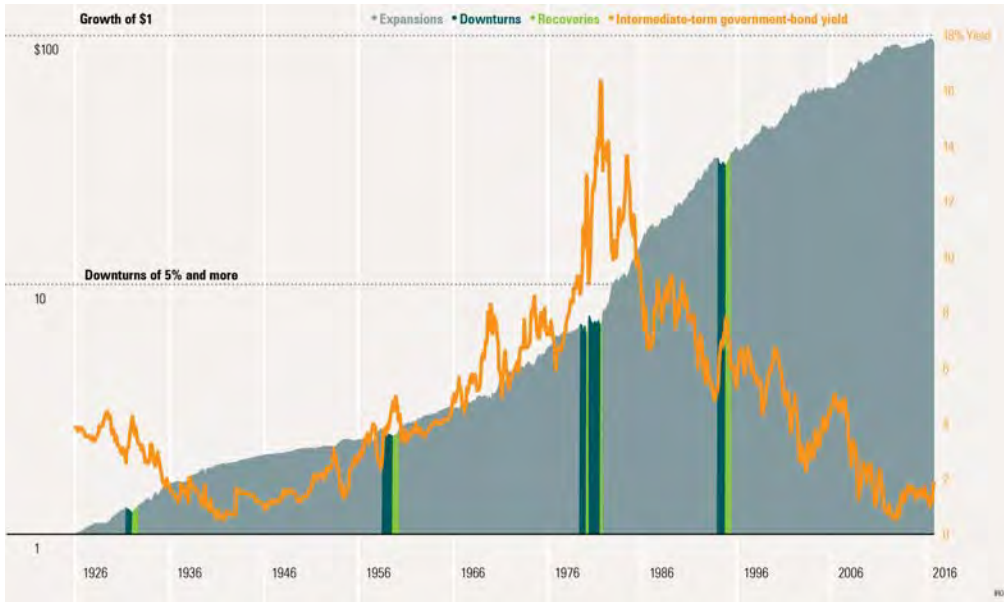
## Long-Term Government Bonds' Downturns and Recoveries January 1926–December 2016



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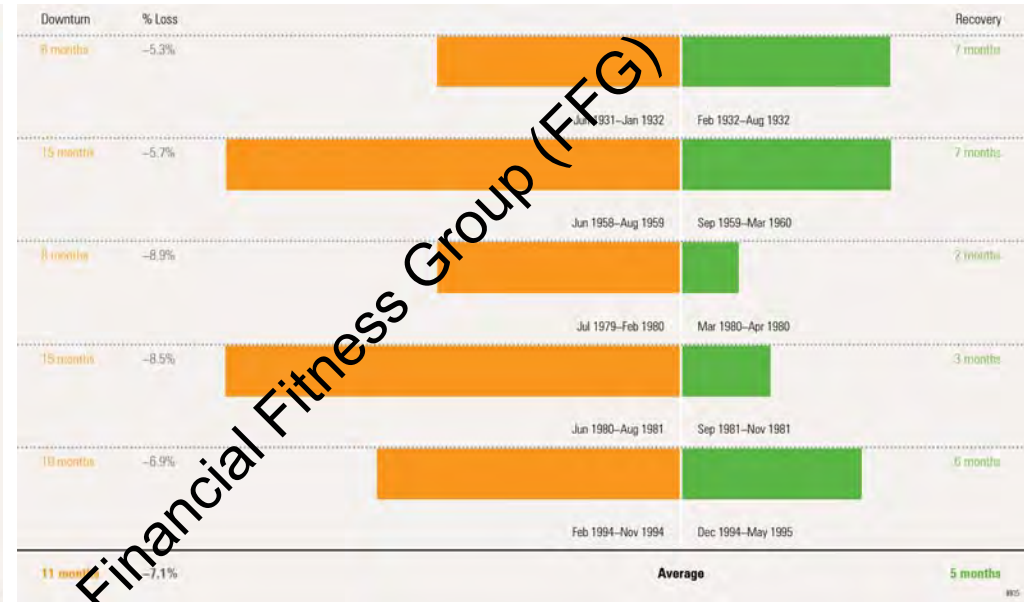
## Intermediate-Term Government Bonds' Downturns and Recoveries January 1926–December 2016



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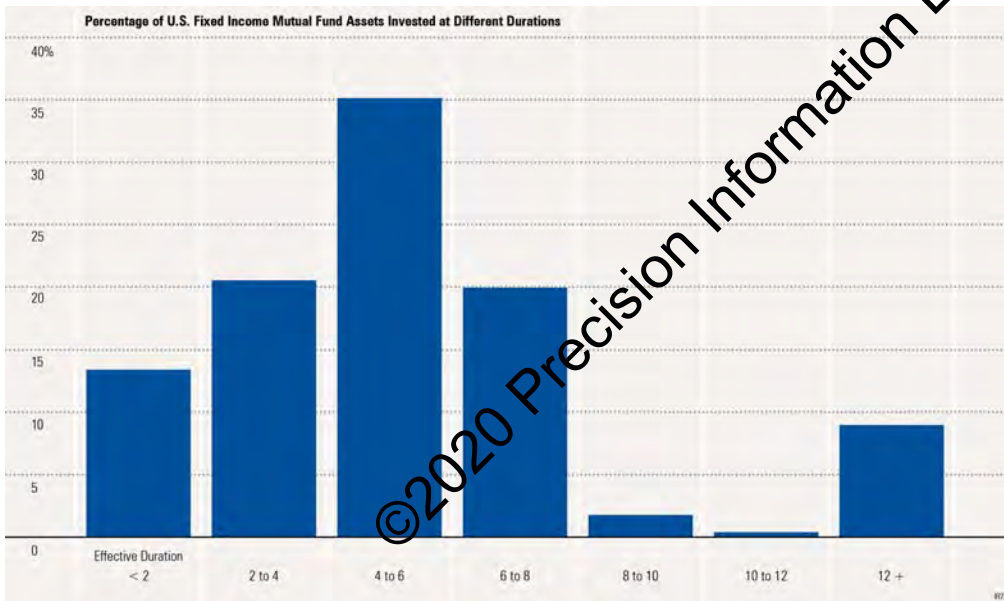
## Intermediate-Term Government Bonds' Downturns and Recoveries January 1926–December 2016



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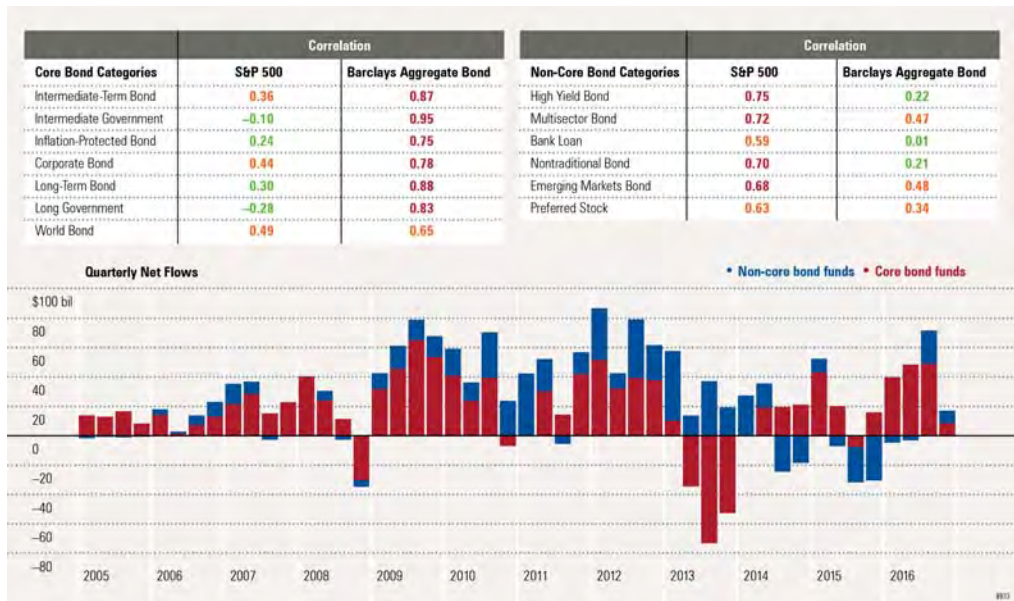
## Fixed Income Mutual Fund Assets by Duration December 2016



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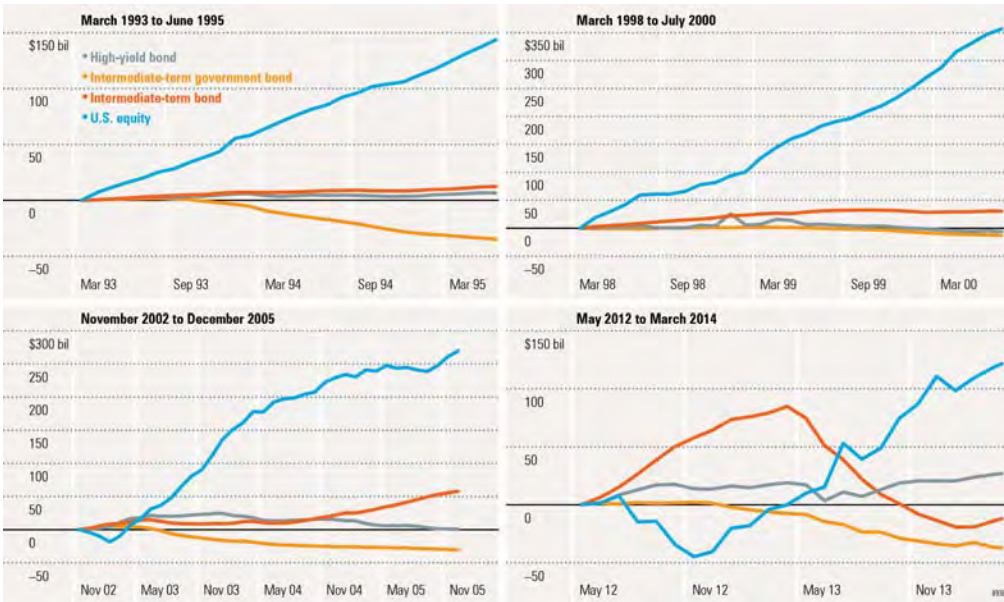
## Core Versus Non-Core Fixed Income January 2005–December 2016 (quarterly)



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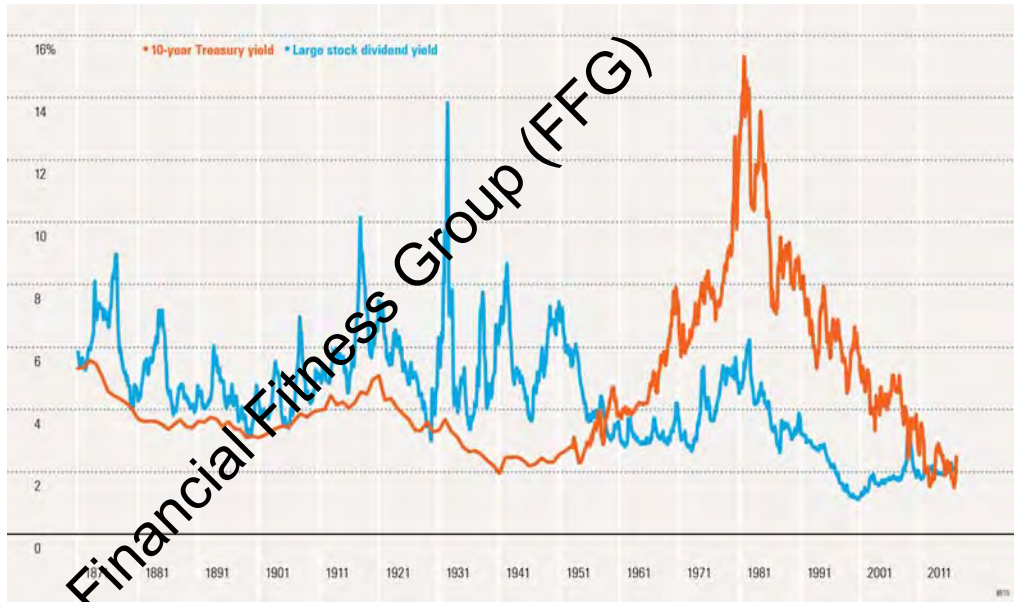
### Cumulative Flows During the Past Four Periods of Rising Interest Rates January 1993–December 2016



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### Large Stock Dividend Yield Versus 10-Year Treasury Yield January 1871–December 2016



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### Monetary Policy Classification System

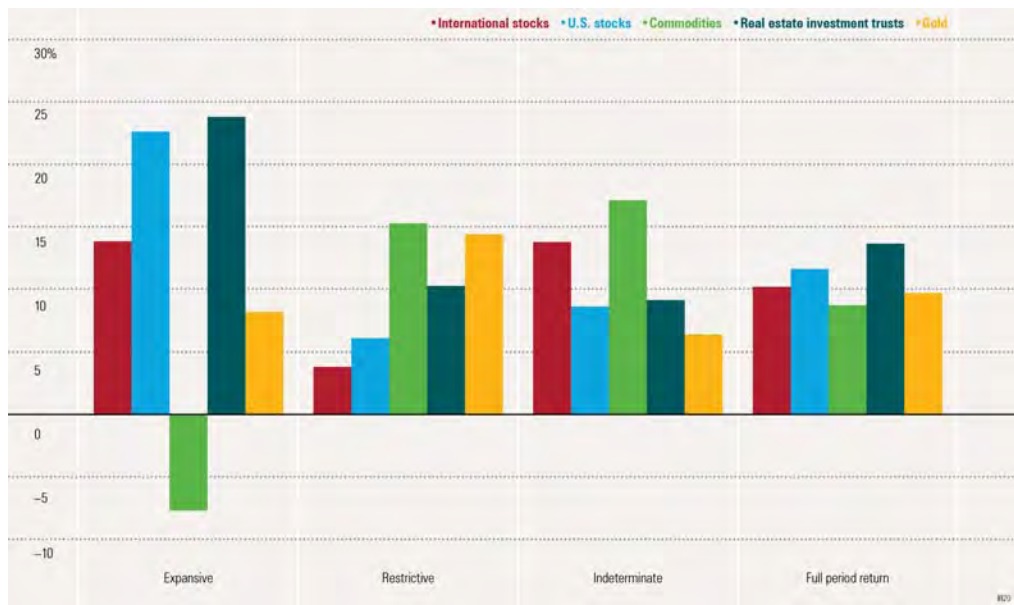
The following slides examine periods of *expansive*, *restrictive*, or *indeterminate* monetary policy.

- ▶ **Expansive:** A period when the Federal Reserve decreased the discount rate and followed it up with actions that resulted in decreases in the federal funds rate. Since 1955, Fed policy has followed an unconstrained or expansive policy approximately 30% of the time.
- ▶ **Restrictive:** A period when the Federal Reserve increased the discount rate and followed it up with actions that resulted in increases in the federal funds rate. Since 1955, approximately 33% of months are classified as constrained or restrictive policy months.
- ▶ **Indeterminate:** A period where the discount rate and the federal funds rate are moving in opposite directions. The Federal Reserve's intentions can't be clearly determined. This classification captures the remaining 37% of the time when the Fed's policy intentions cannot be clearly classified.

Source: Classification system from Invest with the Fed: Maximizing Portfolio Performance by Following Federal Reserve Policy by Robert Johnson, Gerald Jensen, and Luis Garcia-Feijoo



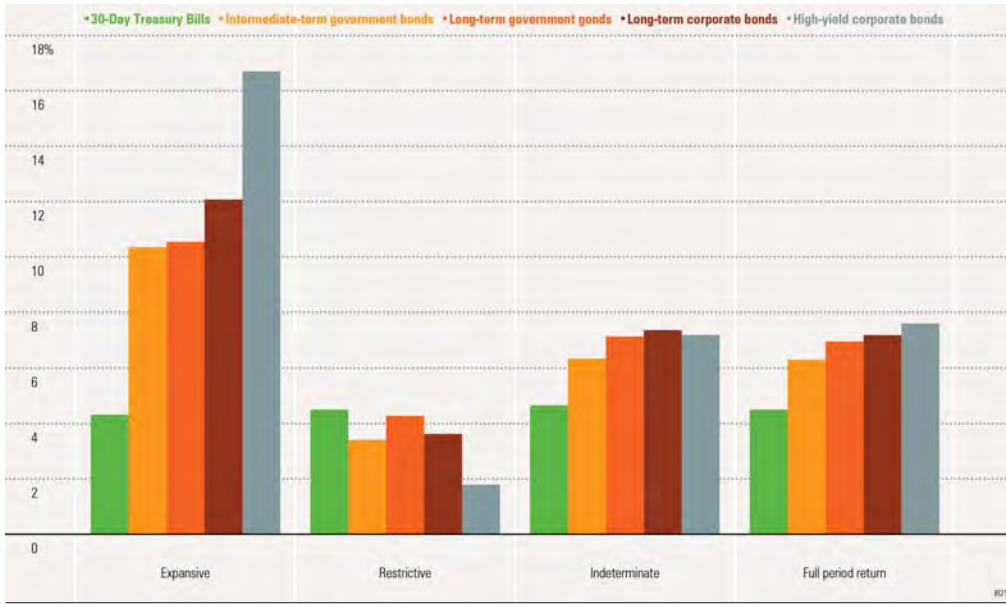
### Average Performance of Asset Classes During Different Federal Reserve Regimes February 1972 to December 2016



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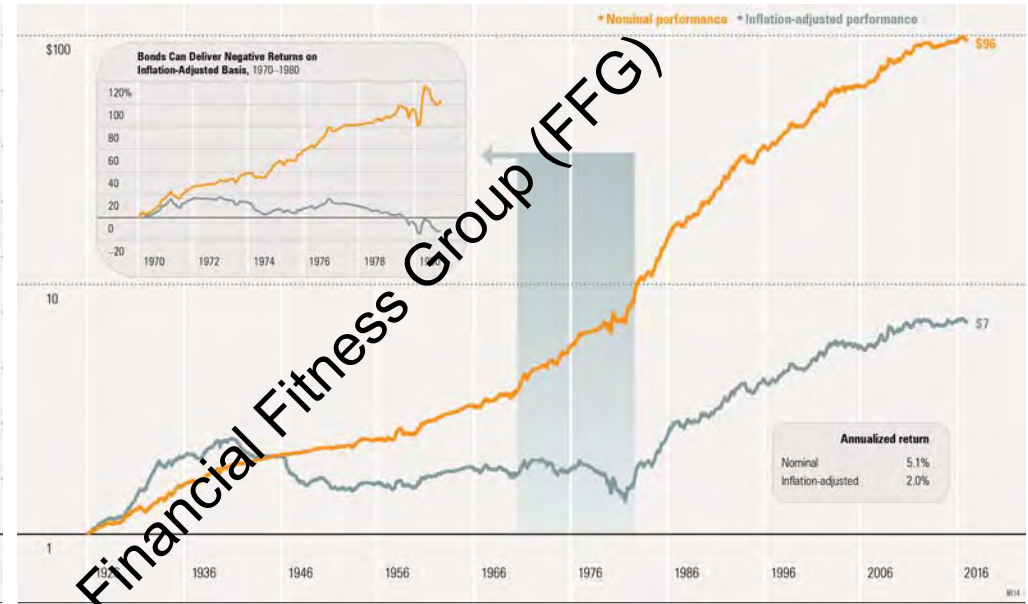
**Average Performance of Fixed Income Sectors During Different Federal Reserve Regimes (May 1955 to December 2016)**



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**Inflation, Not Rising Rates, Biggest Bond Threat in the Long Term**  
Intermediate-Term Government Bonds, January 1926–December 2016



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# Investor Behavior

## Seeing Is Not Believing

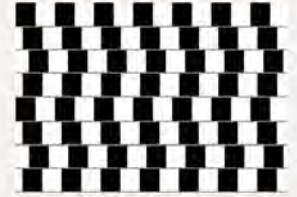
Which gray circle is bigger?



Which gray bar is longer?



Are the gray horizontal lines parallel?



## Rational Minds Can Act Irrationally

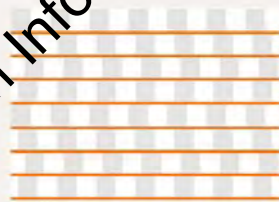
They are the same size



They are the same size



The horizontal lines are parallel



## The Efficient-Market Theory

- ▶ Security prices efficiently incorporate all public information
- ▶ They reflect their true investment value at all times
- ▶ Asset allocation relies on market efficiency and rational investor behavior
- ▶ However, investors do not always behave rationally

## Patterns of Investor Irrationality

- ▶ Overconfidence
- ▶ Hindsight bias
- ▶ Short-term focus
- ▶ Regret
- ▶ Mental accounting
- ▶ Hot-hand fallacy

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## Overconfidence

### Definition

- ▶ Rating oneself as above average when it comes to selecting investments

### Implications

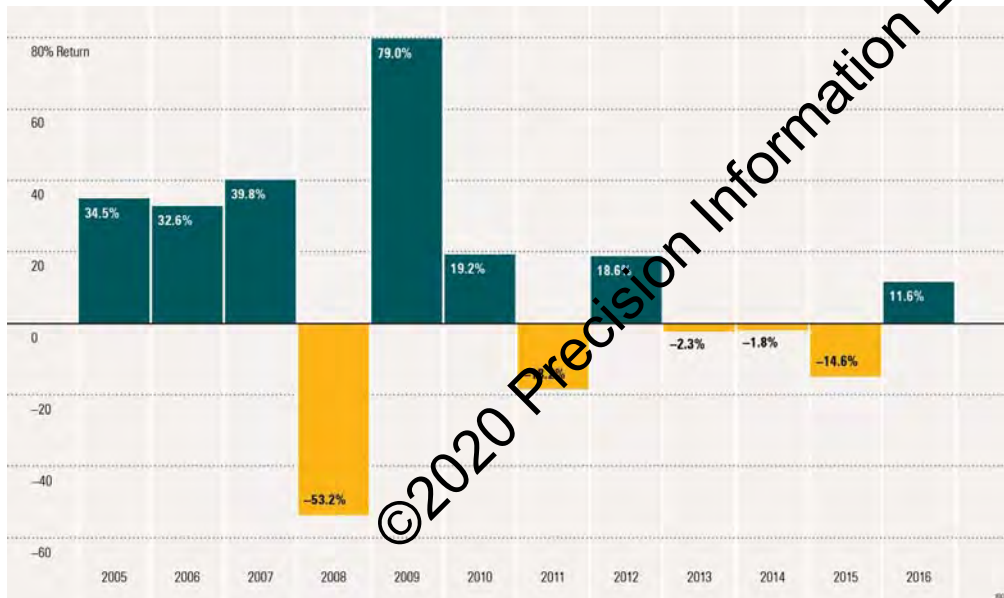
- ▶ Miscalculating the probability of good outcomes
- ▶ Focusing on the potential upside of investments
- ▶ De-emphasizing the potential downside of investments

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## Overconfidence: False Perception

Historical performance of emerging-market stocks 2005–2016



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## Hindsight Bias

### Definition

- ▶ Believing that unpredictable past events, in retrospect, were obvious and predictable

### Implications

- ▶ Feelings of anger and regret
- ▶ Failure to avoid what appears to have been foreseeable
- ▶ Overconfidence

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## Hindsight Bias: Technology and Real Estate Bubbles

An examination of technology stocks and home values



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## Short-Term Focus

### Definition

- ▶ Inappropriately focusing on short-term risk versus long-term risk

### Implications

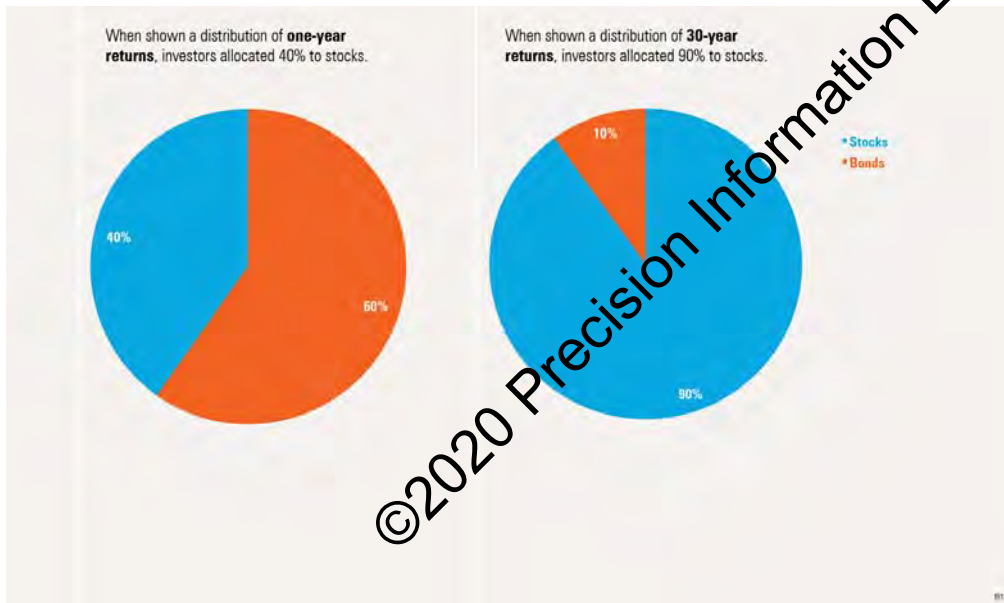
- ▶ Many investors talk long term but act short-term
- ▶ Overly sensitive to interim volatility regardless of time horizon
- ▶ May tend to behave as though their time horizon is far shorter than it truly is

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## Short-Term Focus: Avoiding Potential Near-Term Losses

Choice of asset allocation after examining different return distributions

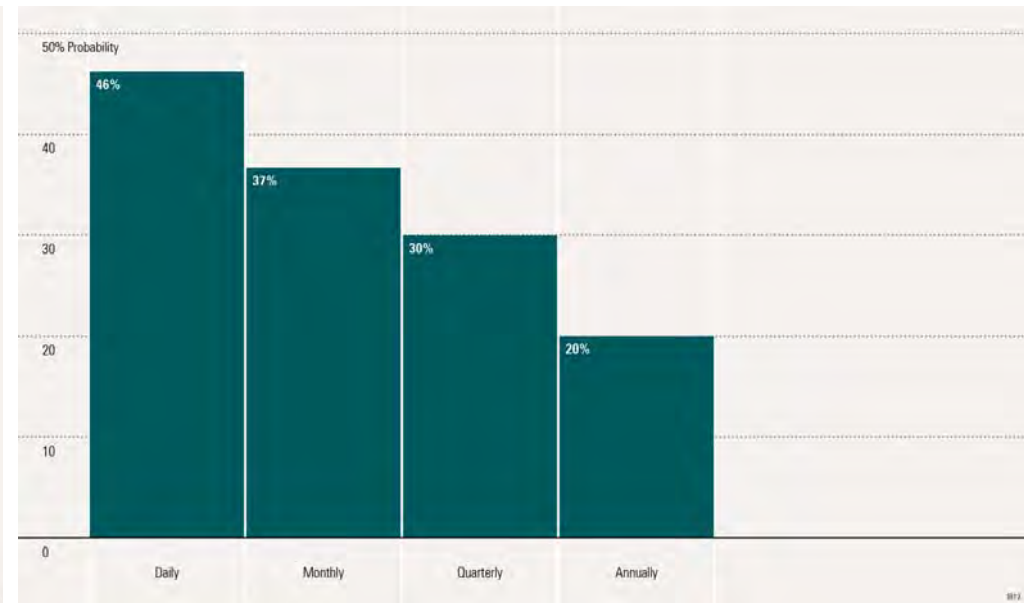


Source: Shlomo Benartzi and Richard H. Thaler, "Risk Aversion or Myopia? Choices in Repeated Gambles and Retirement Investments," March 1999. © Morningstar. All Rights Reserved.



## Short-Term Focus: Coping with Near-Term Fluctuations

Probability of losing money in the market 1997–2016



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## Regret

### Definition

- ▶ Having illogical feelings of guilt because of a poor outcome

### Implications

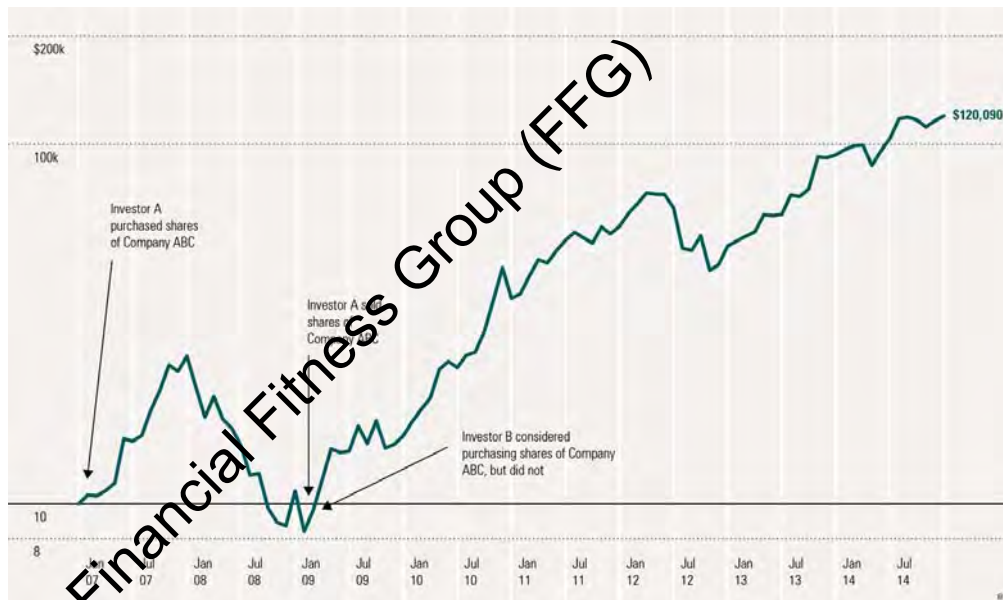
- ▶ Investors' future investment decisions might be affected
- ▶ Can cause investors to become more risk averse/risk tolerant
- ▶ These individuals may blame advisors for perceived mistakes

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## Regret: Action Versus Inaction

Analyzing various types of regret



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## Mental Accounting

### Definition

- ▶ Mentally compartmentalizing investments while ignoring the aggregate portfolio

### Implications

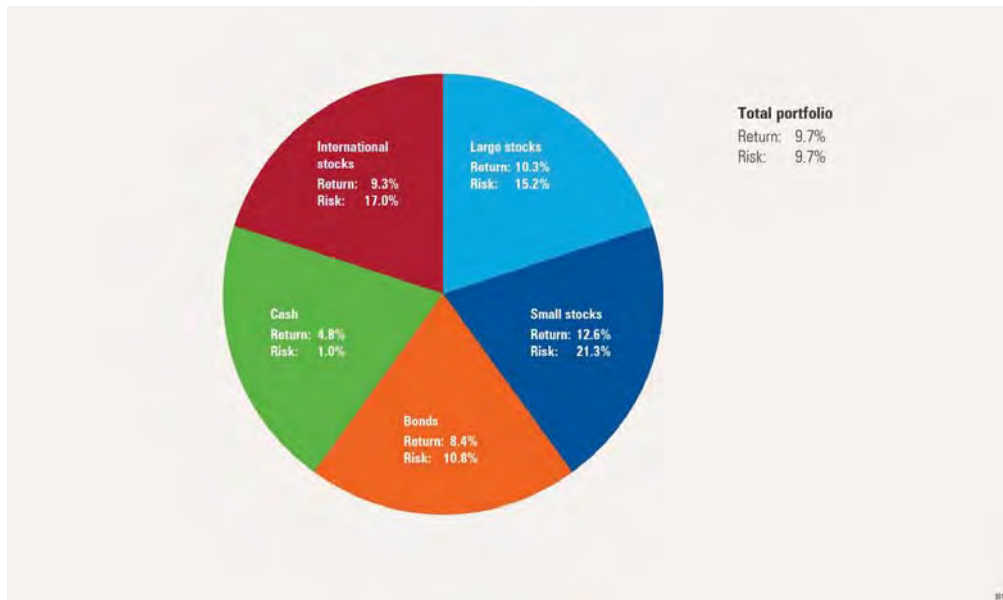
- ▶ Investors tend to disaggregate a diversified portfolio
- ▶ Risk and return components viewed in a vacuum
- ▶ Leads to heightened concern about the riskiness of a component of a portfolio

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## Mental Accounting: Sum of the Parts

Risk and return characteristics 1970–2016



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## Hot-Hand Fallacy

### Definition

- ▶ Perceiving trends where none exist and consequently taking action on this faulty observation

### Implications

- ▶ Investors desire to invest in last year's winners
  - ▶ Favoring a "hot" money manager or asset class
- ▶ Skill is inferred from a random pattern of chance
- ▶ Can lead to erroneous assumptions and predictions

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## Hot-Hand Fallacy: Asset-Class Winners and Losers

Annual performance of various asset classes 1997–2016

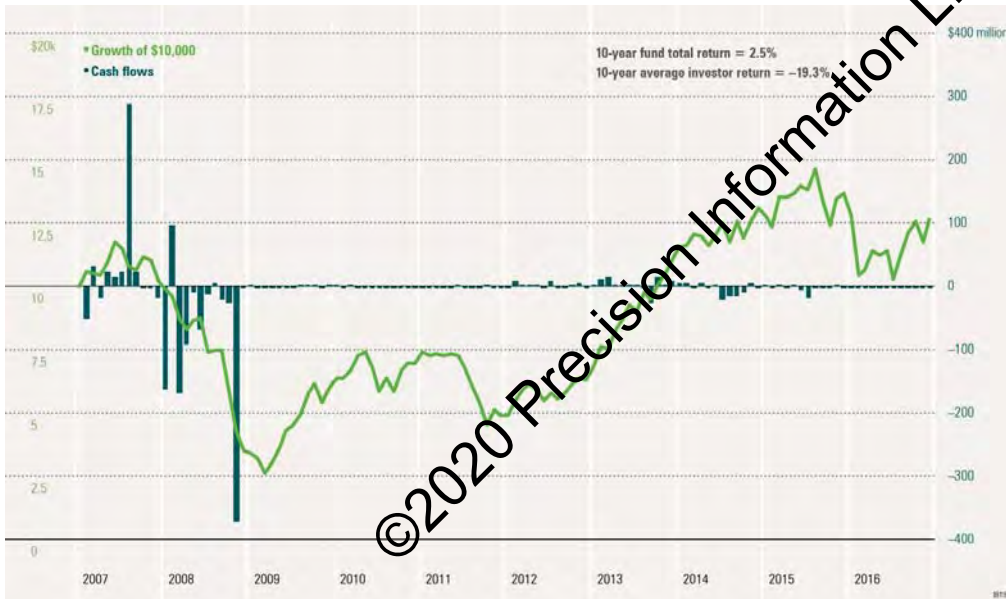


Past performance is no guarantee of future results. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. The diversified portfolio is equally weighted between small stocks, large stocks, long-term government bonds, Treasury bills, and international stocks (20% each). © Morningstar. All Rights Reserved.



## Hot-Hand Fallacy: Chasing Fund Performance

Wealth versus cash flows 2007–2016



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## Summary

- ▶ Investor misconceptions can be dangerous
- ▶ They need to be identified early and countered in an appropriate manner
- ▶ Markets and investing must be viewed in a rational and productive manner

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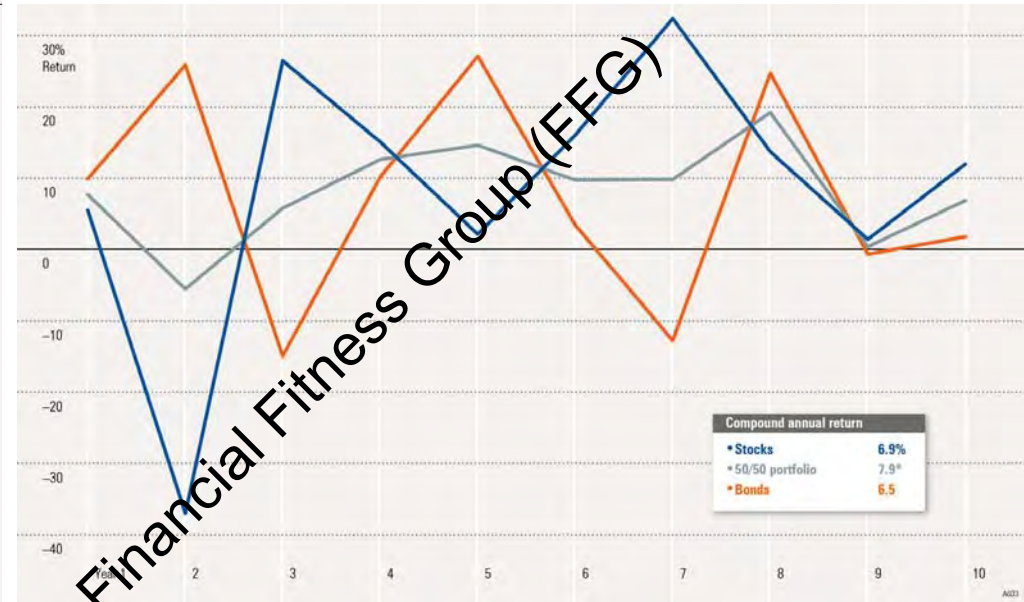


# Portfolio Diversification and Performance

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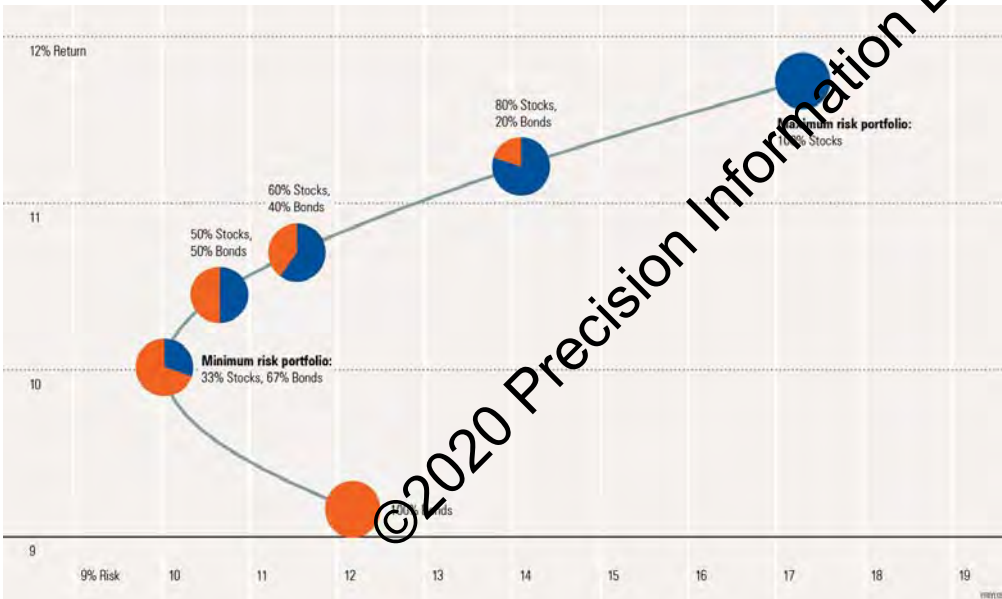
## The Case for Diversifying 2007–2016



Past performance is no guarantee of future results. \*The return of the portfolio is higher than the returns of the constituent asset classes due to a phenomenon called "the rebalancing bonus," which occurred due to the unusual behavior of stocks and bonds over the time period analyzed. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## Stocks and Bonds: Risk Versus Return 1970–2016



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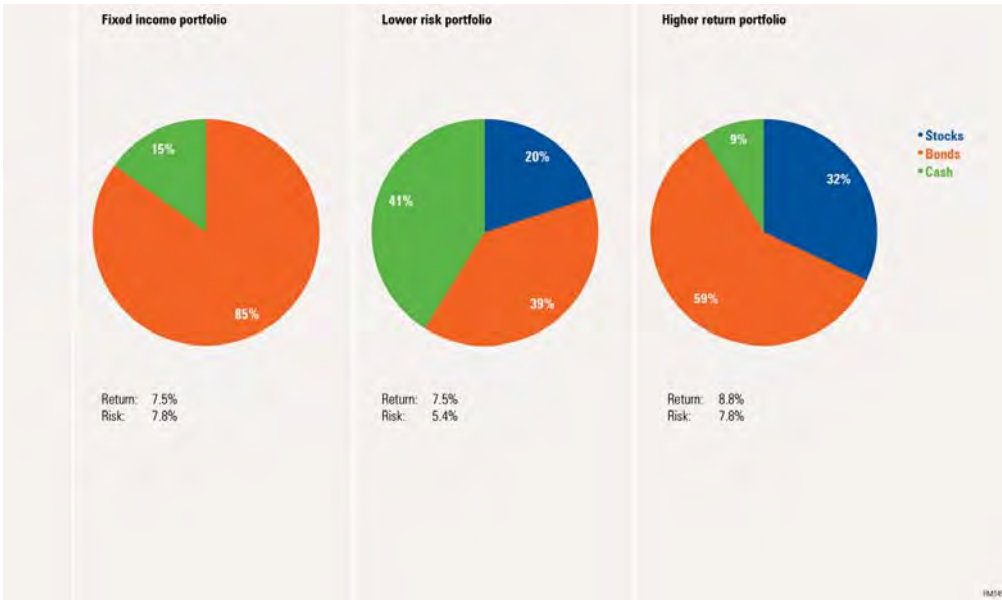
## Diversified Portfolios in Various Market Conditions Performance during and after select bear markets



Past performance is no guarantee of future results. Diversified portfolio: 35% stocks, 40% bonds, 25% Treasury bills. Hypothetical value of \$1,000 invested at the beginning of January 1973 and November 2007, respectively. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



**Potential to Reduce Risk or Increase Return**  
1970–2016



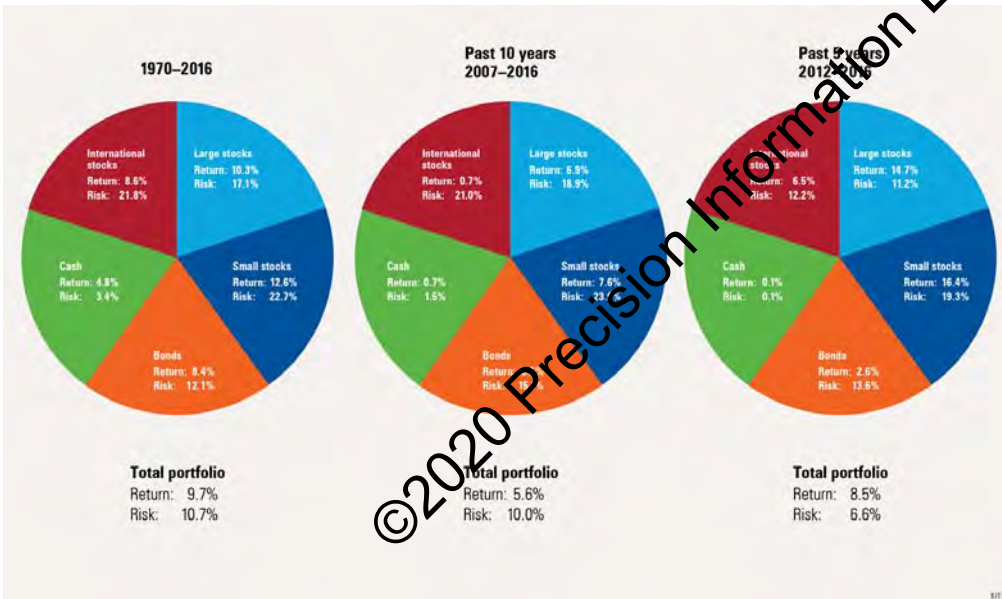
Past performance is no guarantee of future results. Risk and return are measured by standard deviation and compound annual return, respectively. They are based on annual data over the period 1970–2016. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.

**Correlation Can Help Evaluate Potential Diversification Benefits**  
Asset-class correlation 1926–2016

	Small stocks	Large stocks	LT corporate bonds	LT gov't bonds	IT gov't bonds	Treasury bills
Small stocks	1.00					
Large stocks	0.80	1.00				
LT corporate bonds	0.04	0.15	1.00			
LT gov't bonds	0.10	0.00	0.89	1.00		
IT gov't bonds	-0.11	-0.03	0.86	0.86	1.00	
Treasury bills	-0.09	-0.02	0.16	0.18	0.47	1.00

Past performance is no guarantee of future results. Correlation ranges from -1 to 1, with -1 indicating that the returns move perfectly opposite to one another, 0 indicating no relationship, and 1 indicating that the asset classes react exactly the same. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.

**A Diversified Portfolio: Sum of the Parts**  
Risk and return characteristics



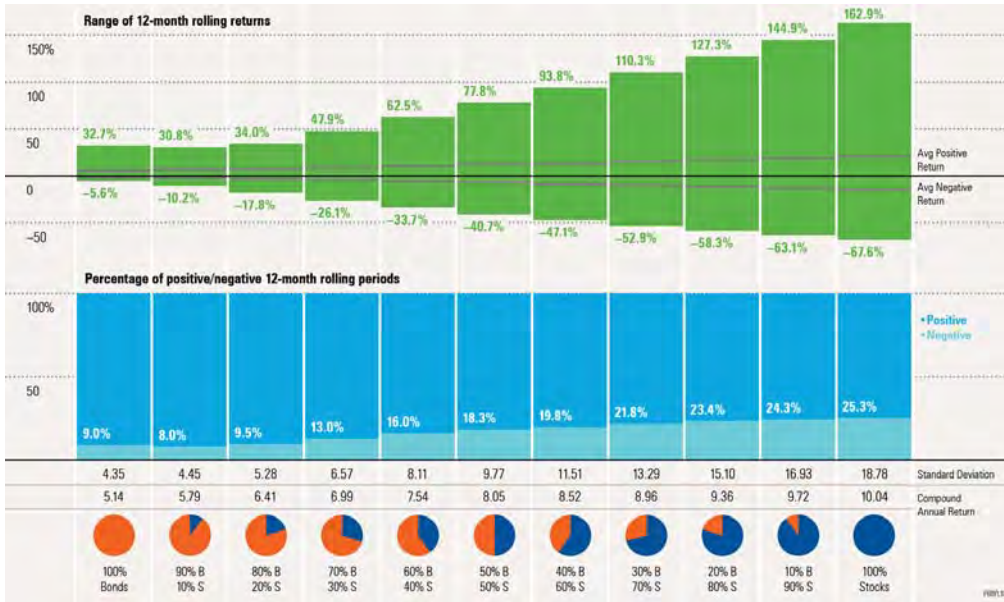
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**Asset-Class Winners and Losers**



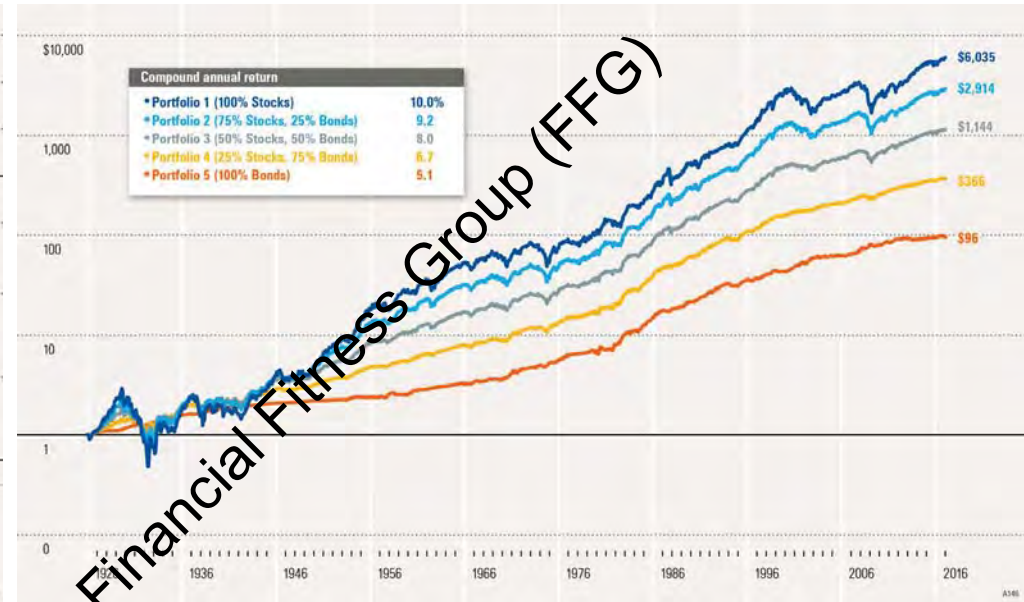
Past performance is no guarantee of future results. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. The diversified portfolio is equally weighted between small stocks, large stocks, long-term government bonds, Treasury bills, and international stocks (20% each). © Morningstar. All Rights Reserved.

## Hypothetical Portfolio Performance 1926–2016



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## Long-Term Portfolio Performance 1926–2016



Past performance is no guarantee of future results. Hypothetical value of \$1 invested at the beginning of 1926. Assumes reinvestment of income and no transaction costs or taxes. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.

## 20-Year Portfolio Performance 1997–2016



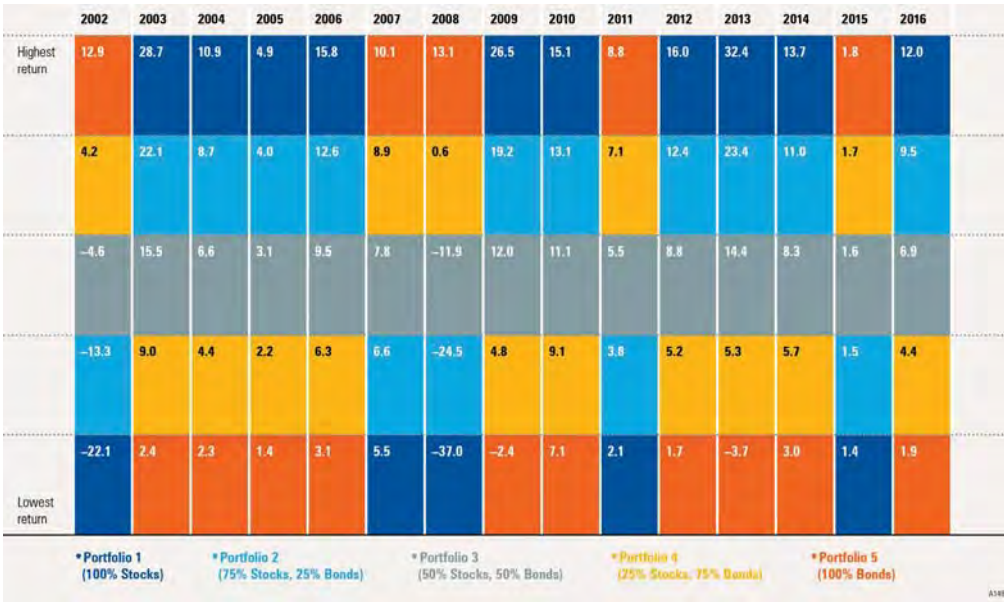
Past performance is no guarantee of future results. Hypothetical value of \$1 invested at the beginning of 1997. Assumes reinvestment of income and no transaction costs or taxes. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.

## Portfolio Summary Statistics Rolling periods 1926–2016

	Average return	12-month holding period			60-month			120-month		
		Highest return	Lowest return	Negative periods	Highest return	Lowest return	Negative periods	Highest return	Lowest return	Negative periods
100% Stocks	10.0%	162.9%	-67.6%	25.3%	36.1%	-17.4%	12.6%	21.4%	-4.9%	5.4%
75% Stocks, 25% Bonds	9.2%	118.7%	-55.7%	22.7%	29.0%	-11.5%	7.4%	17.7%	-1.3%	0.9%
50% Stocks, 50% Bonds	8.1%	77.8%	-40.7%	18.3%	22.2%	-6.1%	4.6%	16.2%	1.5%	0.0%
25% Stocks, 75% Bonds	6.7%	40.9%	-22.0%	10.9%	20.0%	-1.2%	0.3%	14.9%	3.3%	0.0%
100% Bonds	5.2%	32.7%	-5.6%	9.0%	19.5%	0.7%	0.0%	13.7%	1.2%	0.0%

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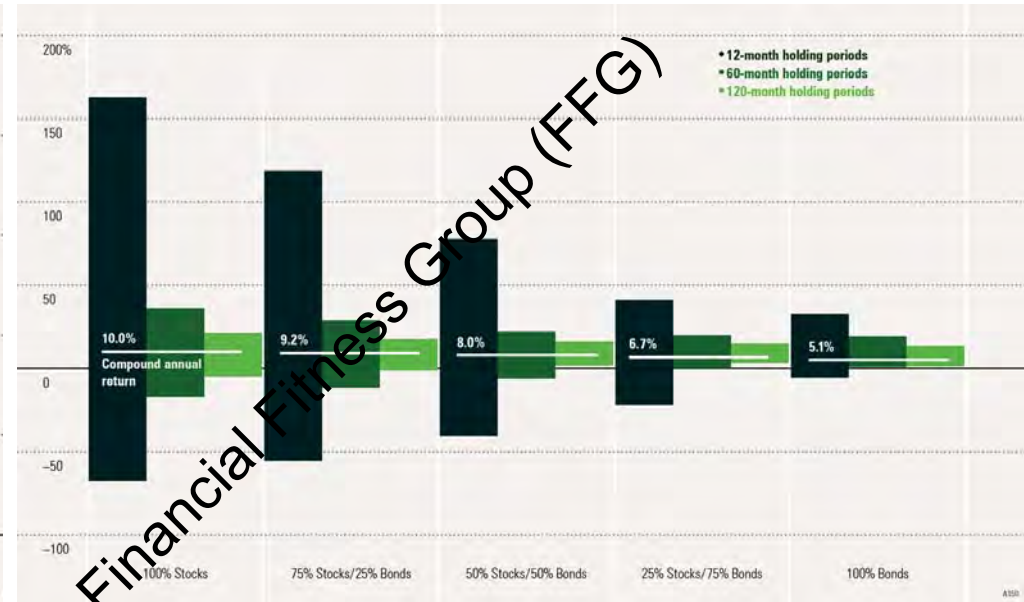
### Diversification May Lessen the Impact of Market Swings



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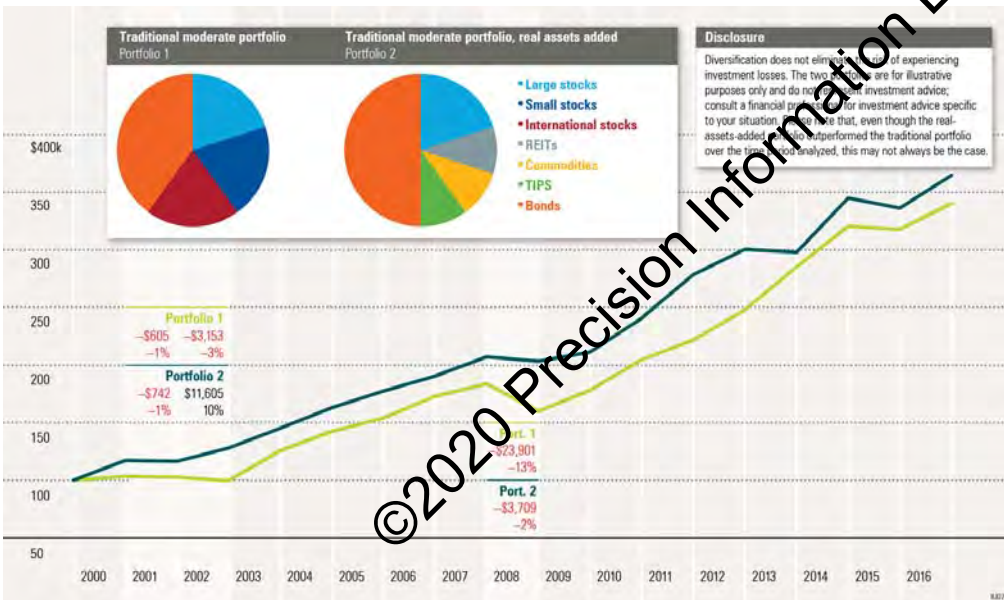
### Portfolio Risk Appears to Diminish Over Time 1926–2016



Past performance is no guarantee of future results. Each bar shows the range of rolling returns for each asset class over the period 1926–2016. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



### Enhancing Diversification Using Real Assets Annual returns

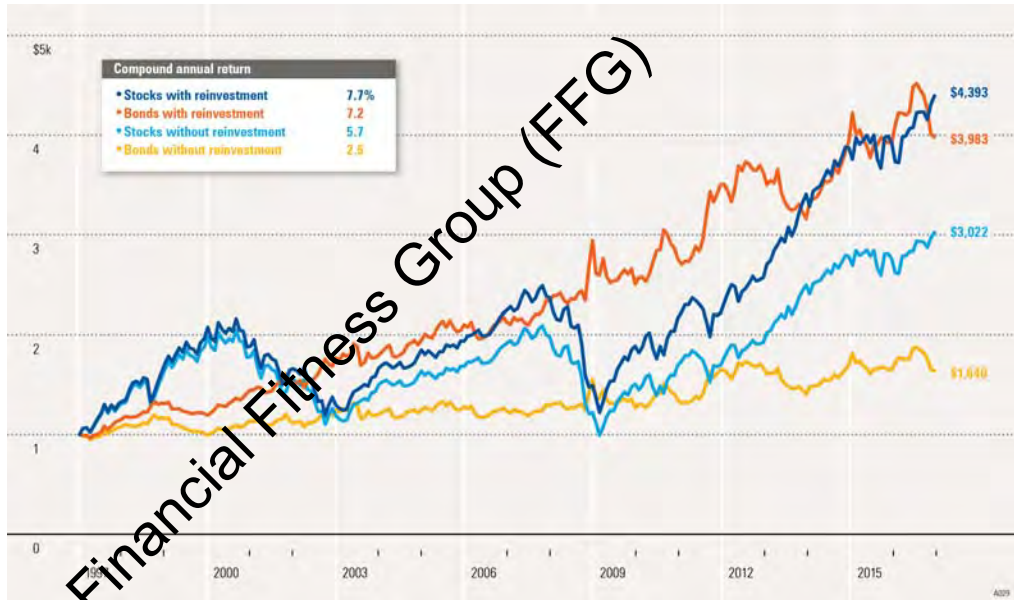


Past performance is no guarantee of future results. Hypothetical value of \$100,000 invested at the beginning of 2000. Assumes reinvestment of income and no transaction costs or taxes. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. Highlighted areas represent years when Portfolio 1 experienced losses. © Morningstar. All Rights Reserved.



# Principles of Investing

## Power of Reinvesting 1997–2016



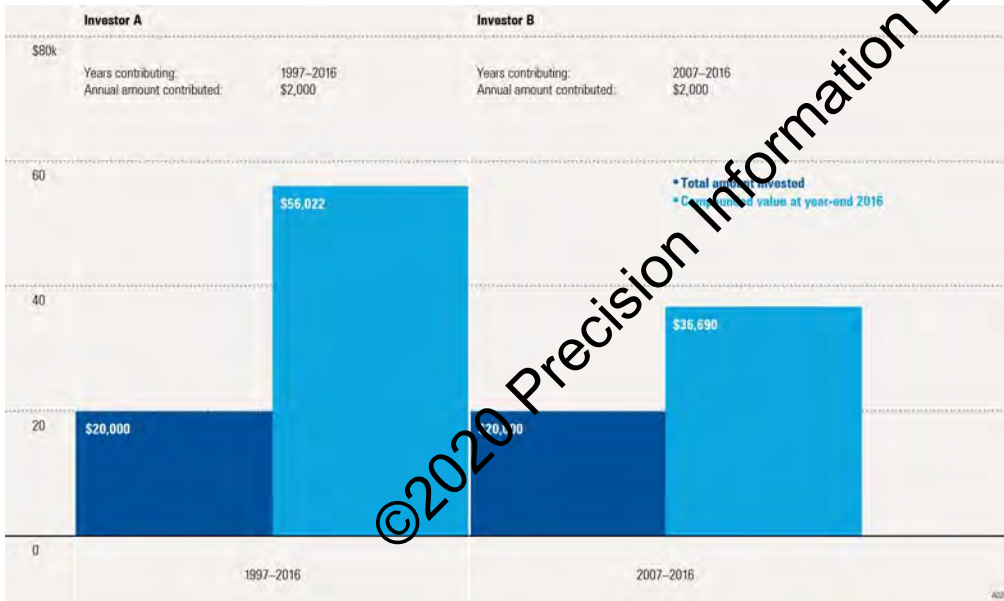
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Past performance is no guarantee of future results. Hypothetical value of \$1,000 invested for the last 20 years. Data does not account for taxes or transaction costs. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



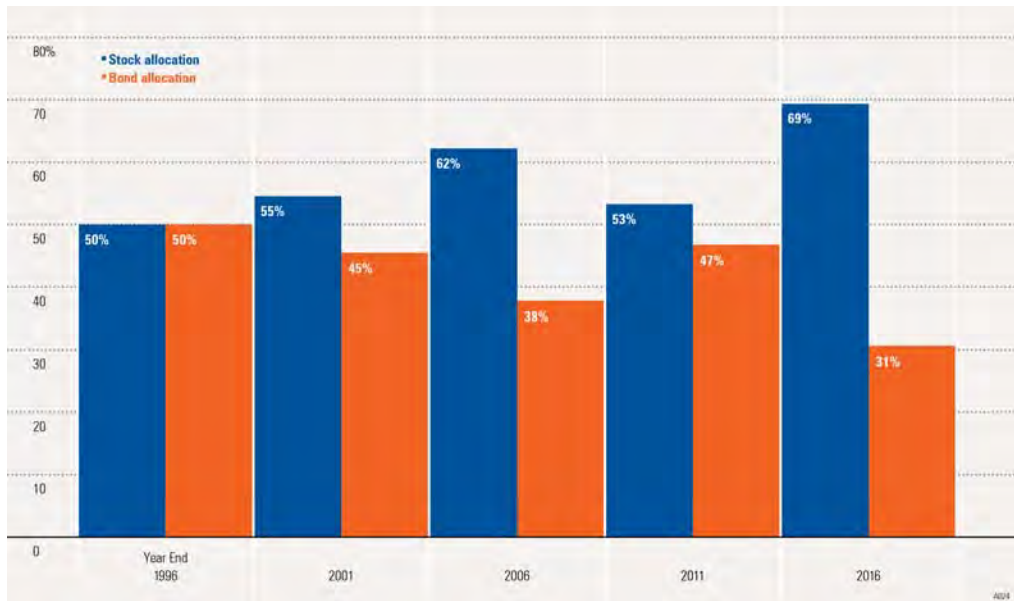
## Power of Compounding Hypothetical investment in stocks



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## Importance of Rebalancing 1996–2016

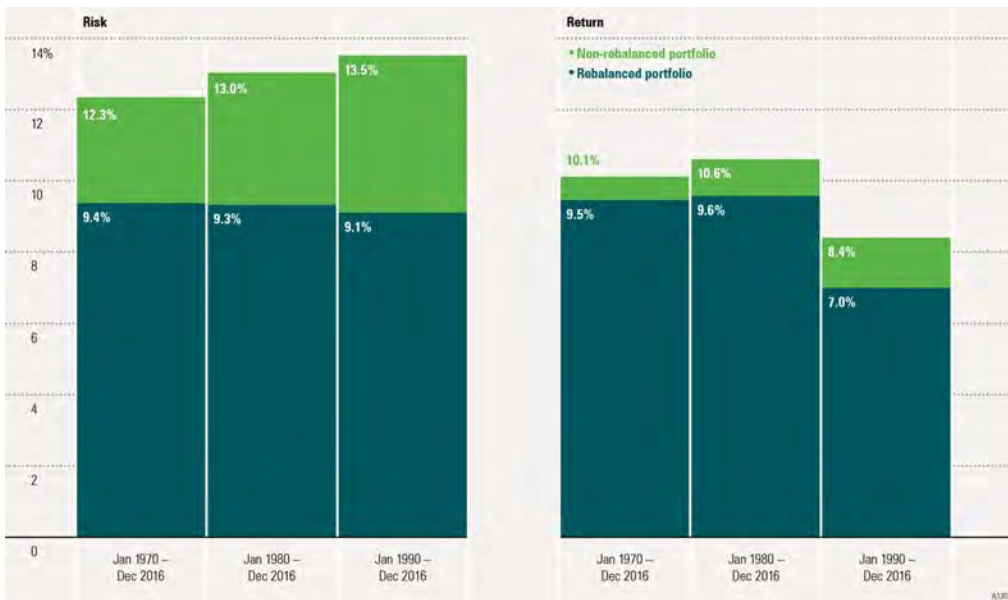


Past performance is no guarantee of future results. Stocks: 50% large and 50% small stocks. Bonds: intermediate-term government bonds. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## Managing Risk With Portfolio Rebalancing

The risk and return of rebalanced versus non-rebalanced portfolios

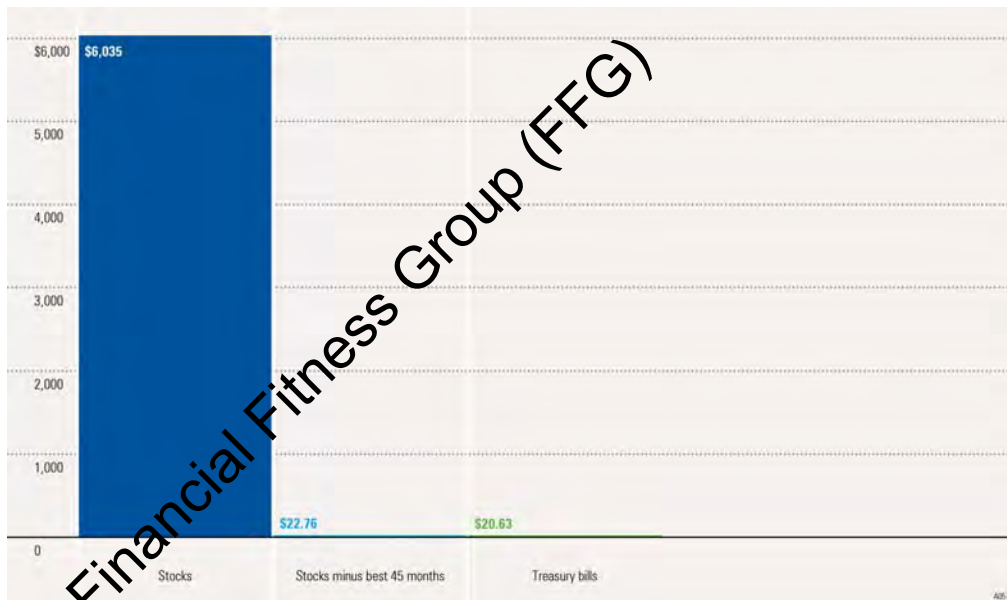


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## Dangers of Market Timing

Hypothetical value of \$1 invested from 1926–2016

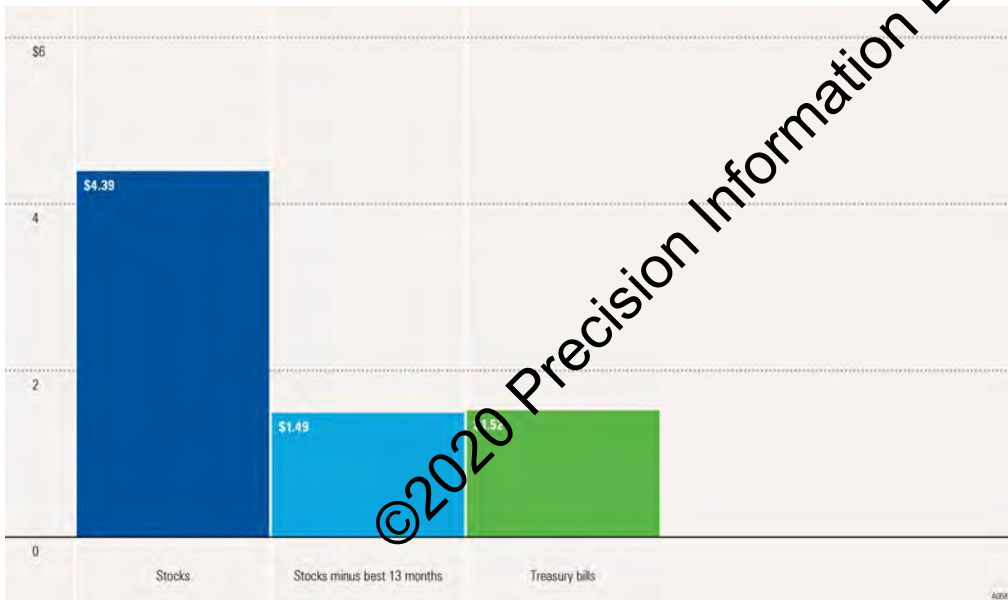


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## Dangers of Market Timing

Hypothetical value of \$1 invested from 1997–2016

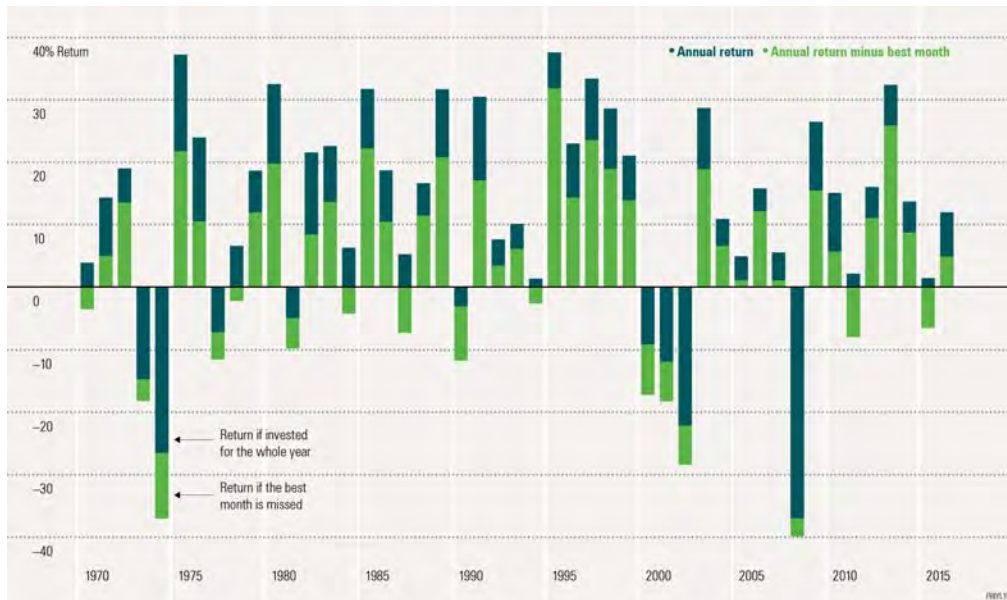


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## Market-Timing Risk

The effects of missing the best month of annual returns 1970–2016



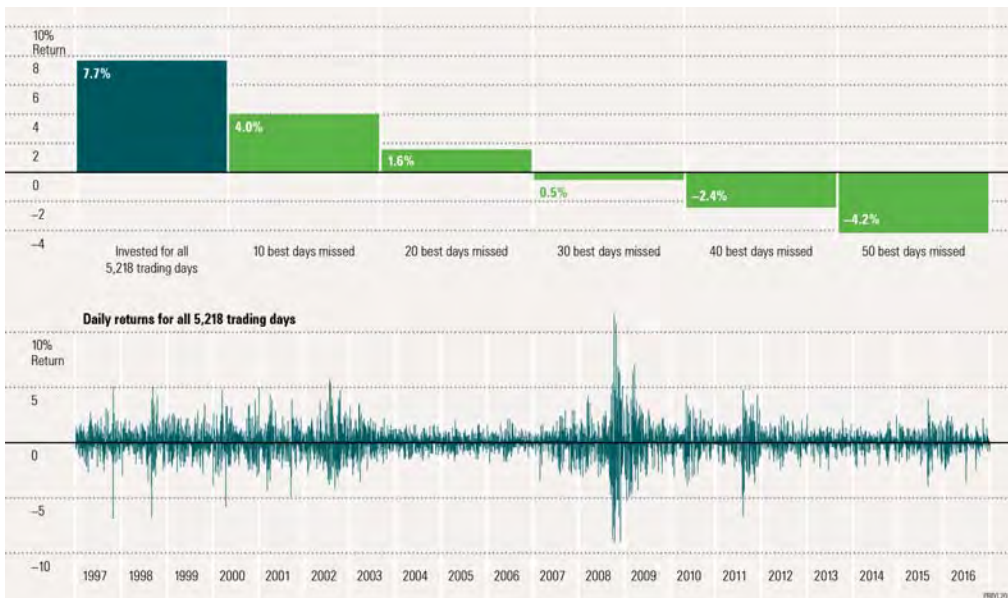
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## The Cost of Market Timing

Risk of missing the best days in the market 1997–2016

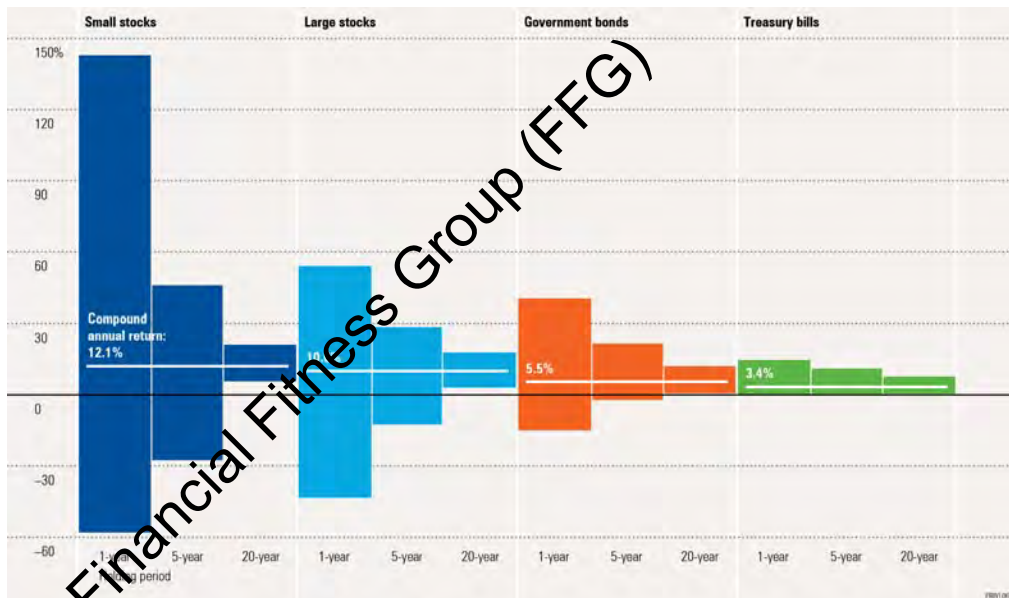


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## Reduction of Risk Over Time

1926–2016

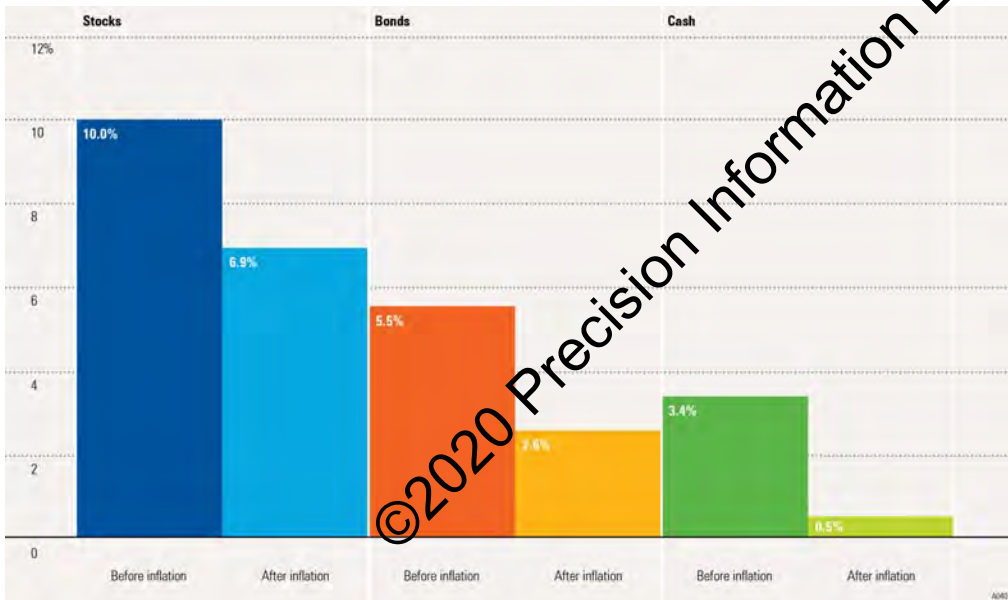


Past performance is no guarantee of future results. Each bar shows the range of compound annual returns for each asset class over the period 1926–2016. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## Returns Before and After Inflation

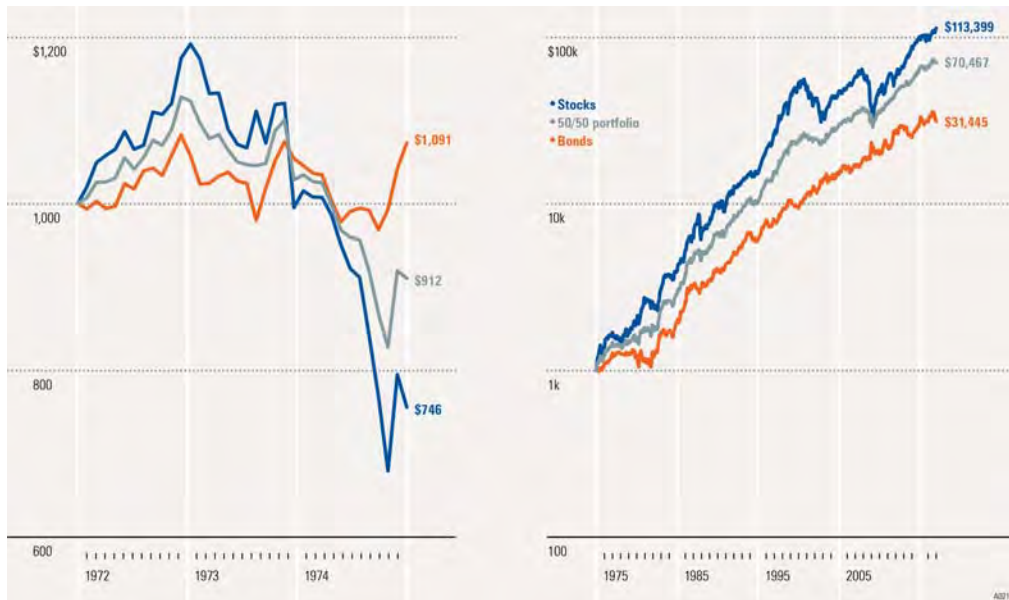
1926–2016



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## Can You Stay on Track?



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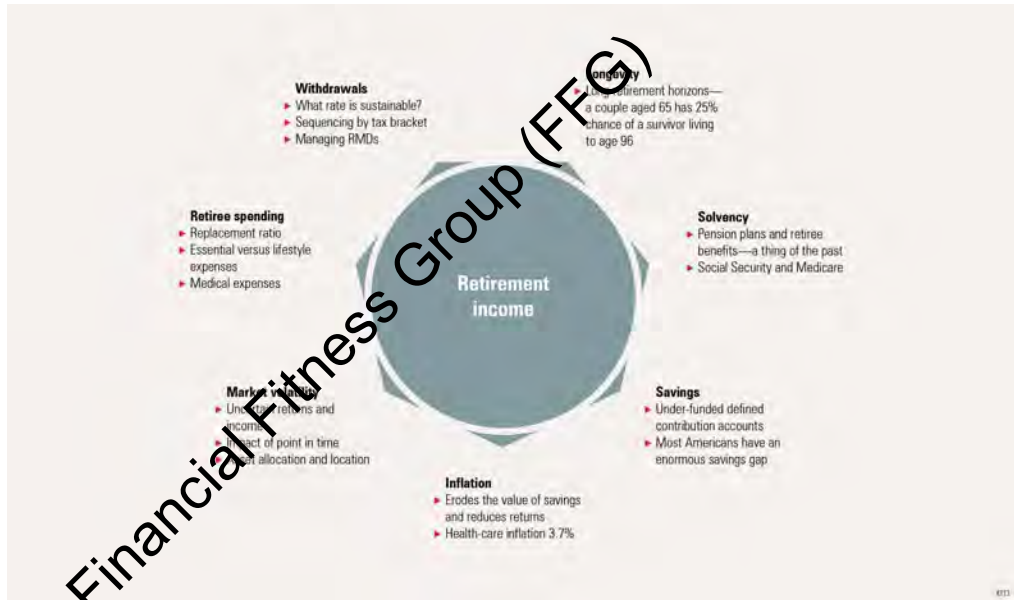


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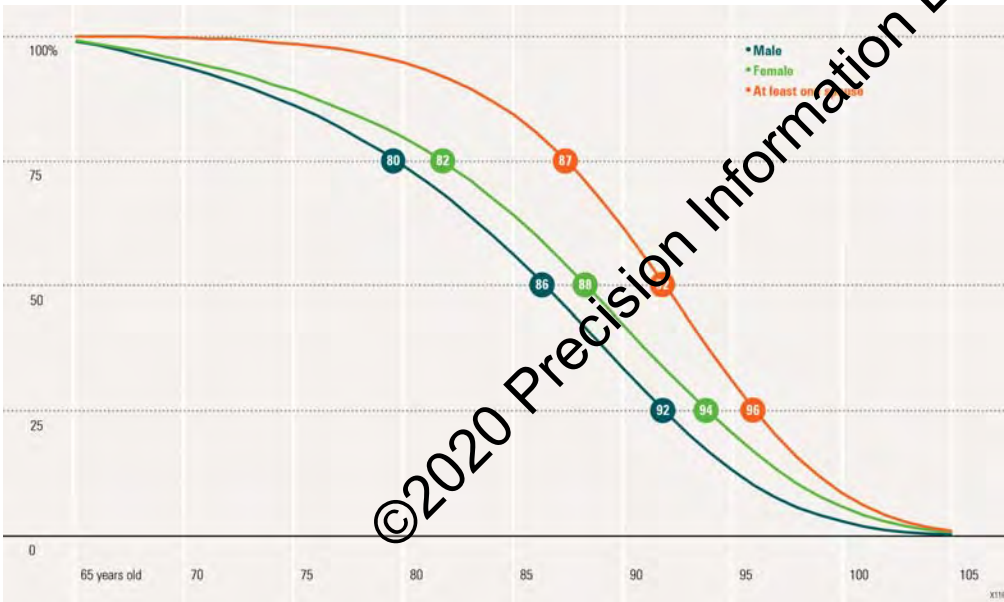
# Retirement Income

## Retirees Face Numerous Risks



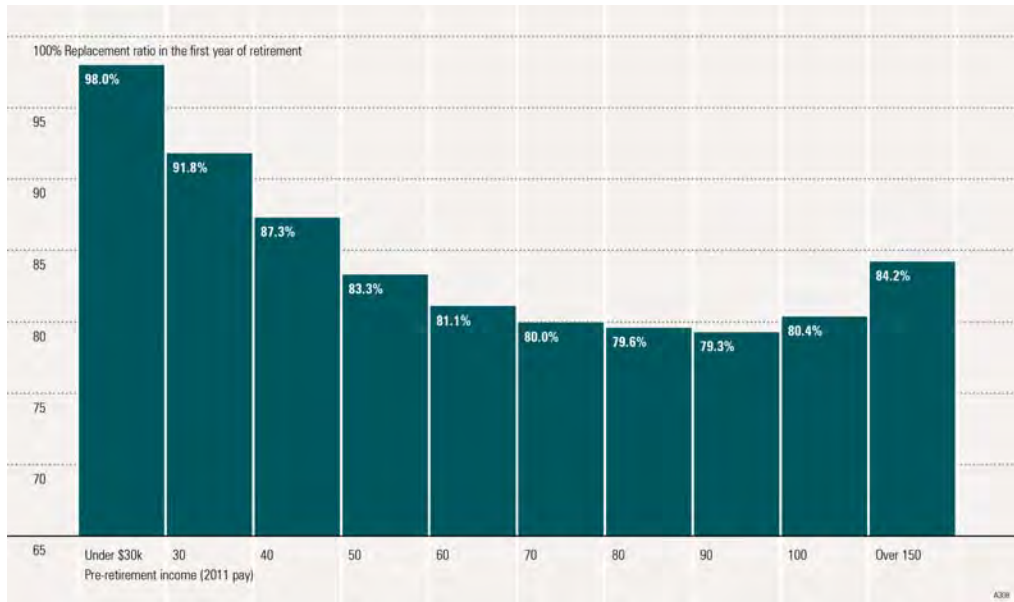
## Retirees Should Plan for a Long Retirement

Probability of a 65-year-old living to various ages



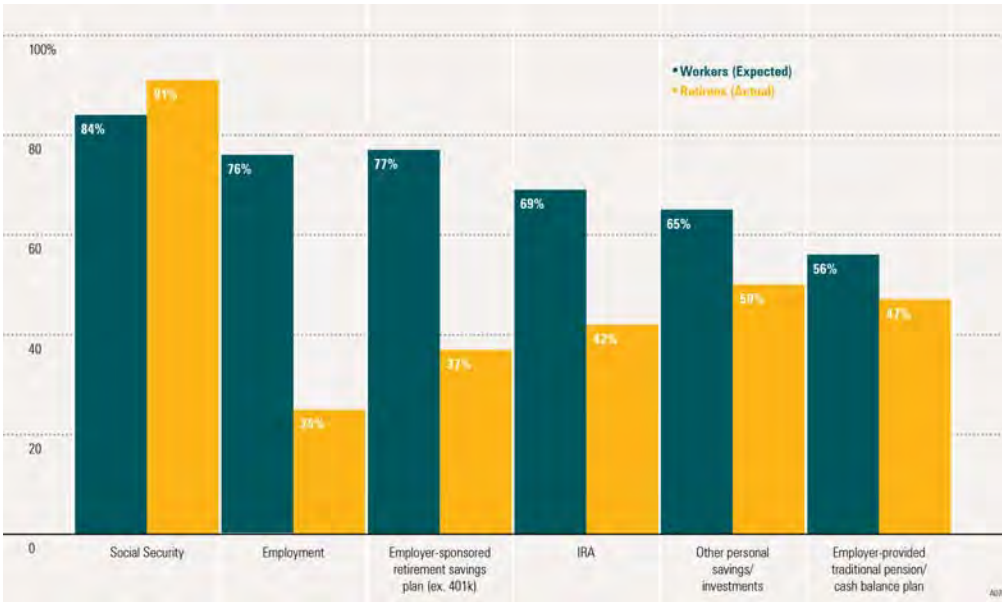
## Retirees Need to Replace a Significant Amount of Income in Retirement

Replacement ratios at various pre-retirement income levels



### Personal Savings Expected to Play a Larger Role in Retirement

Survey of retirement income sources

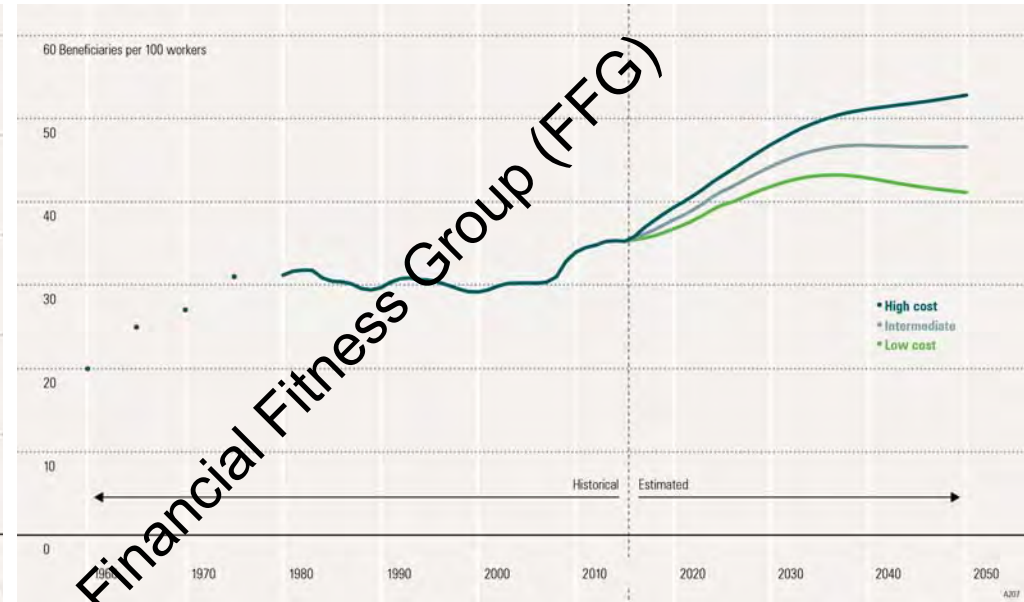


Source: Employee Benefit Research Institute, 2016 Retirement Confidence Survey. © Morningstar. All Rights Reserved.



### Social Security is Under Strain

Number of beneficiaries per 100 covered workers

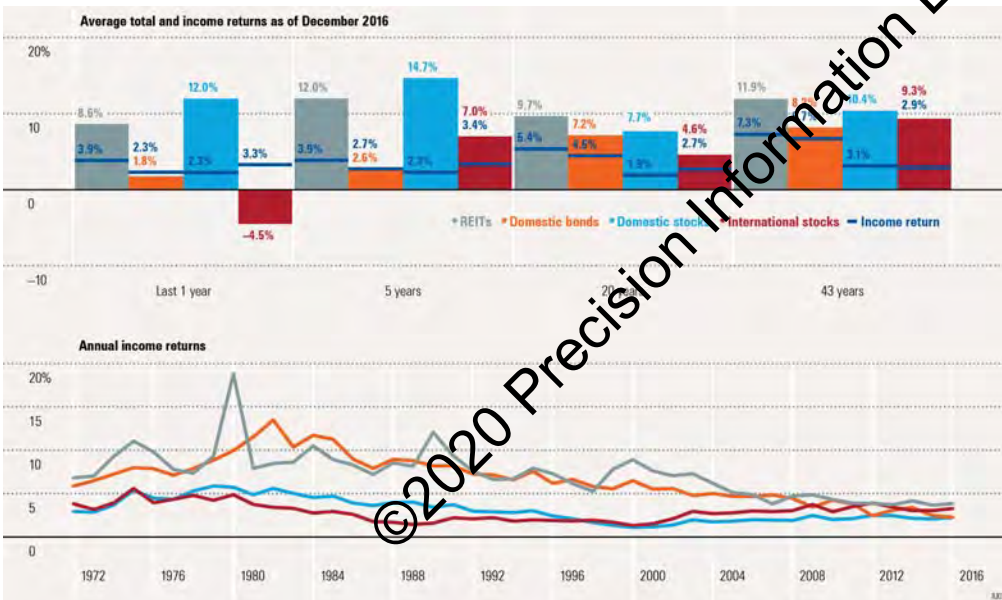


Low-cost—assumes relatively rapid economic growth, low inflation, and favorable (from the standpoint of program financing) demographic and program-specific conditions; Intermediate—represents the Trustees' best estimates of likely future demographic, economic, and program-specific conditions; High-cost—assumes relatively slow economic growth, high inflation, and unfavorable demographic and program-specific conditions. © Morningstar. All Rights Reserved.



### Income Return in Retirement

January 1972–December 2016

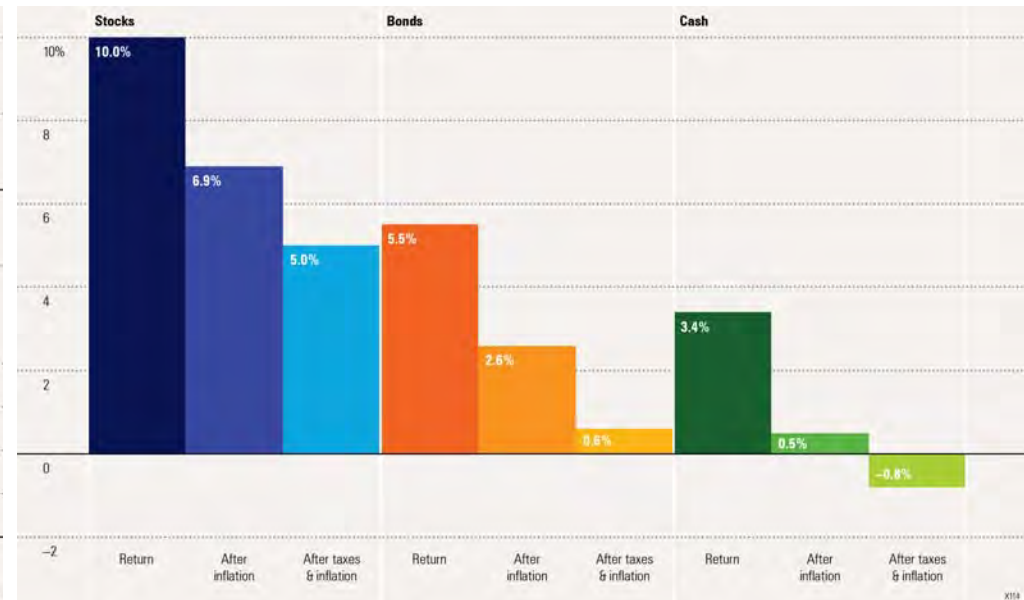


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### Inflation and Taxes Reduce Returns

Compound annual returns 1926–2016



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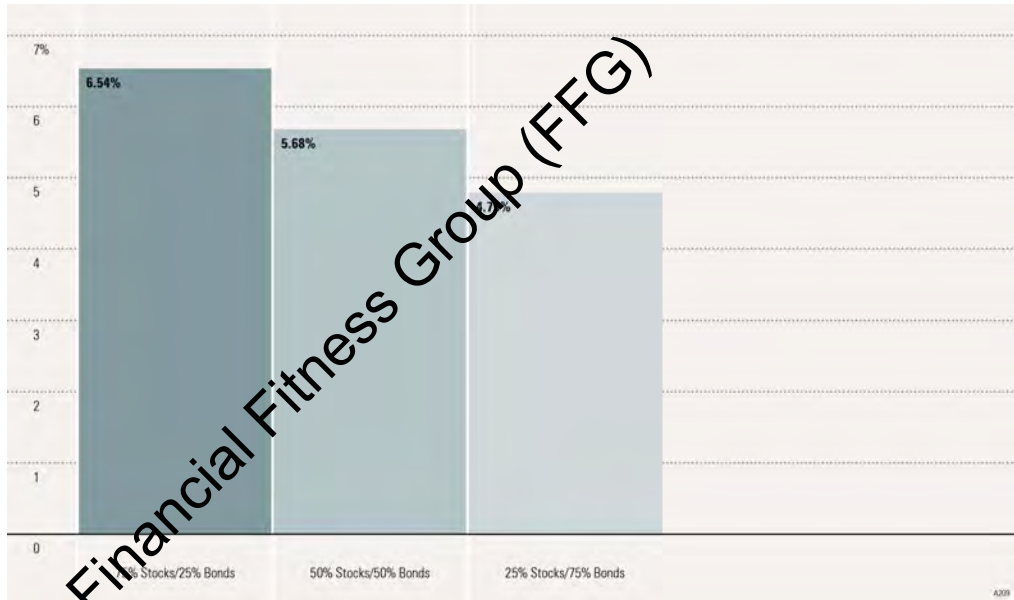
**Sustainable Withdrawal Rates Vary Over Time**  
Rolling 30-year periods 1926–2016



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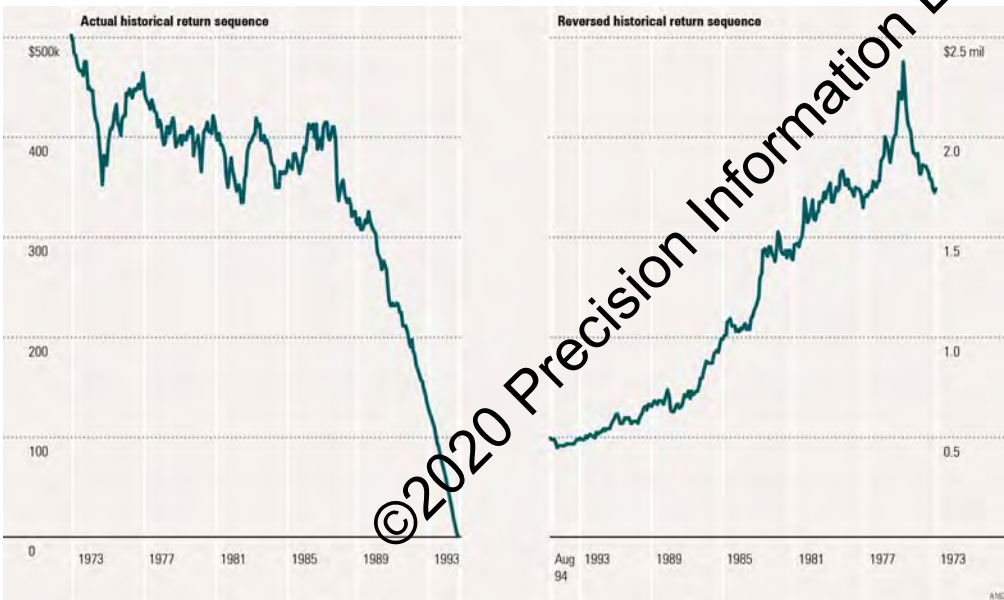
**Withdrawal Rate You Can Sustain May Be Lower Than You Think**  
Average: 1926–2016



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**The Sequence of Returns Can Significantly Affect Your Retirement**  
Sequence of returns matters



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**Discussion of Simulation Criteria and Methodology**

- ▶ Many of the following images were created using Monte Carlo parametric simulation. This model estimates the range of possible outcomes based on a set of assumptions including arithmetic mean (return), standard deviation (risk), and correlation for a set of asset classes. The inputs used herein are hypothetical, based on historical long-term figures. The hypothetical risk and return of each asset class, cross-correlation, and annual average inflation follow. Stocks: risk 20.2%, return 12.1%; Bonds: risk 5.7%, return 5.4%; Correlation 0.00; Inflation: 3.0%.
- ▶ Note that other investments not considered may have characteristics similar or superior to those being analyzed. Each simulation produces 35 randomly selected return estimates consistent with the characteristics of the portfolio to estimate the return distribution over a 35-year period. Each simulation is run 5,000 times, to give 5,000 possible 35-year scenarios. A limitation of the simulation model is that it assumes the distribution of returns is normal. Should actual returns not follow this pattern, results may vary.

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## Interpreting Confidence Levels in Simulation

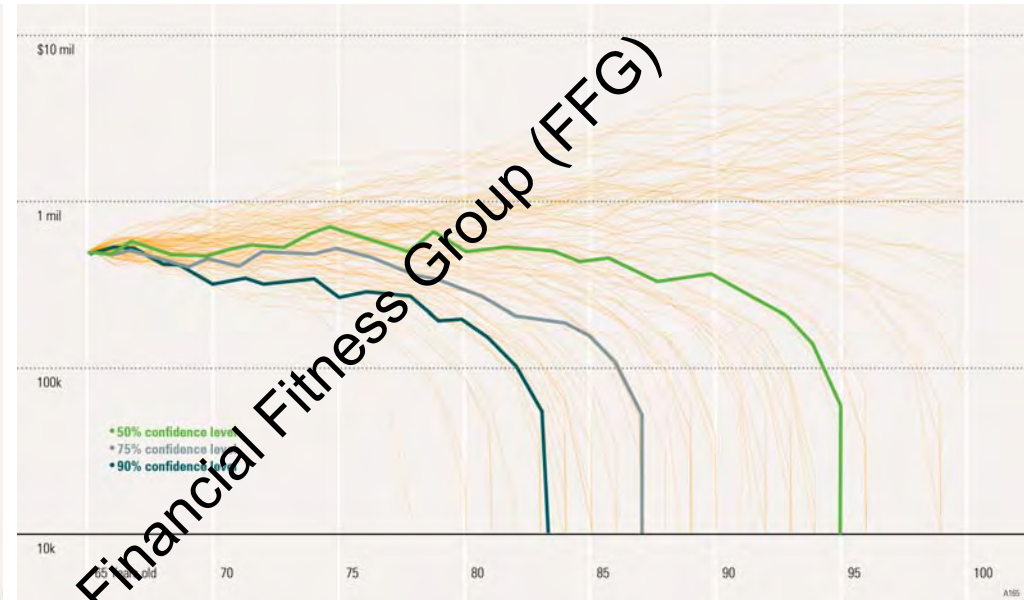
Confidence level	Chance of exceeding	Chance of falling short
50%	50%	50%
75%	75%	25%
90% (More conservative)	90%	10%

This table is intended to help interpret 50%, 75%, and 90% confidence levels illustrated in the following images. © Morningstar. All Rights Reserved.



## Simulation Can Illustrate the Probability of Achieving Outcomes

A visual interpretation of confidence levels in simulation

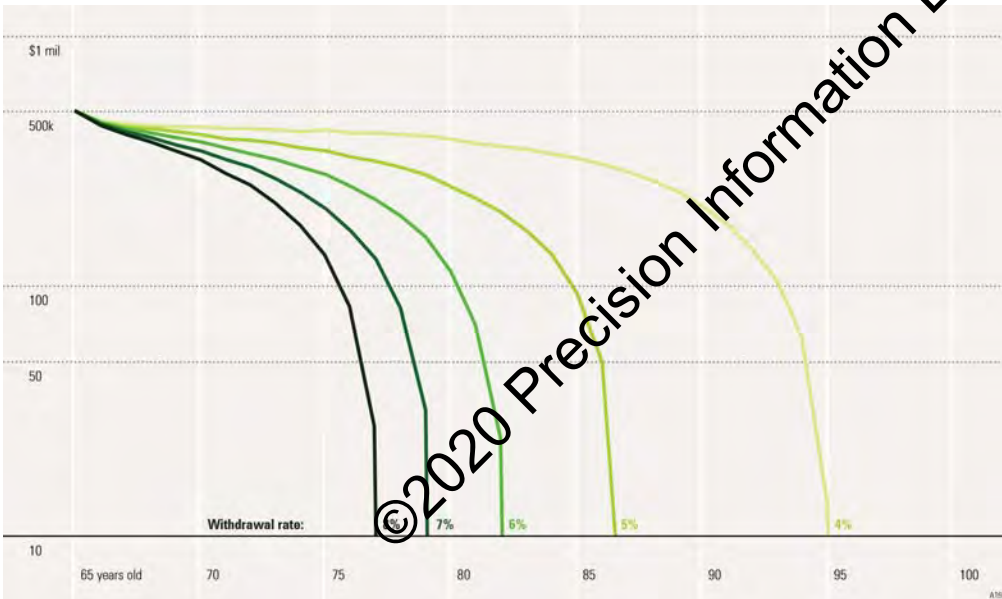


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## High Withdrawal Rates Will Quickly Deplete Your Assets

Simulated portfolio values (90% confidence level)

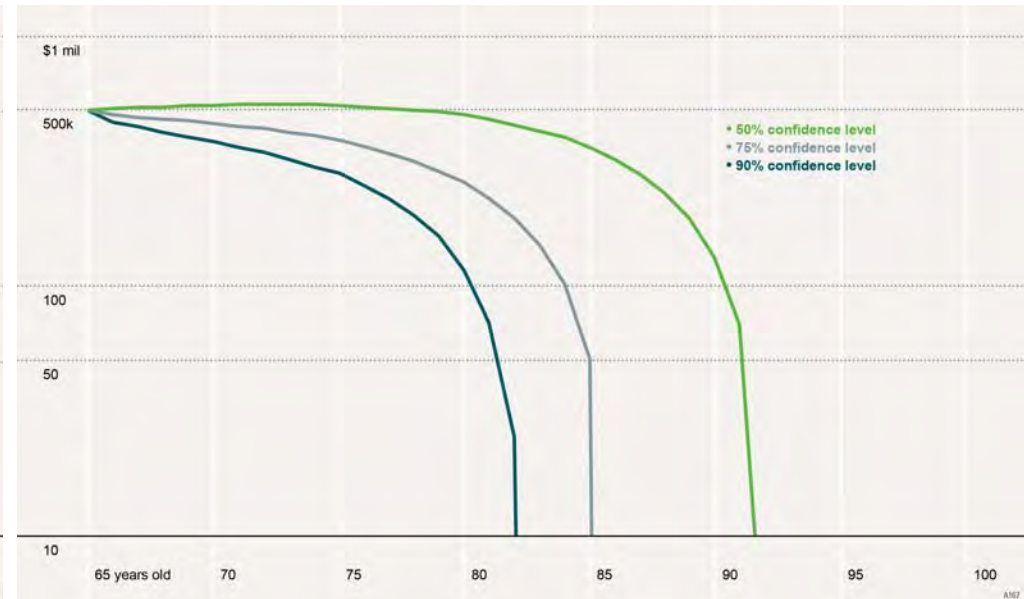


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## Market Performance Affects Chance of Portfolio Shortfall

Six percent inflation-adjusted withdrawal at three confidence levels

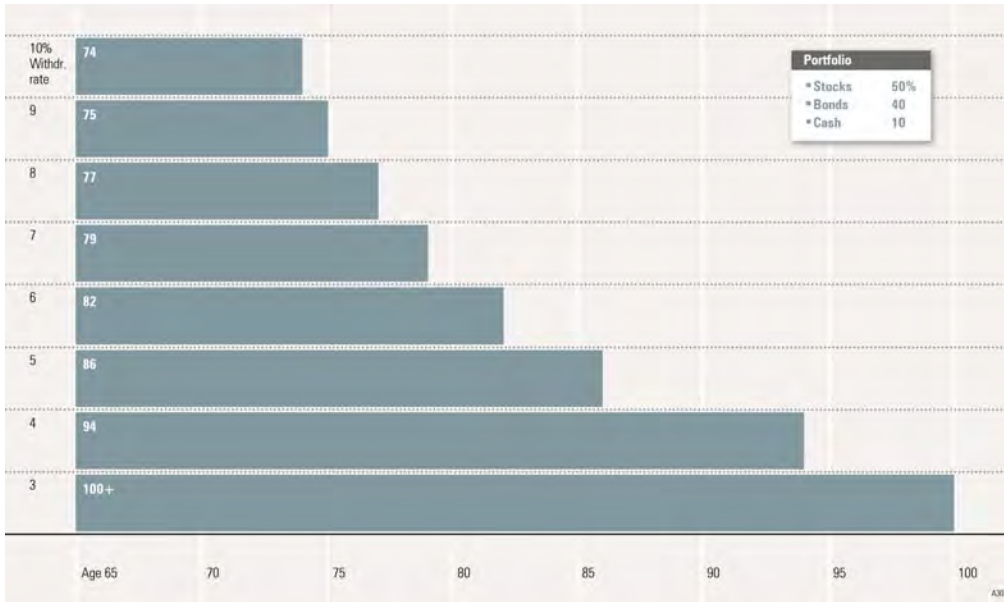


IMPORTANT: Projections generated by Morningstar regarding the likelihood of various investment outcomes using the Ibbotson Wealth Forecasting Engine are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Results may vary over time and with each simulation. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



### Retirement Assets Deplete Faster with Higher Withdrawal Rates

Age to which a portfolio may last based on withdrawal rate (90% confidence level)



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### Probability of Meeting Income Needs

Various withdrawal rates and portfolio allocations over a 25-year retirement



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### Providing for Retirement Income

- ▶ Retirement risks can be managed by intelligent combination of funds, stocks and bonds, and insurance products
- ▶ How do you find the right asset mix for retirement?
  - ▶ age and risk tolerance
  - ▶ desire for consumption and bequest
  - ▶ expenses and fees of product choices

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# Real Estate Investing

## Real Estate Beyond Your Home

Traditionally, investing in real estate has been synonymous with buying a home. For years, opportunities in commercial real estate, either indirectly through real estate investment trusts (REITs) or directly through private transactions, were classified as alternative opportunities that were mostly available to institutional investors.

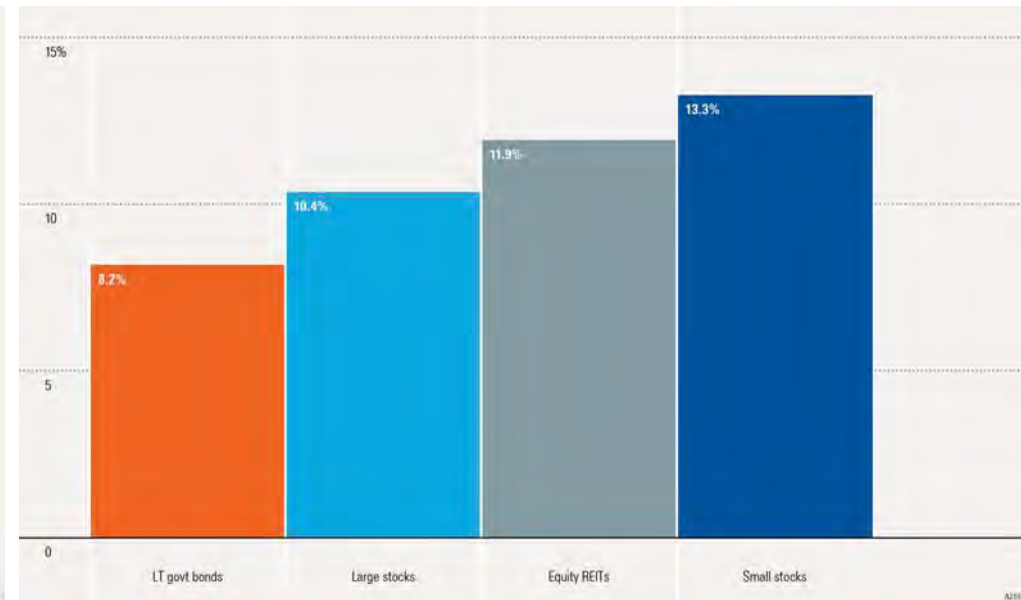
Today, real estate investing has gained more popularity among investors around the globe. With increased access to commercial real estate through REITs, competitive historical performance, potential diversification benefits, and the increased globalization of commercial real estate, this once alternative sector now has a place in a diversified portfolio.

## Real Estate Investment Through Equity REITs

- ▶ Equity REITs are companies that own, manage, and lease investment-grade, income-producing commercial real estate
- ▶ REITs must be in the real estate business
  - ▶ At least 75% of assets must be real property
  - ▶ At least 75% of revenue must come from real estate
- ▶ At least 90% of taxable income must be distributed annually to shareholders
- ▶ Company receives a dividends paid deduction
- ▶ Taxes are paid at the shareholder level

## Consistent Long-Term Performance

Compound annual returns 1972–2016



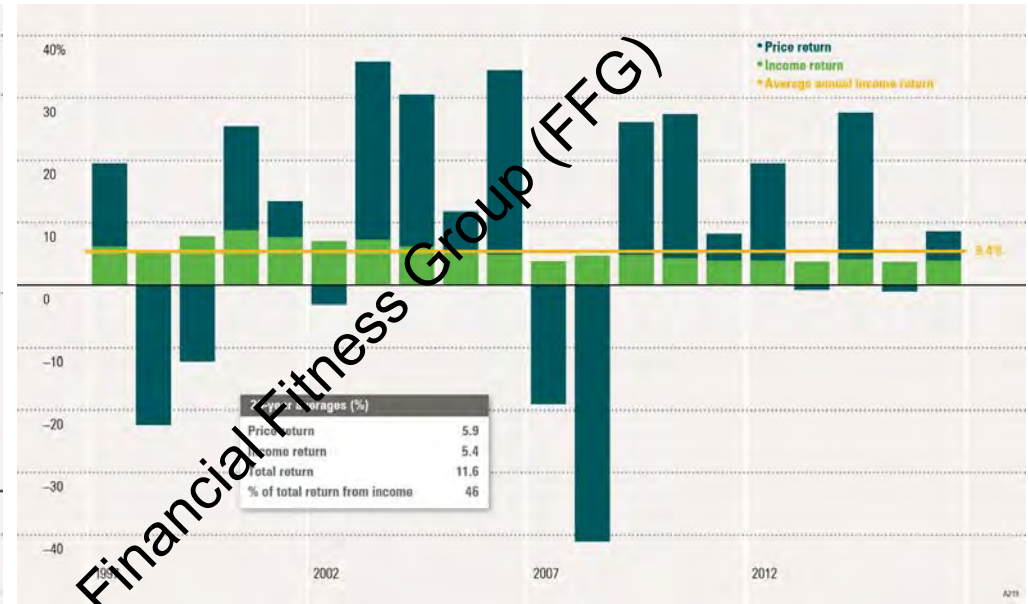
**Performance: Stocks, Bonds, Bills, and REITs**  
1972–2016



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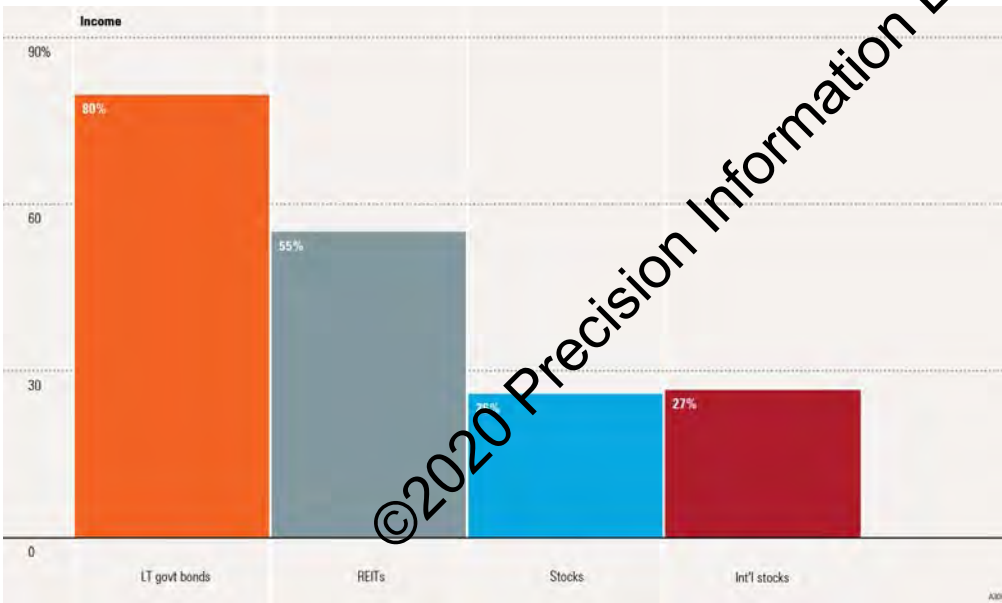
**Reliable Income Returns**  
Equity REIT annual returns, past 20 years



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**Retirement Income Vehicles**  
Stocks, bonds, and REITs 1972–2016



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**Correlation of Equity REITs to Stocks and Bonds**  
60-month rolling periods



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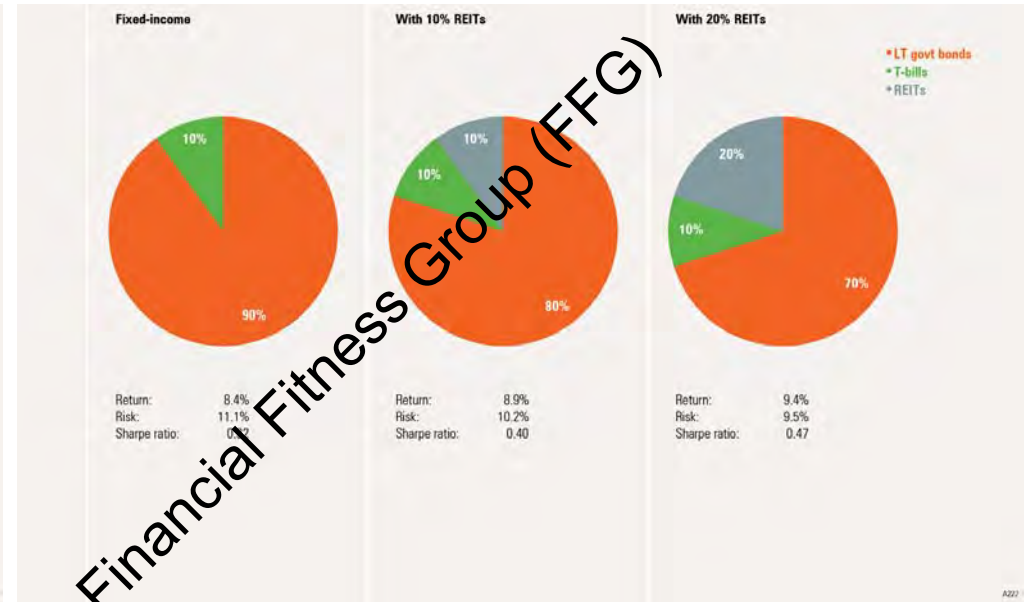
**Potential to Reduce Risk and Increase Return**  
Stock and bond investors 1972–2016



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**Potential to Reduce Risk and Increase Return**  
Fixed-income investors 1972–2016

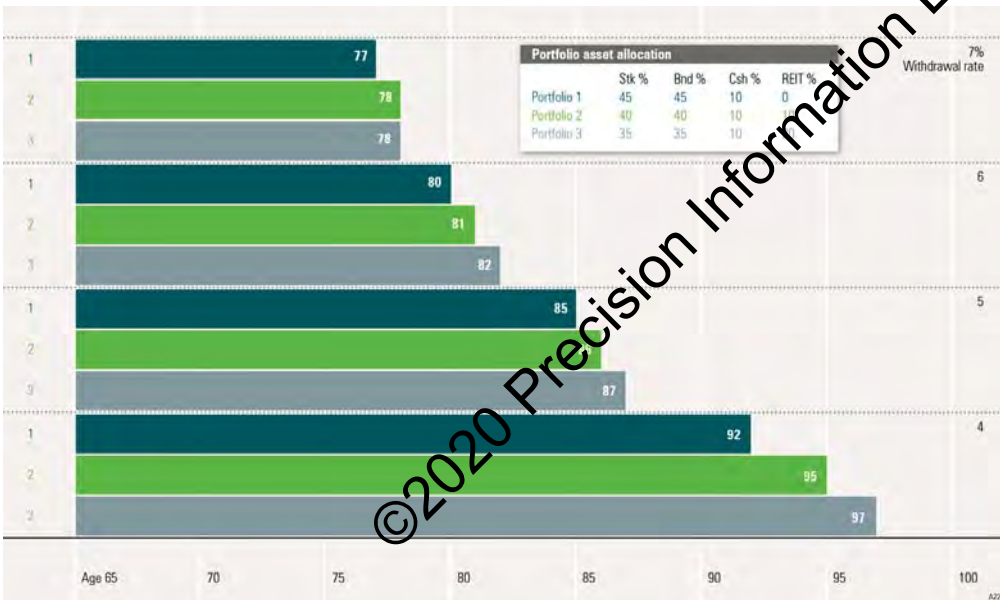


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**Retirement Portfolios**

Age to which portfolio may last (90% confidence level)



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**Direct Commercial Real Estate**

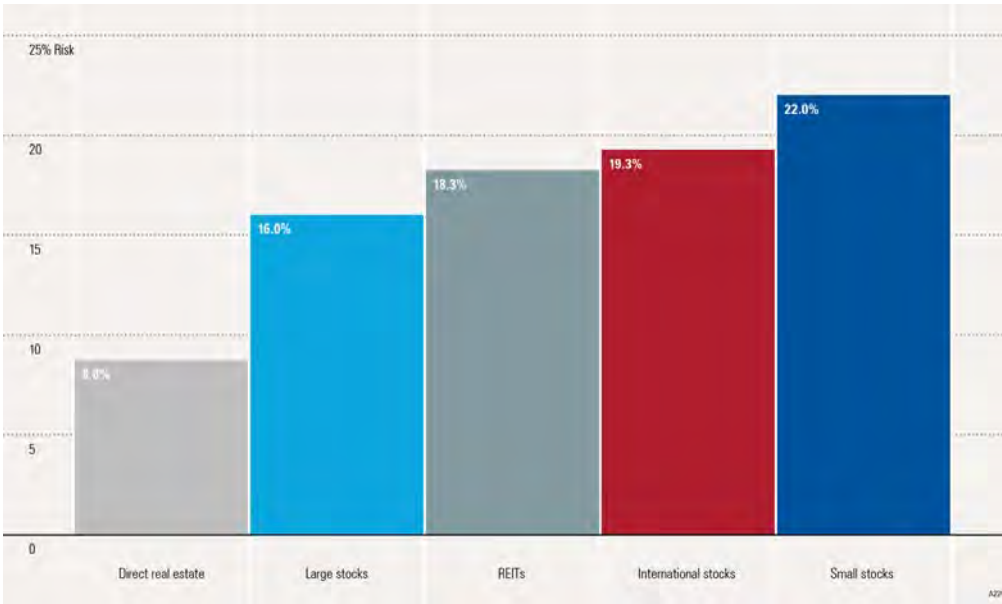
- ▶ Unlike REITs, direct investment in real estate is not traded on an exchange
- ▶ Traditionally part of the asset-allocation strategy for pension funds and large institutional investors
- ▶ Direct control
  - ▶ Ability to select individual properties
- ▶ Investment performance characteristics
  - ▶ Competitive risk-adjusted returns
  - ▶ Low volatility of returns
  - ▶ Low correlation with other investments

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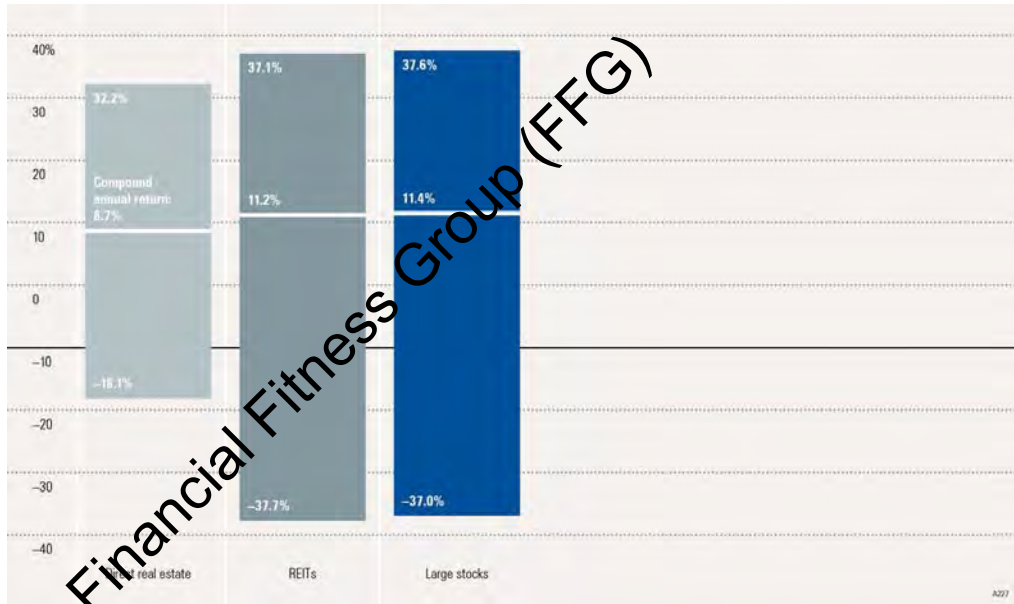
**Risk Levels of Real Estate Versus Equities**  
Standard deviation 1985–2016



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**Real Estate Has Experienced a Narrower Range of Returns**  
Range of annual returns: 1985–2016



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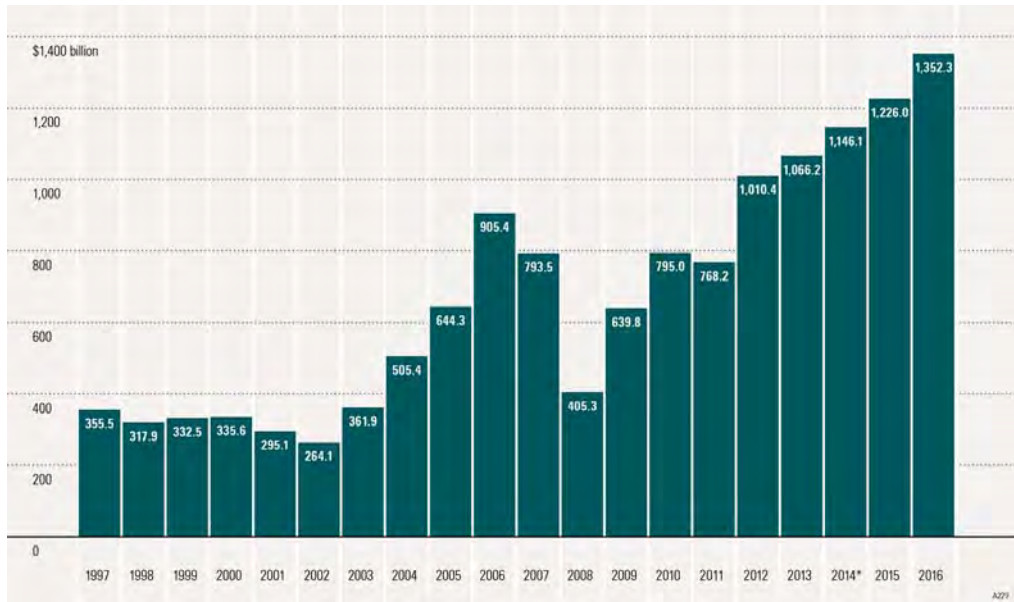
**Diversification Through Global Real Estate Investments**

- ▶ Over the past 45 years, the United States and, more recently, Japan have provided investors with the majority of opportunities for investing in publicly traded equity REITs and listed property companies
- ▶ Introduction of REITs and publicly traded real estate in Europe and Asia has created new investment opportunities abroad
- ▶ Global real estate investments generally have low correlations to other asset classes
- ▶ May provide additional diversification benefits

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**Growth in Equity Market Capitalization of Global Developed Real Estate**  
FTSE EPRA/NAREIT Global Developed Real Estate Index® 1997–2016



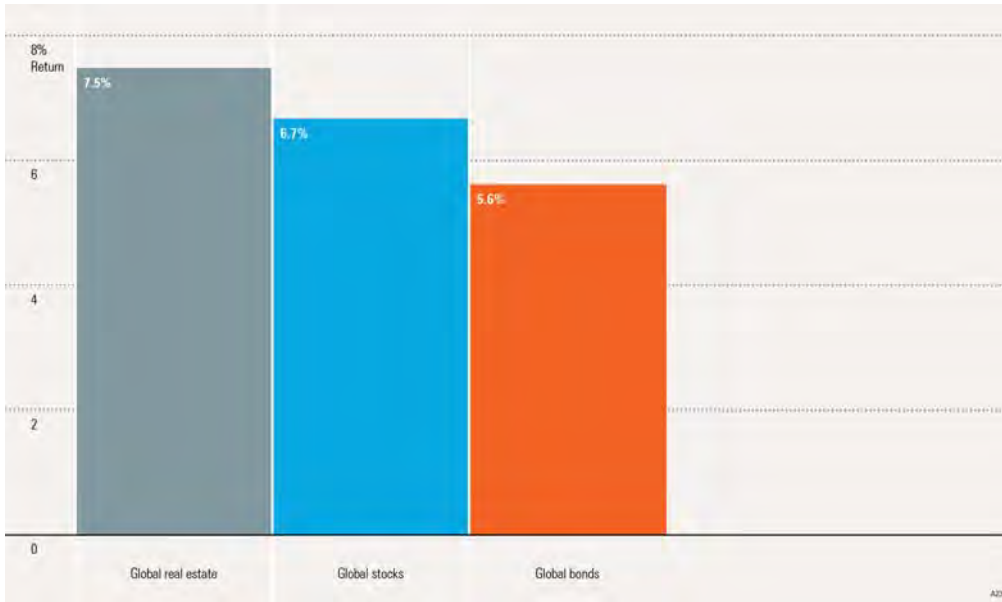
Source: FTSE EPRA/NAREIT Global Developed Real Estate Index®, 2014 value is an estimate. © Morningstar. All Rights Reserved.



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## Global Returns

Stocks, bonds, and real estate 1990–2016



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## Regional Real Estate Correlation Comparison

1990–2016

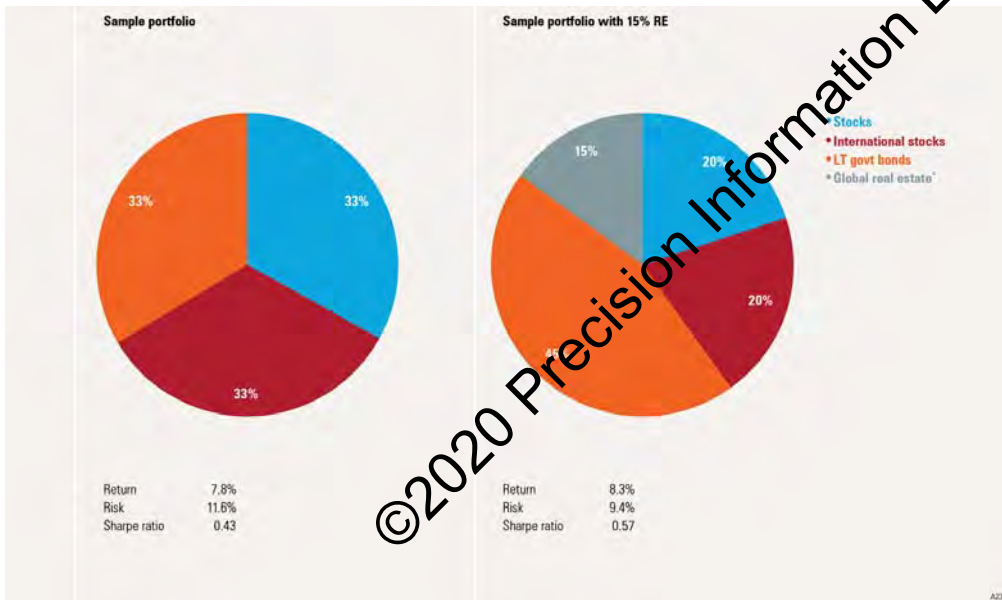
Correlation matrix	Large stocks	Small stocks	Int'l stocks	LT govt bonds	T-bills	North American RE	European RE	Asian RE
<b>Large stocks</b>	1.00							
<b>Small stocks</b>	0.75	1.00						
<b>Int'l stocks</b>	0.75	0.92	1.00					
<b>LT govt bonds</b>	-0.24	-0.34	-0.45	1.00				
<b>T-bills</b>	0.01	-0.14	-0.12	0.16	1.00			
<b>North American RE</b>	0.52	0.67	0.46	-0.04	-0.05	1.00		
<b>European RE</b>	0.38	0.40	0.69	-0.27	-0.20	0.58	1.00	
<b>Asian RE</b>	0.48	0.56	0.82	-0.21	-0.11	0.56	0.73	1.00

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## Potential to Increase Return and Decrease Risk

Sample portfolios with and without global real estate 1990–2016



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## Summary of Characteristics

	Competitive returns	Low to moderate correlation	More public information	Ability to target desired properties	Lower volatility	More liquidity
<b>REITs</b>	X	X	X		X	X
<b>Direct real estate</b>	X	X		X	X	
<b>Global real estate</b>	X	X				

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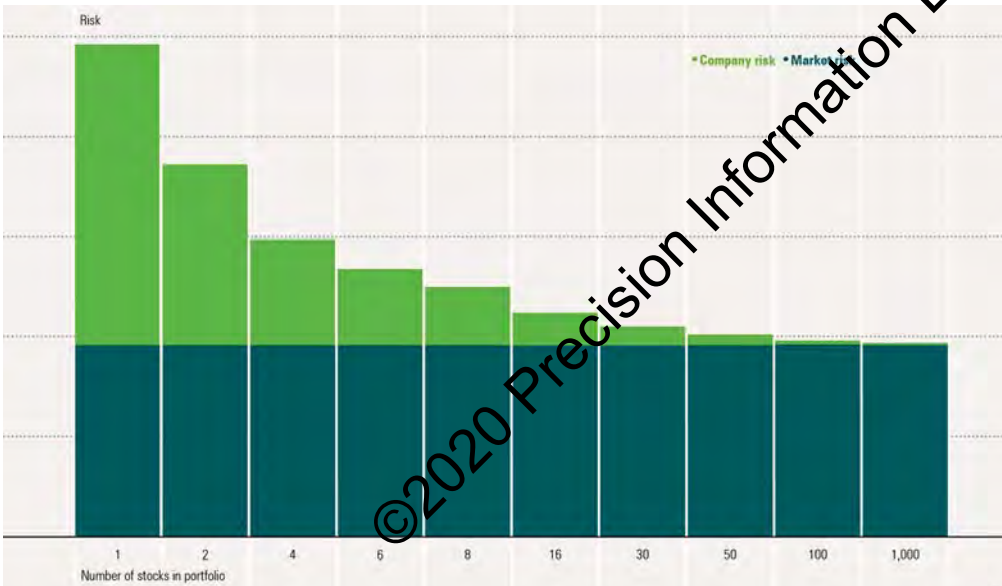


# Risk and Volatility

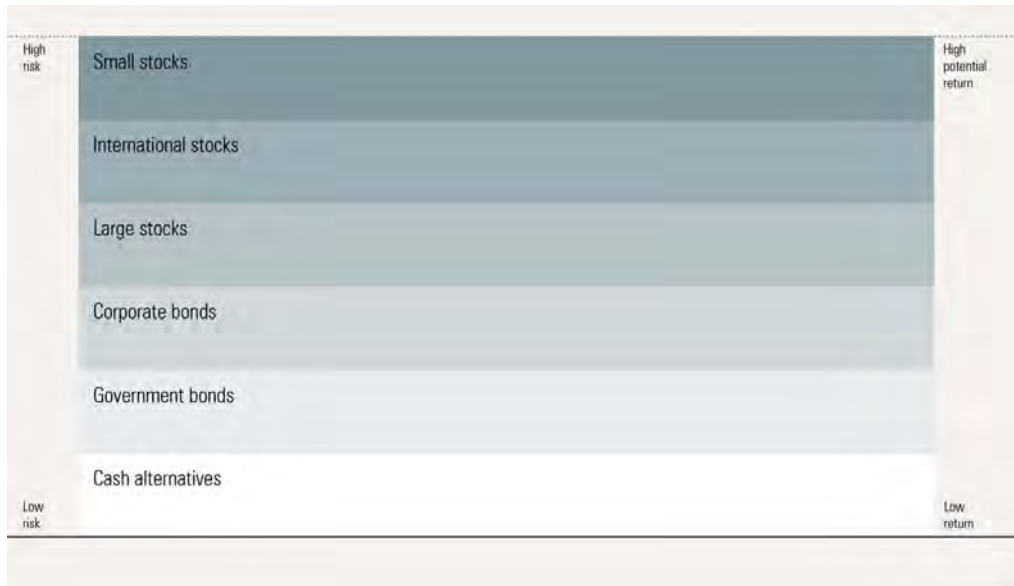
## Types of Risk



## Stock Diversification

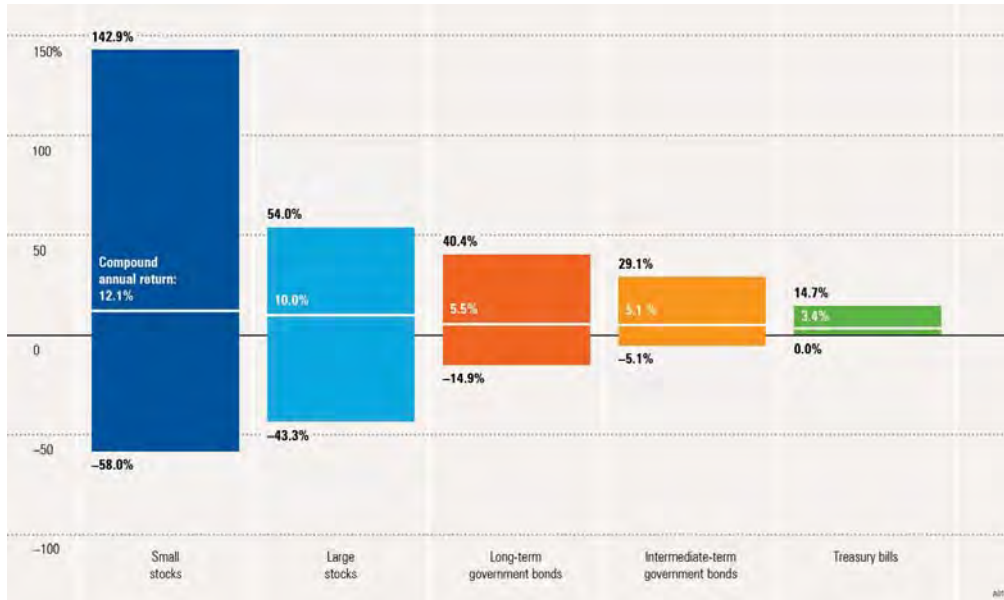


## Risk Tolerance Spectrum



## Asset-Class Returns

Highs and lows: 1926–2016

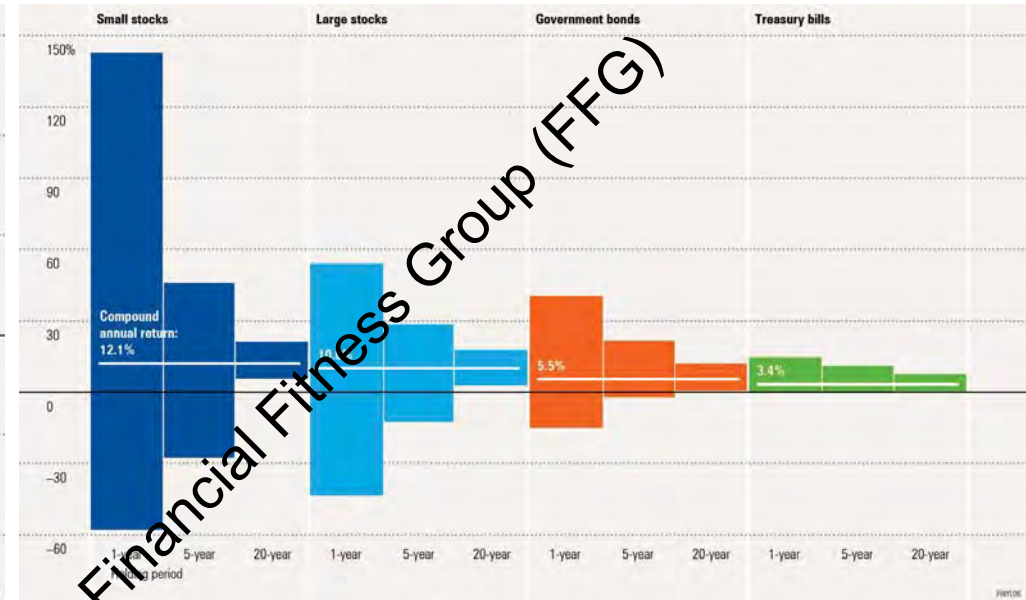


Past performance is no guarantee of future results. Each bar shows the range of annual total returns for each asset class over the period 1926–2016. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.



## Reduction of Risk Over Time

1926–2016

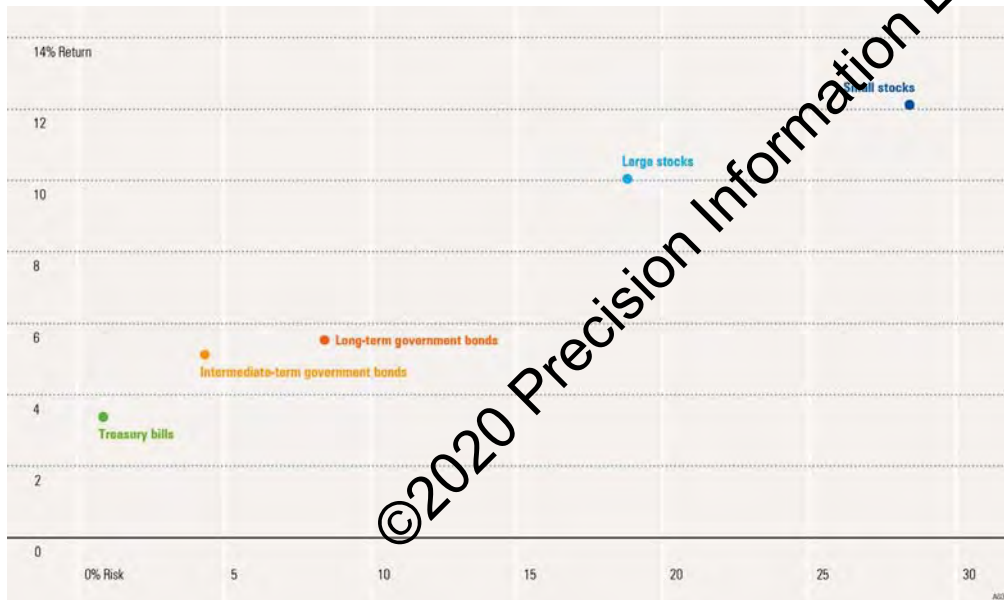


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## Risk Versus Return

Stocks, bonds, and bills 1926–2016

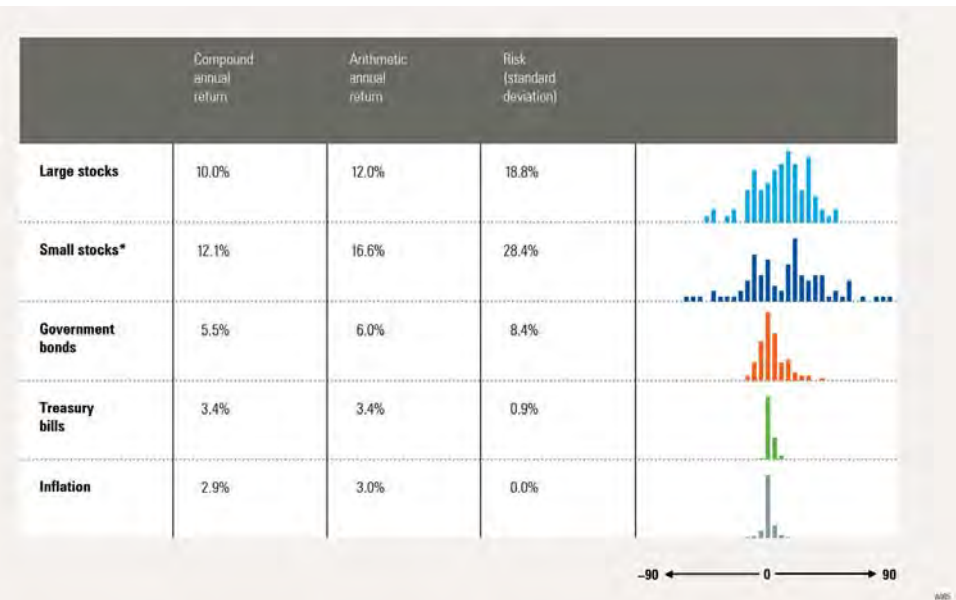


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## Ibbotson® SBBI®

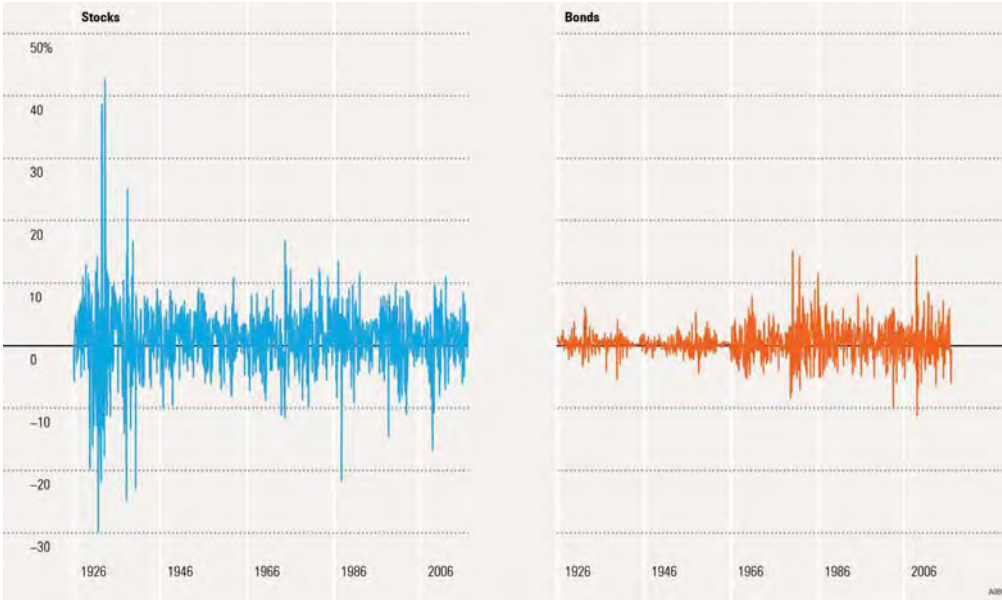
Summary statistics 1926–2016



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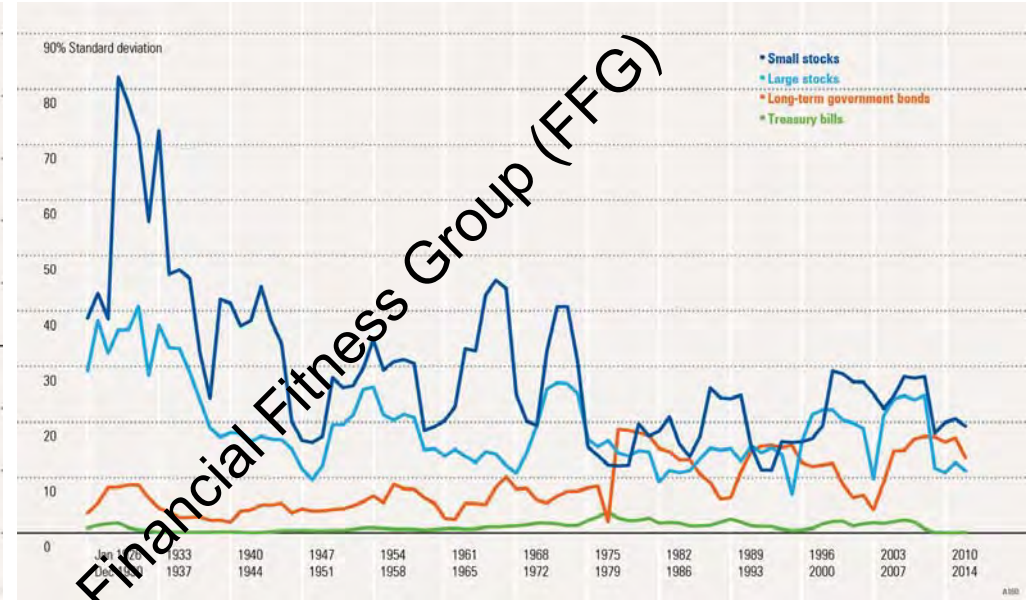
### Stock and Bond Volatility Varies 1926–2016



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### Risk Changes Over Time Five-year rolling periods 1926–2016

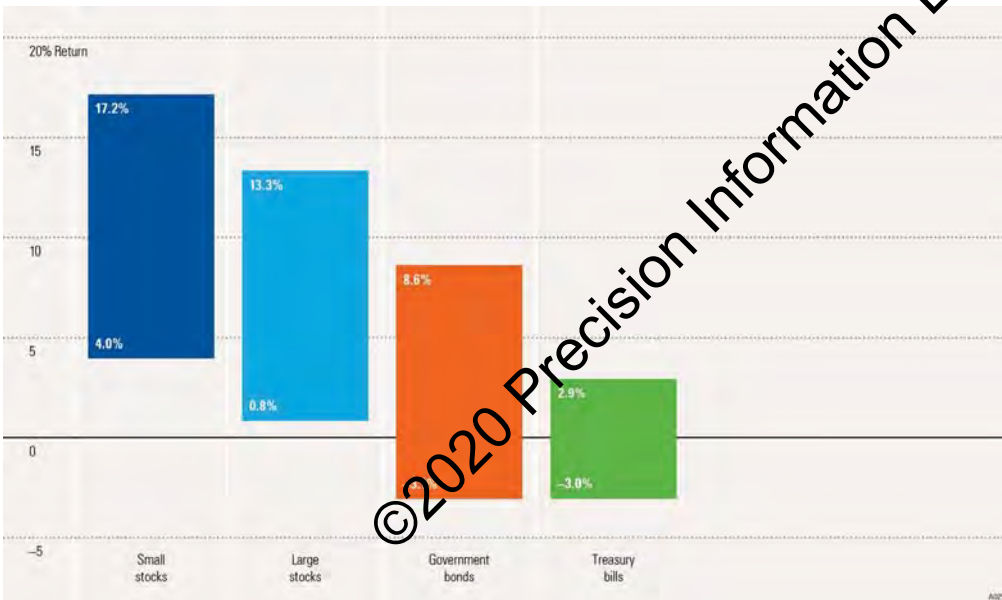


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### Inflation Risk: Stocks Versus Fixed Income

Range of average inflation-adjusted returns over 20-year periods, 1926–2016

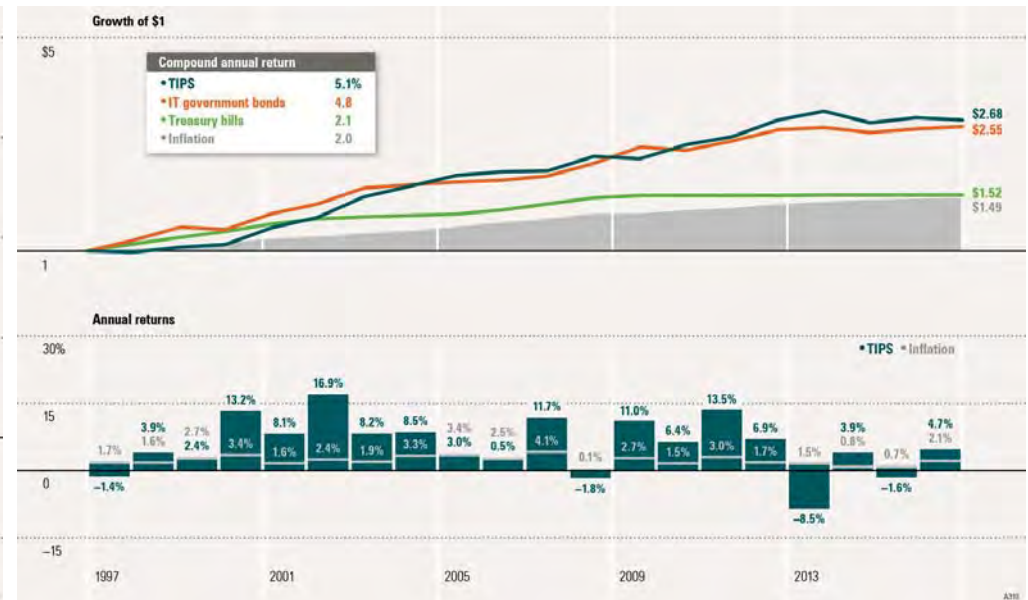


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### Treasury Inflation-Protected Securities (TIPS)

A hedge against inflation, 1997–2016

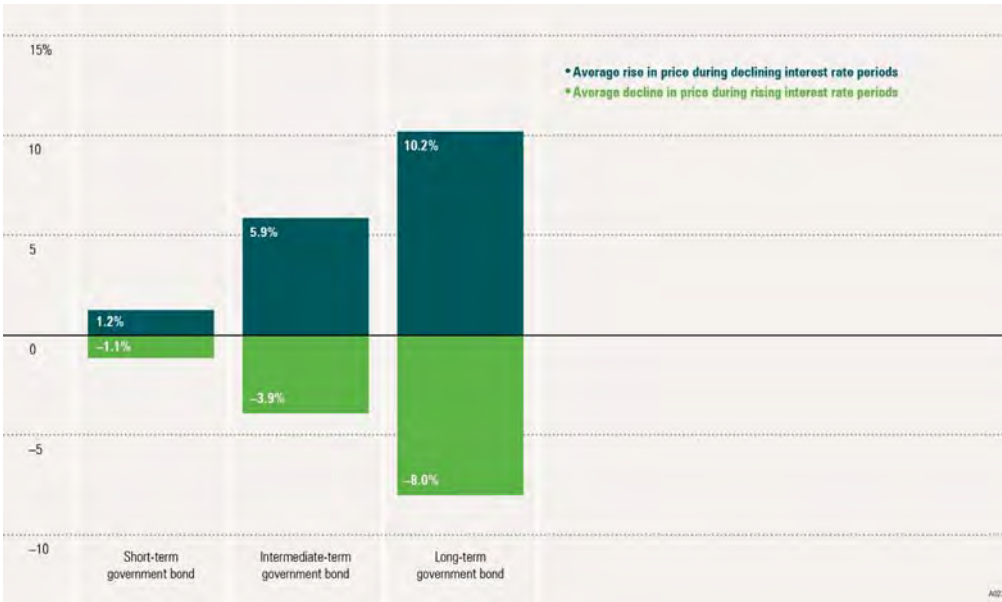


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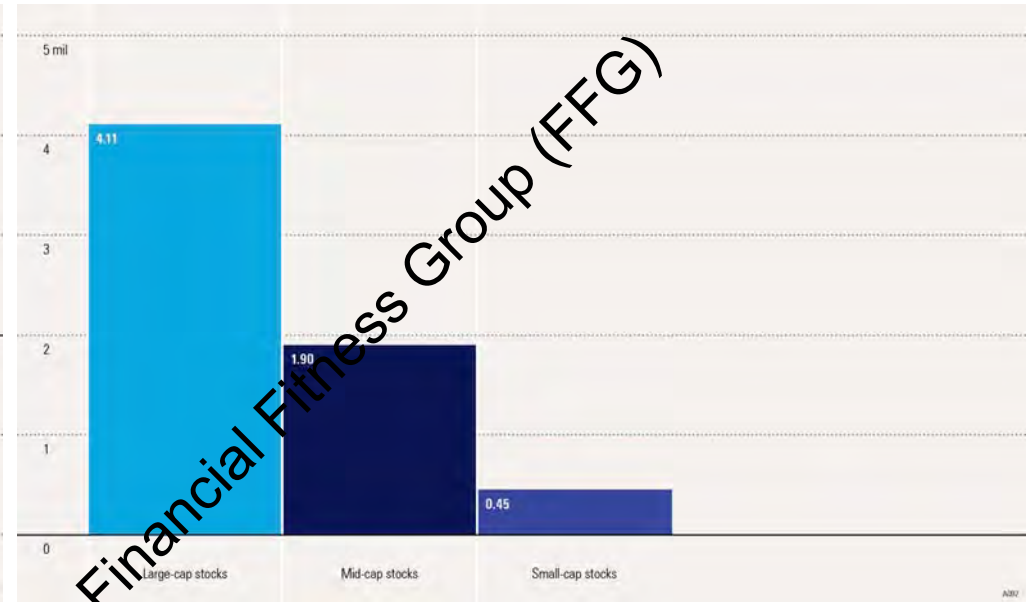
### Fixed Income Maturity Risk 1970–2016



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### Liquidity Risk Average daily stock trading volume as of year-end 2016

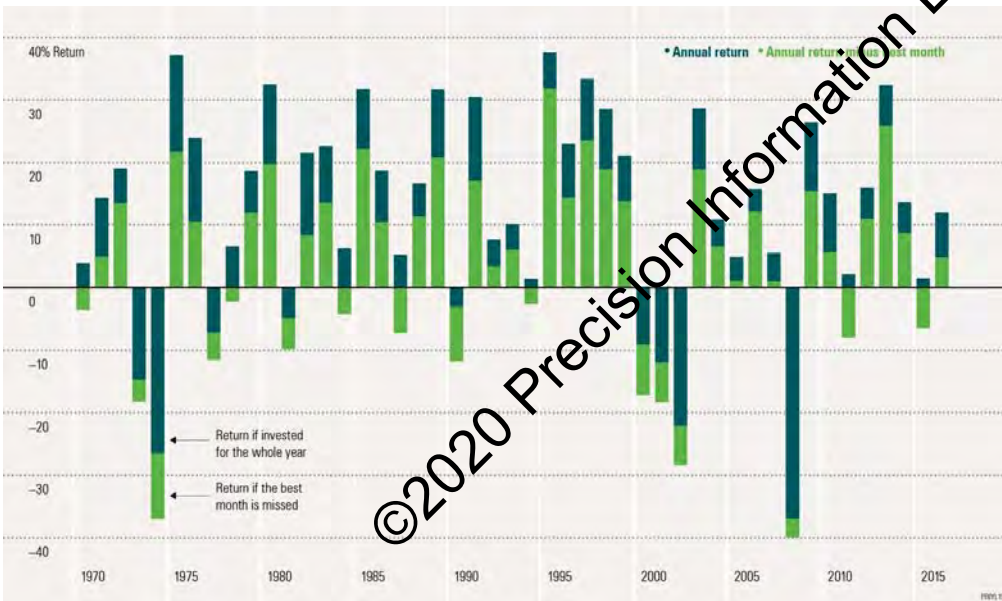


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### Market-Timing Risk

The effects of missing the best month of annual returns 1970–2016



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# Stocks and Bonds

## Investing in Stocks and Bonds

### Stocks

- ▶ Ownership in a corporation
- ▶ Voting rights
- ▶ Historically higher returns
- ▶ More risk

### Bonds

- ▶ Potential growth
- ▶ Historically lower risk
- ▶ Income generation

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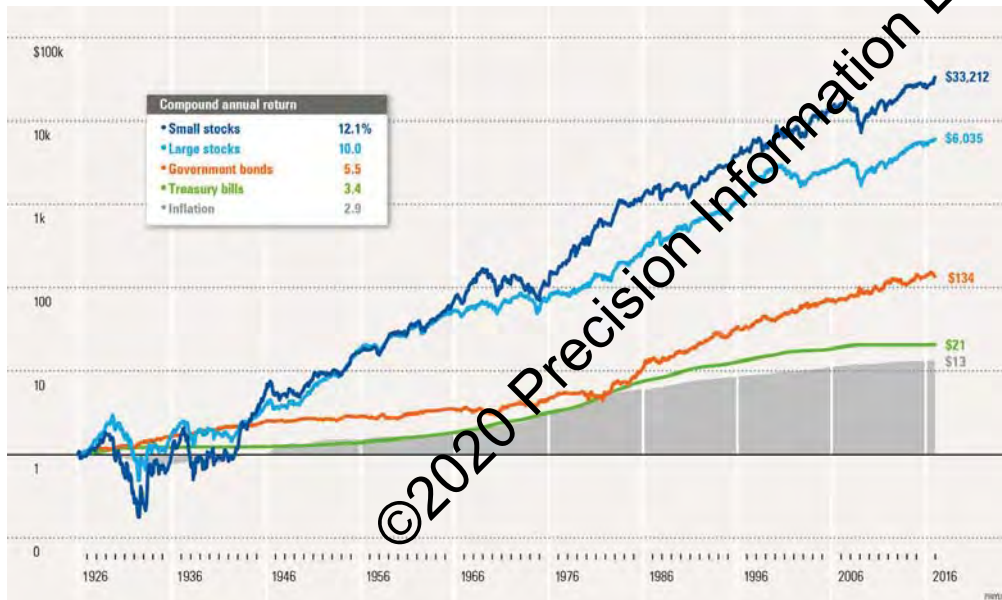


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### Ibbotson® SBBI®

Stocks, Bonds, Bills, and Inflation 1926–2016



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### Ibbotson® SBBI®

Stocks, Bonds, Bills, and Inflation 1997–2016



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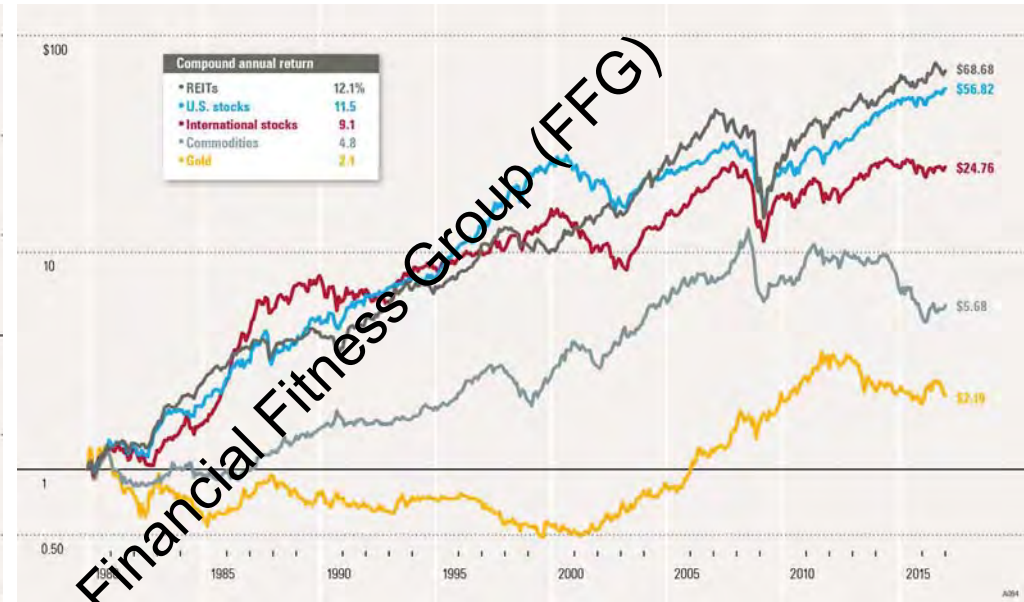


### The Past 10 Years 2007–2016



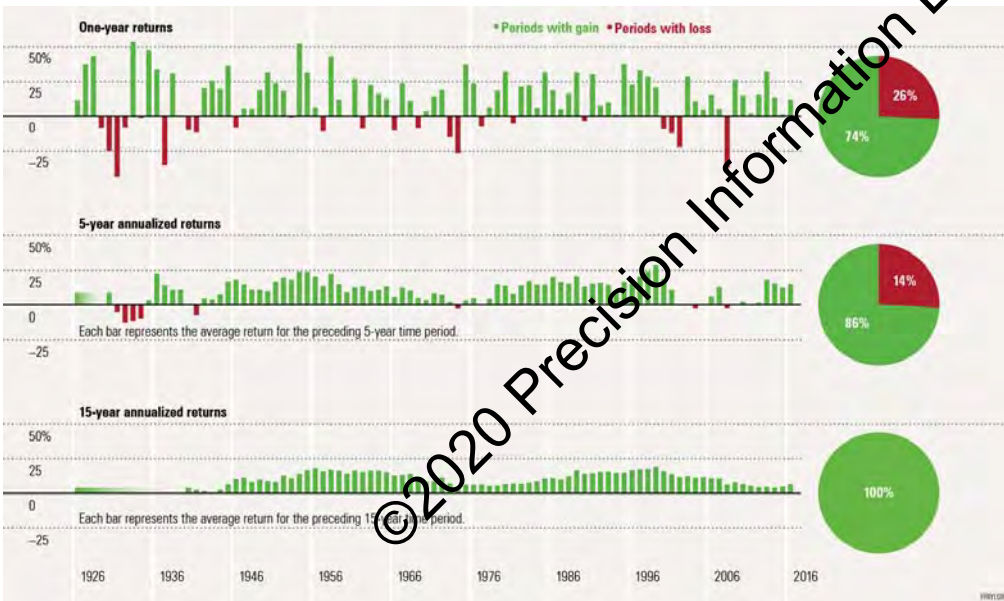
Past performance is no guarantee of future results. Hypothetical value of \$1 invested at the beginning of 2006. Assumes reinvestment of income and no transaction costs or taxes. This is for illustrative purposes only and not indicative of any investment. An investment cannot be made directly in an index. © Morningstar. All Rights Reserved.

### Stocks, Commodities, REITs, and Gold 1980–2016



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### Risk of Stock Market Loss Over Time 1926–2016



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### Bond Market Performance 1986–2016



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### Relationship Between Bond Prices and Yields

When yields increase, bond prices decrease

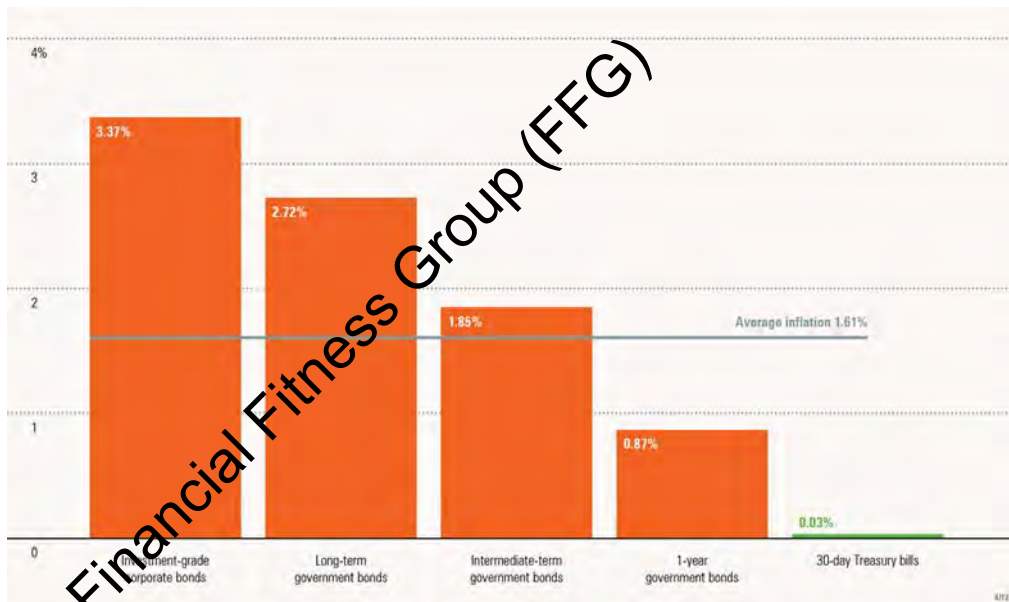


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### Fixed-Income Yields Versus Average 10-Year Inflation

As of December 2016

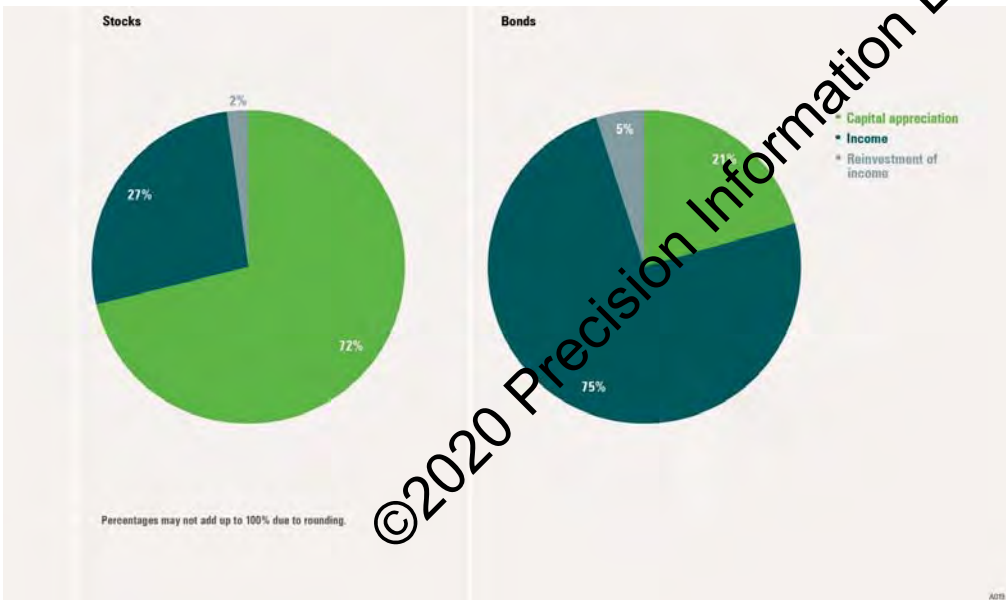


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### Bonds Produced Greater Income

Percentage of total return 1970–2016

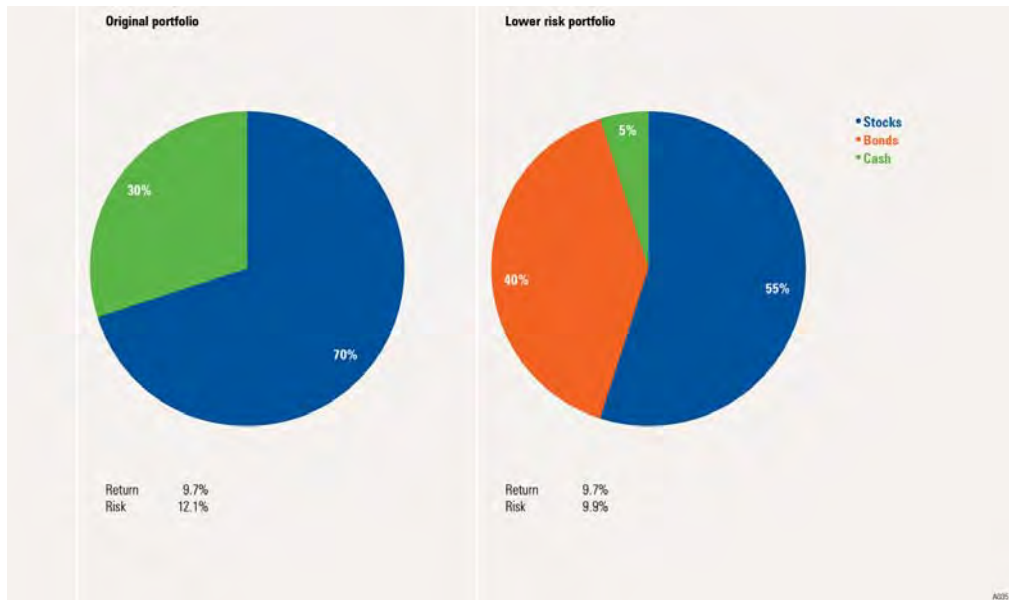


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### Adding a Bond Allocation to Diversify

1970–2016

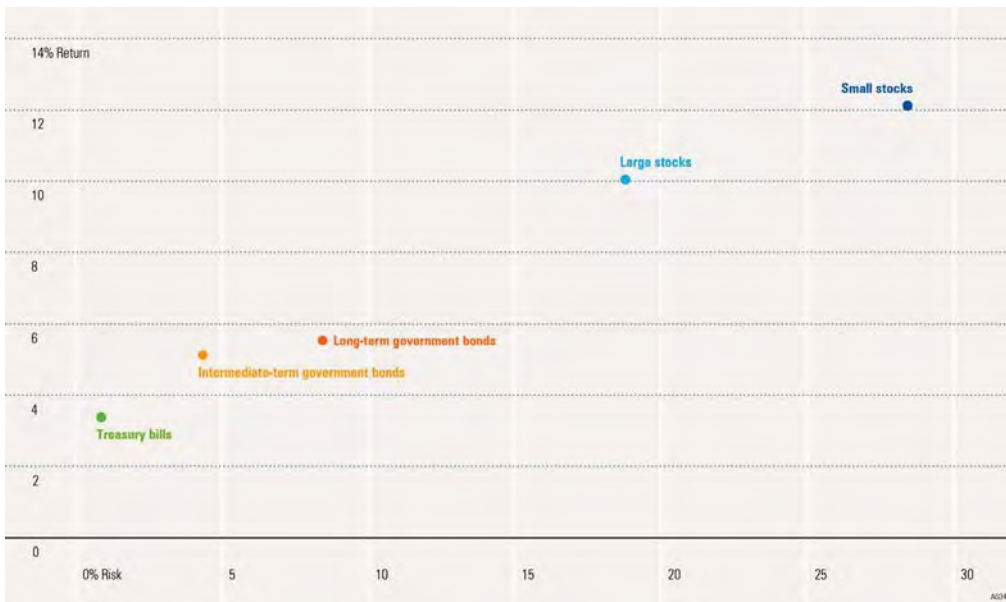


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## Risk Versus Return

Stocks, bonds, and bills 1926–2016



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## Asset-Class Winners and Losers



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## Stock and Bond Snapshots

Returns over various time periods as of December 2016

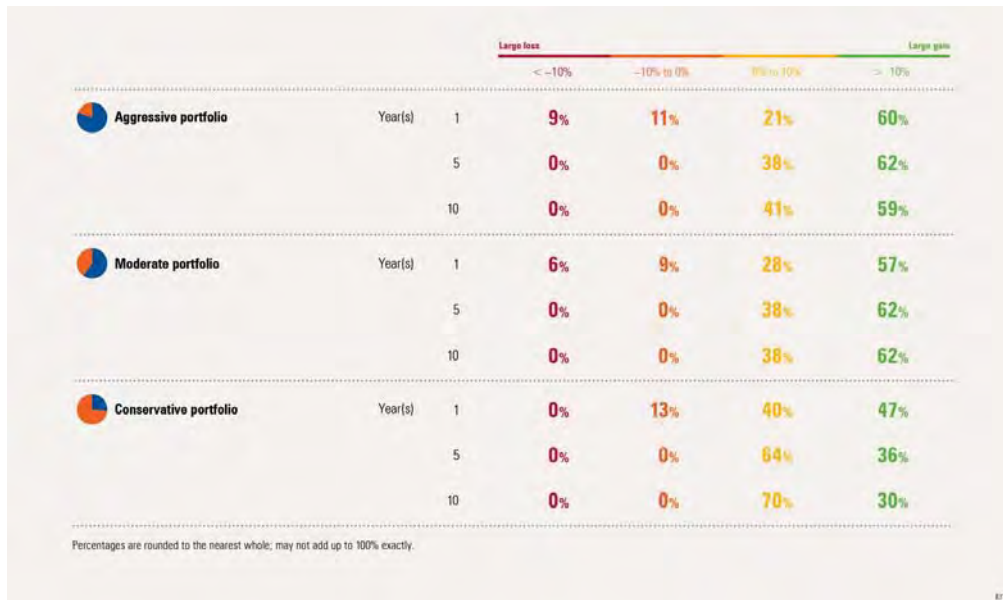


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## Stock and Bond Portfolios

Probability of gain or loss over one-, five-, and ten-year rolling periods, 1970–2016



Percentages are rounded to the nearest whole; may not add up to 100% exactly.

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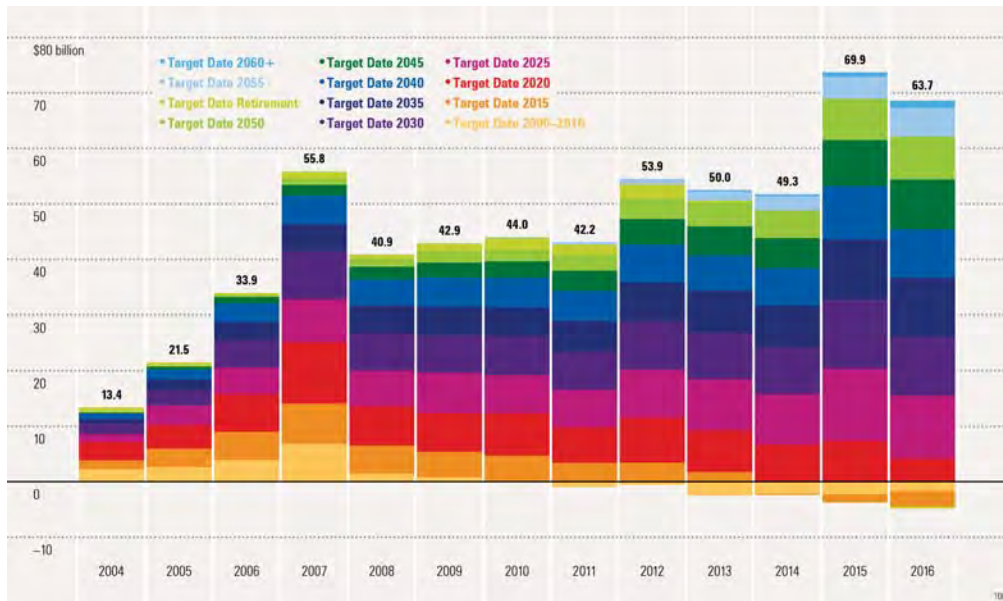
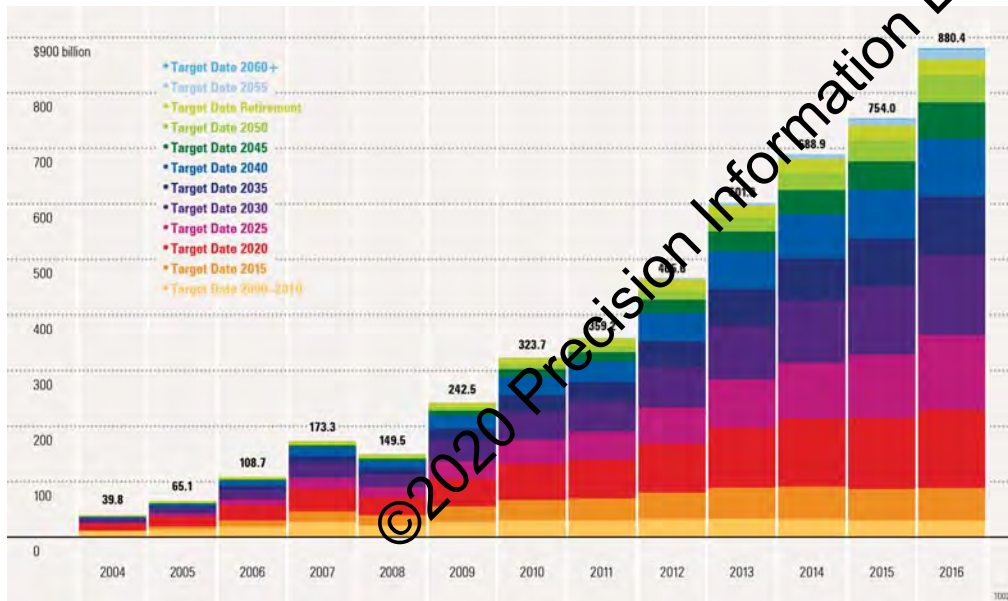
# Target-Date Funds

## Structure and Characteristics of Target-Date Funds

- ▶ A single investment option that allows investors to hold a mix of asset classes that both rebalances periodically and shifts allocations over time.
- ▶ Invests more aggressively in the decades before retirement and shifts to a more conservative asset mix in the years immediately preceding retirement. This shift in assets is called the "glide path."
- ▶ Not a uniform investment type. Depending on the glide-path philosophy, the sub-asset classes used, and the nature and quality of the underlying investments, target-date funds can display markedly different risk and return characteristics.
- ▶ While stocks and bonds may account for a large portion of these funds, target-date funds also allow for exposure to alternative asset classes.

**Target-Date Fund Assets Continue to Rise**  
Total net assets by category, 2004–2016

**Tracking Investor Target-Date Fund Flows**  
Net fund flows by category, 2004–2016



## Glide Path Discussion

Linear, Steep, and Stepped Paths

- ▶ Linear: roll down equity allocations in a gradual, linear fashion, producing a consistent slope.
- ▶ Steep: equities are kept near or above the averages in the longer-dated funds but dramatically reduced in the decade before retirement.
- ▶ Stepped: equities are kept at their original target level over each 10-year period.
- ▶ Target-date funds adopt three general approaches to tactical allocation, or deviations from the strategic glide path.
  - ▶ No tactical allocation is allowed.
  - ▶ Modest deviations are allowed.
  - ▶ Active tactical allocation is allowed.

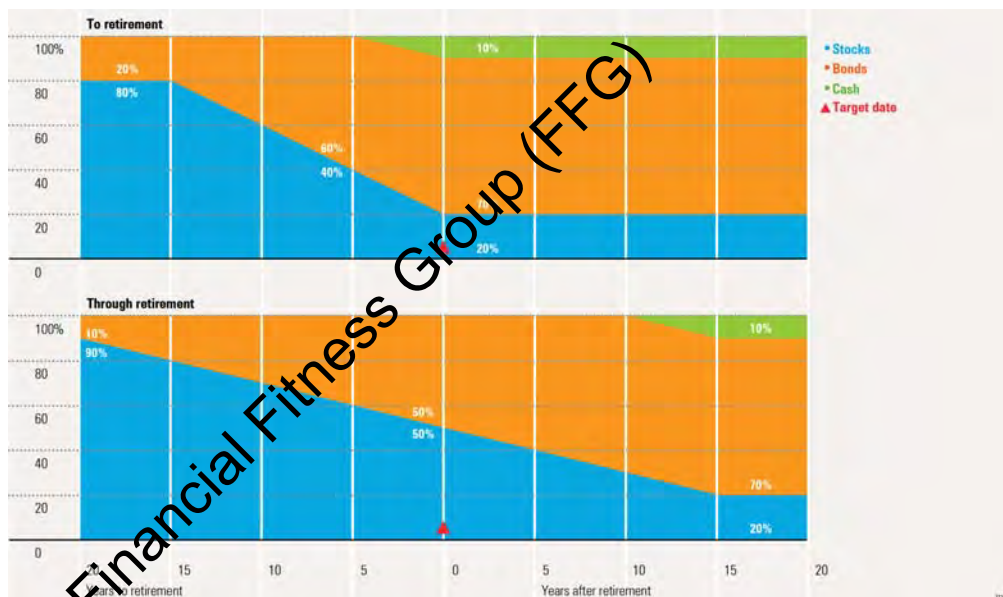


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## Risk Level at Retirement

Comparison of "to" versus "through" funds

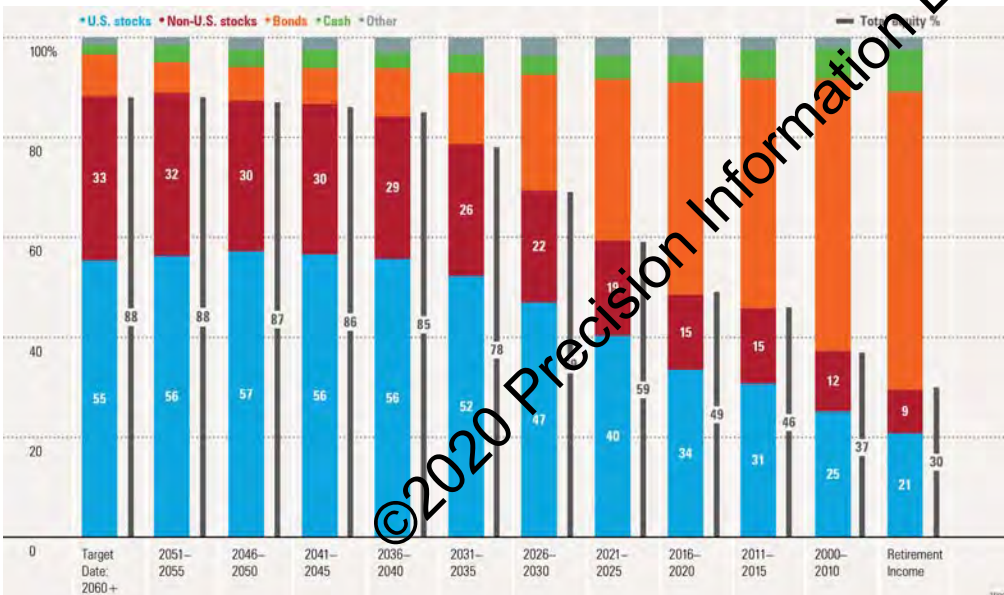


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## Target-Date Funds Alter Allocations Over Time

Average allocations to stocks, bonds, cash, and other investments

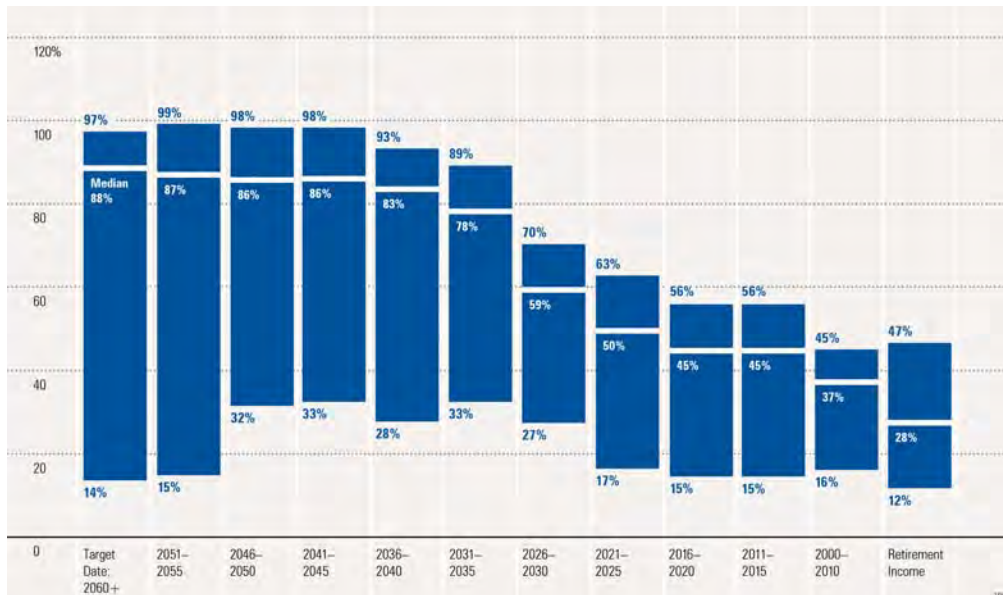


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## Target-Date Funds Display Lack of Consistency in Allocations

Range of allocations to equities as of year-end 2016

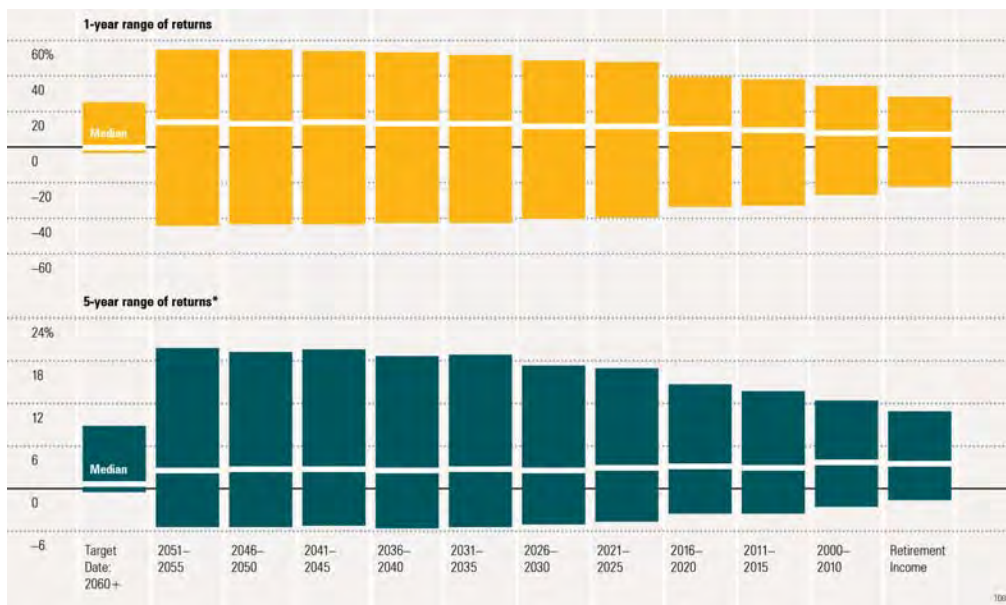


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## Risk Levels Differ by Target-Date Category

Rolling returns over 1- and 5-year periods, November 2003–December 2016



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## Proposed Disclosure for Target-Date Funds

- ▶ Performance is influenced by the way a fund changes its asset allocation over time (the glide path).
- ▶ Numerous permutations of glide paths exist.
- ▶ Fund companies must disclose to investors the nature of their glide paths, along with the attendant risks and performance expectations.
- ▶ According to the Investment Company Institute, it is suggested that fund series prominently disclose:
  - ▶ Relevance of the “target date” used in a fund name, including what happens on the target date.
  - ▶ The fund’s assumptions about the investor’s withdrawal intentions after reaching the target date.
  - ▶ The age group for whom the fund is designed.
  - ▶ An illustration of the glide path that the fund follows and the degree to which management may change the allocation target.
  - ▶ A statement of the risks associated with the series.

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## Questions to Consider When Evaluating a Target-Date Fund

- ▶ What is the shape of the fund’s glide path?
- ▶ How does the glide path compare to other funds in the same target-date category?
- ▶ What happens to the glide path at retirement?
- ▶ Is the fund intended to get investors “to” or “through” retirement?
- ▶ Is the fund diversified beyond stocks and bonds to include other alternative assets such as real estate, commodities, TIPS, etc.?
- ▶ What are the costs associated with the fund?
- ▶ Does the fund take a strategic or tactical asset allocation approach?

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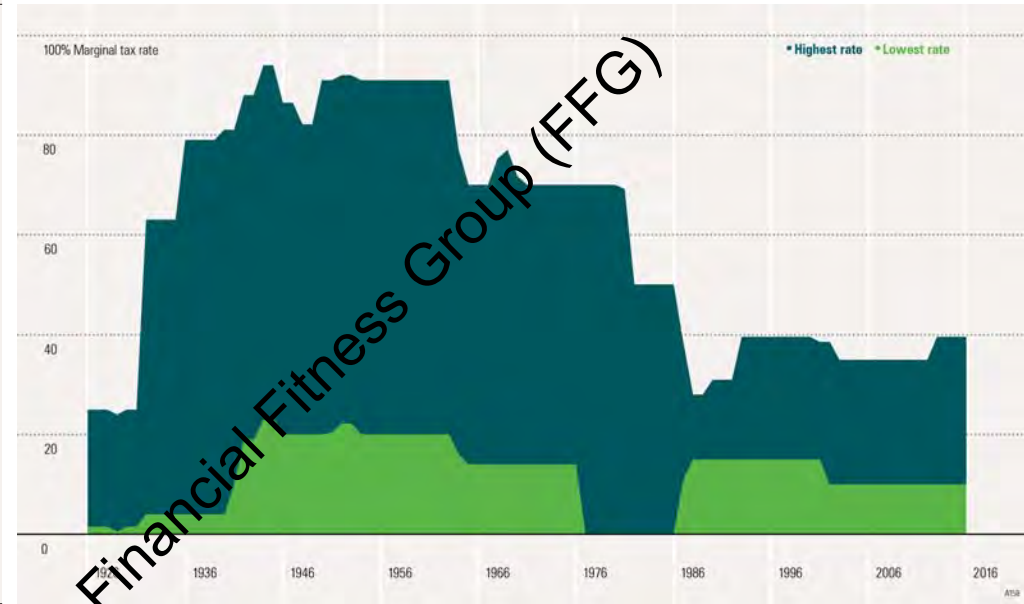


# Taxes and Investment Performance

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## Comparison of Highest and Lowest Marginal Tax Rates 1926–2016



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## Ibbotson® SBBI® Stocks, Bonds, Bills, and Inflation 1926–2016



## Ibbotson® SBBI® After Taxes 1926–2016



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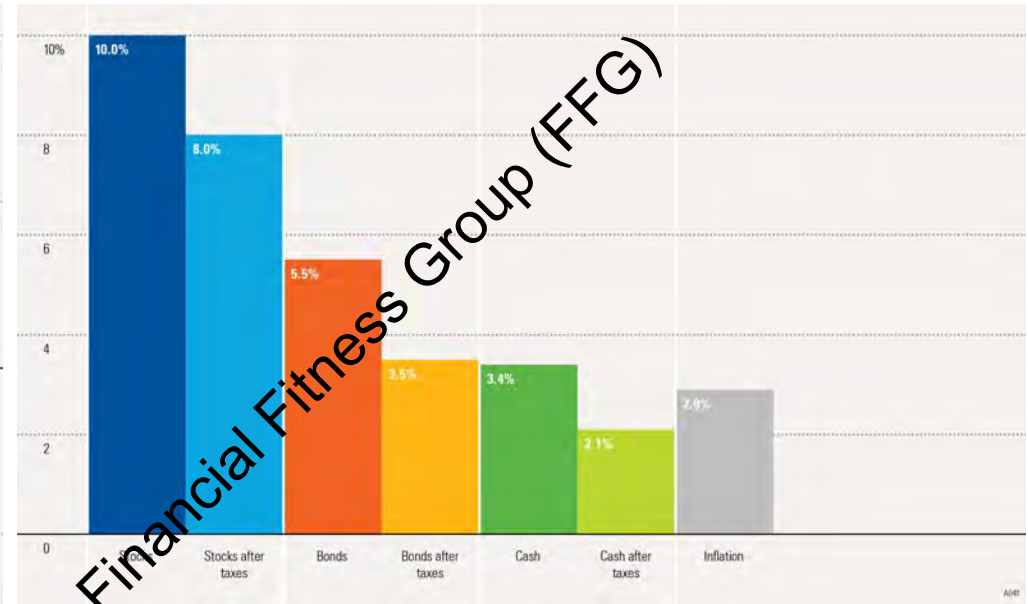


**Ibbotson® SBBI® After Taxes and Inflation**  
1926–2016



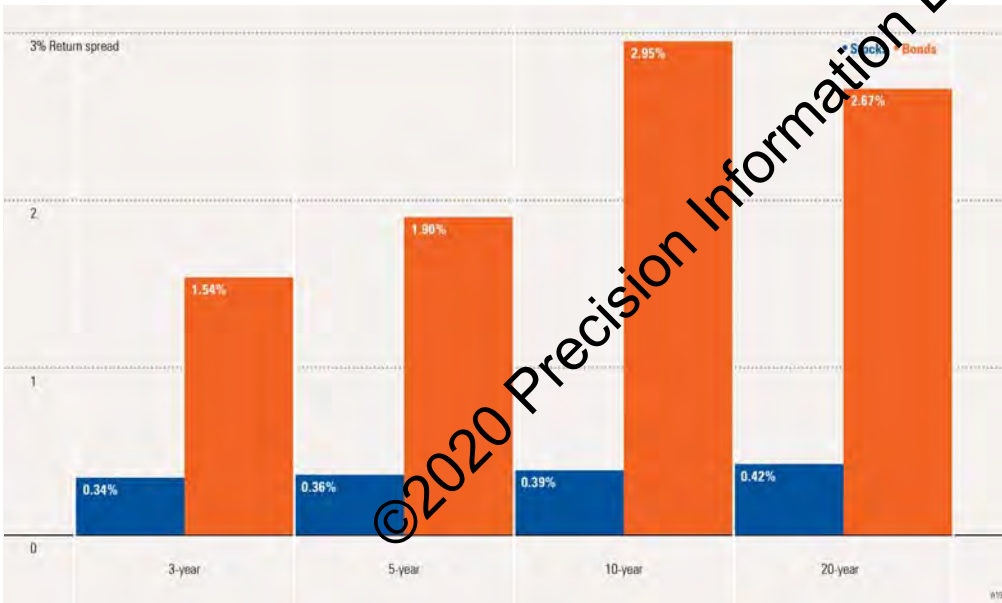
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**Taxes Significantly Reduce Returns**  
1926–2016



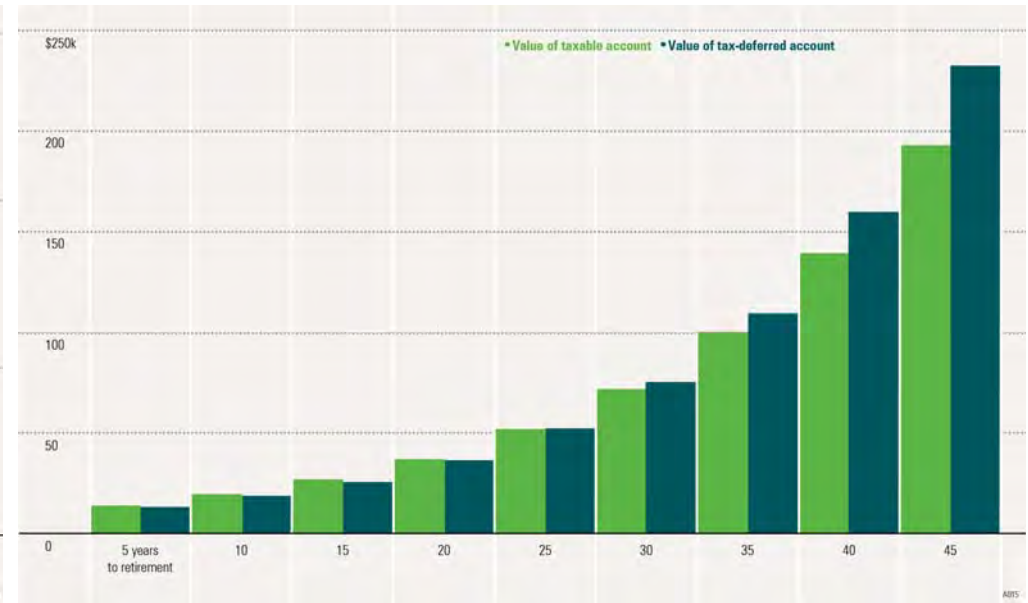
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**Lower Capital Gains Taxes Have Benefited Stocks in Recent Years**  
Spread between before- and after-tax returns over various holding periods



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**Benefits of Deferring Taxes**



Hypothetical value of \$10,000 invested in stocks. This example is for an investor in the 28% bracket using the 2016 tax code. Assumes an 8% annual total return. Estimates are not guaranteed. This is for illustrative purposes only and not indicative of any investment. © Morningstar. All Rights Reserved.

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