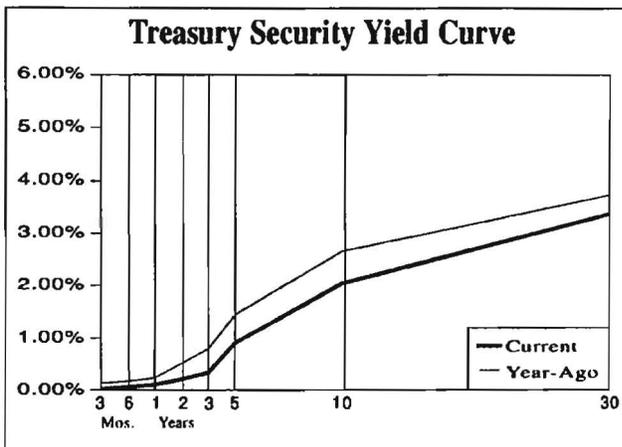


## Selected Yields

	Recent (9/8/11)	3 Months Ago (6/08/11)	Year Ago (9/08/10)		Recent (9/8/11)	3 Months Ago (6/08/11)	Year Ago (9/08/10)
<b>TAXABLE</b>							
<b>Market Rates</b>							
Discount Rate	0.75	0.75	0.75				
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25				
Prime Rate	3.25	3.25	3.25				
30-day CP (A1/P1)	0.36	0.17	0.22				
3-month LIBOR	0.34	0.25	0.29				
<b>Bank CDs</b>							
6-month	0.17	0.27	0.35				
1-year	0.21	0.45	0.61				
5-year	1.29	1.69	1.72				
<b>U.S. Treasury Securities</b>							
3-month	0.02	0.03	0.13				
6-month	0.06	0.09	0.17				
1-year	0.10	0.16	0.23				
5-year	0.91	1.50	1.45				
10-year	2.04	2.94	2.66				
10-year (inflation-protected)	-0.08	0.67	0.99				
30-year	3.37	4.19	3.73				
30-year Zero	3.67	4.57	3.99				
<b>Mortgage-Backed Securities</b>							
GNMA 5.5%	1.05	1.74	1.72				
FHLMC 5.5% (Gold)	1.82	2.33	2.24				
FNMA 5.5%	1.76	2.26	2.11				
FNMA ARM	2.50	2.51	2.90				
<b>Corporate Bonds</b>							
Financial (10-year) A	3.77	4.35	4.20				
Industrial (25/30-year) A	4.70	5.22	4.89				
Utility (25/30-year) A	4.55	5.20	4.98				
Utility (25/30-year) Baa/BBB	5.14	5.77	5.48				
<b>Foreign Bonds (10-Year)</b>							
Canada	2.27	3.00	2.92				
Germany	1.91	3.05	2.30				
Japan	1.01	1.16	1.14				
United Kingdom	2.34	3.29	2.99				
<b>Preferred Stocks</b>							
Utility A	5.79	5.62	6.08				
Financial A	6.60	6.16	6.69				
Financial Adjustable A	5.53	5.53	5.53				



### TAX-EXEMPT

<b>Bond Buyer Indexes</b>							
20-Bond Index (GOs)	4.14	4.51	3.86				
25-Bond Index (Revs)	5.15	5.33	4.63				
<b>General Obligation Bonds (GOs)</b>							
1-year Aaa	0.20	0.26	0.29				
1-year A	0.96	1.08	1.09				
5-year Aaa	0.93	1.33	1.09				
5-year A	1.96	2.48	2.11				
10-year Aaa	2.28	2.65	2.30				
10-year A	3.77	4.17	3.56				
25/30-year Aaa	3.95	4.35	4.08				
25/30-year A	5.62	5.89	5.36				
<b>Revenue Bonds (Revs) (25/30-Year)</b>							
Education AA	4.62	4.87	4.60				
Electric AA	4.99	5.18	4.60				
Housing AA	5.61	5.59	5.36				
Hospital AA	4.98	5.29	4.87				
Toll Road Aaa	4.70	4.97	4.58				

## Federal Reserve Data

### BANK RESERVES

(Two-Week Period; in Millions, Not Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	8/24/11	8/10/11	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1577803	1601995	-24192	1592546	1490623	1255175
Borrowed Reserves	11833	11941	-108	12789	15806	30058
Net Free/Borrowed Reserves	1565970	1590054	-24084	1579757	1474817	1225117

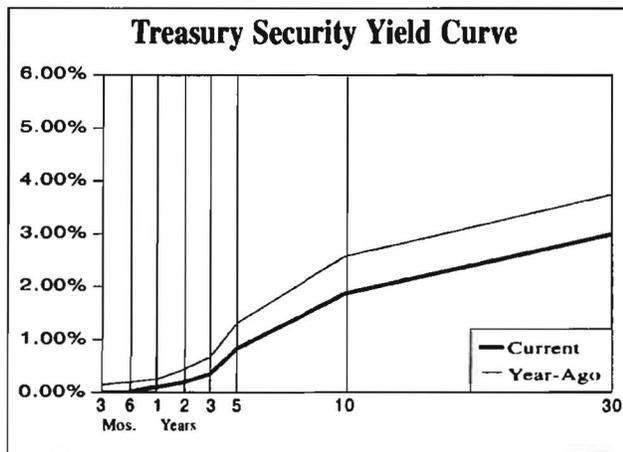
### MONEY SUPPLY

(One-Week Period; in Billions, Seasonally Adjusted)

	Recent Levels			Ann'l Growth Rates Over the Last...		
	8/22/11	8/15/11	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	2105.8	2085.7	20.1	40.2%	26.0%	20.3%
M2 (M1+savings+small time deposits)	9539.6	9521.7	17.9	24.9%	14.8%	10.2%

## Selected Yields

	Recent (9/21/11)	3 Months Ago (6/22/11)	Year Ago (9/22/10)		Recent (9/21/11)	3 Months Ago (6/22/11)	Year Ago (9/22/10)
<b>TAXABLE</b>							
<b>Market Rates</b>							
Discount Rate	0.75	0.75	0.75				
Federal Funds	0.00-0.25	0.00-0.25	0.00-0.25				
Prime Rate	3.25	3.25	3.25				
30-day CP (A1/P1)	0.42	0.18	0.24				
3-month LIBOR	0.36	0.25	0.29				
<b>Bank CDs</b>							
6-month	0.17	0.26	0.34				
1-year	0.21	0.44	0.60				
5-year	1.26	1.64	1.71				
<b>U.S. Treasury Securities</b>							
3-month	0.01	0.01	0.15				
6-month	0.02	0.08	0.19				
1-year	0.10	0.15	0.25				
5-year	0.84	1.54	1.32				
10-year	1.86	2.98	2.56				
10-year (inflation-protected)	0.00	0.75	0.65				
30-year	2.99	4.22	3.75				
30-year Zero	3.25	4.60	4.02				
<b>Mortgage-Backed Securities</b>							
GNMA 5.5%	1.14	2.05	1.99				
FHLMC 5.5% (Gold)	1.93	2.55	2.39				
FNMA 5.5%	1.85	2.43	2.27				
FNMA ARM	2.50	2.51	2.90				
<b>Corporate Bonds</b>							
Financial (10-year) A	3.59	4.42	4.11				
Industrial (25/30-year) A	4.31	5.31	5.02				
Utility (25/30-year) A	4.23	5.29	5.04				
Utility (25/30-year) Baa/BBB	4.86	5.79	5.56				
<b>Foreign Bonds (10-Year)</b>							
Canada	2.12	2.97	2.86				
Germany	1.77	2.94	2.35				
Japan	0.99	1.12	1.03				
United Kingdom	2.41	3.19	2.97				
<b>Preferred Stocks</b>							
Utility A	5.23	5.27	6.08				
Financial A	6.38	6.10	6.47				
Financial Adjustable A	5.47	5.47	5.47				



### TAX-EXEMPT

<b>Bond Buyer Indexes</b>							
20-Bond Index (GOs)	4.07	4.49	3.89				
25-Bond Index (Revs)	5.11	5.32	4.63				
<b>General Obligation Bonds (GOs)</b>							
1-year Aaa	0.21	0.28	0.34				
1-year A	0.99	1.08	1.15				
5-year Aaa	1.00	1.37	1.24				
5-year A	1.99	2.40	2.24				
10-year Aaa	2.21	2.63	2.56				
10-year A	3.56	4.08	3.70				
25/30-year Aaa	3.89	4.37	4.11				
25/30-year A	5.63	5.89	5.40				
<b>Revenue Bonds (Revs) (25/30-Year)</b>							
Education AA	4.62	4.87	4.61				
Electric AA	4.97	5.19	4.62				
Housing AA	5.60	5.79	5.44				
Hospital AA	4.97	5.28	4.82				
Toll Road Aaa	4.69	4.97	4.60				

## Federal Reserve Data

### BANK RESERVES

(Two-Week Period; in Millions, Not Seasonally Adjusted)

	Recent Levels			Average Levels Over the Last...		
	9/7/11	8/24/11	Change	12 Wks.	26 Wks.	52 Wks.
Excess Reserves	1568590	1577802	-9212	1595396	1515698	1275488
Borrowed Reserves	11685	11833	-148	12407	15069	28273
Net Free/Borrowed Reserves	1556905	1565969	-9064	1582989	1500629	1247215

### MONEY SUPPLY

(One-Week Period; in Billions, Seasonally Adjusted)

	Recent Levels			Ann'l Growth Rates Over the Last...		
	9/5/11	8/29/11	Change	3 Mos.	6 Mos.	12 Mos.
M1 (Currency+demand deposits)	2136.6	2124.1	12.5	48.8%	30.8%	21.9%
M2 (M1+savings+small time deposits)	9591.4	9570.1	21.3	26.4%	15.3%	10.5%



Subscribe to Fortune Register Log In CNN

Enter symbol or keyword



Home | Video | Business News | Markets | Term Sheet | Economy | Tech | Personal Finance | Small Business | Leadership

Premarket | After-hours | Stocks | Market Movers | Dow 30 | Bonds | Currencies | Commodities | Mutual Funds | ETFs | World Markets | Alerts | Video

Trade Now  
 Select Your Broker...



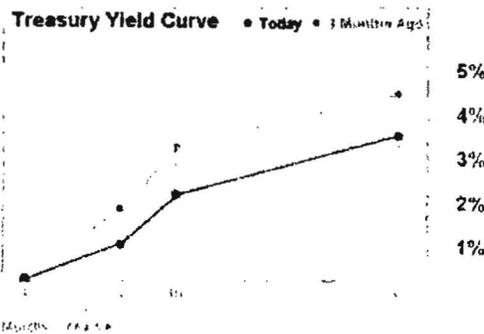
**Bonds & Interest Rates**

**10-year Treasury yield hits record low**

SEP 9 2:10PM A triple-whammy of fear has had a pressure-cooker affect on the market, leading yields on Friday to hit new lows. And they could go lower still. More

**U.S. Treasury Yields**

Maturity	Last Yield	Previous Yield
3 Month	0.00%	0.01%
2 Year	0.19%	0.28%
5 Year	0.80%	0.87%
10 Year	1.91%	1.99%
30 Year	3.25%	3.31%



**Would You Go Back To School If You Qualified For A Grant? See If You Qualify!**

CLICK YOUR AGE:

25	26	27	28	29	30	31	
32	33	34	35	36	37	38	
39	40	41	42	43	44	45	
46	47	48	49	50	51	52	
53	54	55	56	57	58	59	
60	61	62	63	64	65	66	
67	68	69	70	71	72	73	
classesUSA™	74	See Degrees Now					

**Inflation-Protected (TIPS)**

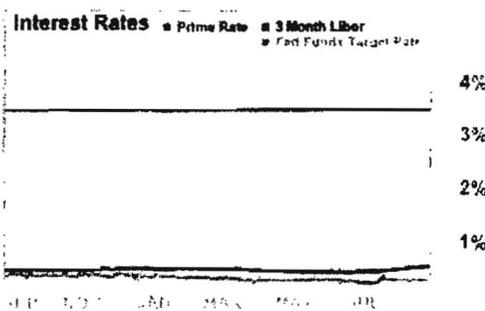
Maturity	Last Yield	Previous Yield
5 Year	-1.00%	-0.84%
10 Year	-0.21%	0.40%

**Corporates**

Index Name	Last Yield	Previous Yield
Investment Grade	3.59%	3.61%
High Yield	8.50%	8.69%

**Lending Rates** 1 Year

Interest Rate	Rate	1 Year Ago
Fed Funds	0.09	0.18
3 Month Libor	0.34	0.29
Prime	3.25	3.25



**Fed Focus** »  
 Get the latest news and analysis of the Federal Reserve

**Would You Go Back To School If You Qualified For A Grant? See If You Qualify!**

CLICK YOUR AGE:

25	26	27	28	29	30	31	
32	33	34	35	36	37	38	
39	40	41	42	43	44	45	
46	47	48	49	50	51	52	
53	54	55	56	57	58	59	
60	61	62	63	64	65	66	
67	68	69	70	71	72	73	
classesUSA™	74	See Degrees Now					

For latest news and rates on home mortgages, CDs, and student or auto loans go to our [Loan Center](#) »

Sponsored Links

**Penny Stock Jumping 3000%**  
Join our 100% Free Newsletter & get Penny Stock Picks that jump high!

**Mortgage Rates Hit 2.50%**  
Homeowners Are Using This Ridiculously Easy Trick To Pay Off Their Homes In Half The Time! (3.1 APR)

**Top 10 High-Yield Stocks**  
These companies could pay you a lifetime of reliable high-income...

Buy a link here

Resource Center Special Offers  
PERSONAL FINANCE

**Penny Stock Jumping 3000%**

**Mortgage Rates Hit 2.50%**

**Top 10 High-Yield Stocks**

REAL ESTATE

**Reverse Mortgage Answers**

**What Is Your Flood Risk?**

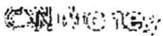
**Mortgage Rates Hit 2.50%**

STOCKS

**100% - 1000% Stock Gains?**

**Penny Stock Soaring 3000%**

**Stocks that Move up Big**



About CNNMoney

Contact Us

Advertise with Us

User Preferences

Career Opportunities

Conferences

Business Leader Council

Content

Fortune Magazine

Money Magazine

Business News

Markets

Term Sheet

Economy

Tech

Personal Finance

Small Business

Video

Magazines

Subscribe to Fortune

Subscribe to Money

Give the Gift of Fortune

Give the Gift of Money

Reprints

Special Sections

Magazine Customer Service

Site Tools

Site Map

Watchlist

Search Jobs

Real Estate Search

Mortgage and Savings Center

Calculators

Widgets

Corrections

Market Data Alerts

News Alerts

Stay Connected

My Account

Mobile Site & Apps

Facebook

Twitter

LinkedIn

YouTube

RSS Feeds

Newsletters

Tumblr

Market indexes are shown in real time, except for the DJIA, which is delayed by two minutes. All times are ET. Disclaimer LIBOR Warning: Neither BBA Enterprises Limited, nor the BBA LIBOR Contributor Banks, nor Reuters, can be held liable for any irregularity or inaccuracy of BBA LIBOR. Disclaimer. Morningstar © 2011 Morningstar, Inc. All Rights Reserved. Disclaimer The Dow Jones Indexes are proprietary to and distributed by Dow Jones & Company, Inc. and have been licensed for use. All content of the Dow Jones Indexes 2011 is proprietary to Dow Jones & Company, Inc. Chicago Mercantile Association. The market data is the property of Chicago Mercantile Exchange Inc. and its licensors. All rights reserved. FactSet Research Systems Inc. 2011. All rights reserved. Most stock quote data provided by BATS.

© 2011 Cable News Network. A Time Warner Company. All Rights Reserved. Terms under which this service is provided to you. Privacy Policy. Ad Choices



Subscribe to Money Register Log In CNN

Enter symbol or keyword

Search

Home | Video | Business News | Markets | Term Sheet | Economy | Tech | Personal Finance | Small Business | Leadership | »

Premarket | After-hours | Stocks | Market Movers | Dow 30 | Bonds | Currencies | Commodities | Mutual Funds | ETFs | World Markets | Alerts | Video |

Trade Now  
 Select Your Broker...



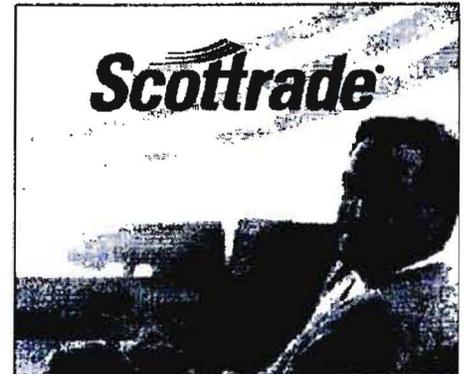
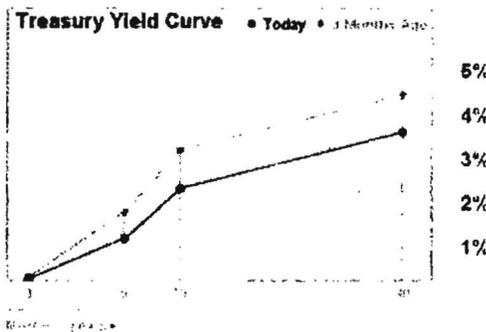
### Bonds & Interest Rates

#### Wishing for euro bonds? Fat chance.

Sep 16 11:52am Calls for a bond backed by all 17 eurozone countries are getting louder. But experts warn that euro bonds would not be a silver bullet. More

#### U.S. Treasury Yields

Maturity	Last Yield	Previous Yield
3 Month	0.00%	0.00%
2 Year	0.18%	0.26%
5 Year	0.93%	0.95%
10 Year	2.08%	2.08%
30 Year	3.34%	3.35%



Last 5 Quotes My Watch List

#### Inflation-Protected (TIPS)

Maturity	Last Yield	Previous Yield
5 Year	-0.93%	-0.94%
10 Year	-0.06%	0.40%

Data as of Sep 16

#### Corporates

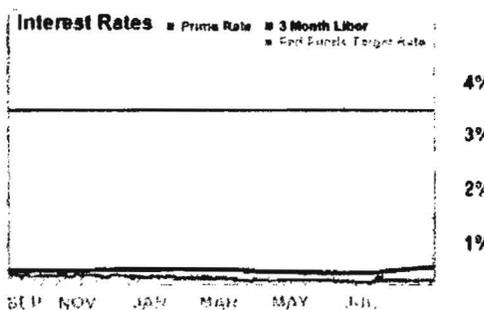
Index Name	Last Yield	Previous Yield
Investment Grade	3.73%	3.73%
High Yield	8.66%	8.66%

Data as of Sep 16

#### Lending Rates 1 Year

Interest Rate	Rate	1 Year Ago
Fed Funds	0.09	0.21
3 Month Libor	0.35	0.29
Prime	3.25	3.25

Data as of Sep 16



Push high bandwidth applications to the very edge of your network in seconds.

BROCADE

For latest news and rates on home mortgages, CDs, and student or auto loans go to our [Loan Center](#) »

**Sponsored Links**

**Penny Stock Jumping 3000%**  
 Join our 100% Free Newsletter & get Penny Stock Picks that jump high!

**Top 10 High-Yield Stocks**  
 These companies could pay you a lifetime of reliable high-income...

**Invest in Gold Today**  
 Grow your Retirement Accounts with Gold. Get a Free Investor Kit

**Resource Center Special Offers**  
**PERSONAL FINANCE**

**Penny Stock Jumping 3000%**

**Top 10 High-Yield Stocks**

**Invest in Gold Today**  
**REAL ESTATE**

**Refinance at 3.25% FIXED!**

**Reverse Mortgage Answers**

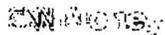
**Free Day Trading Classes**  
**STOCKS**

**Penny Stock Soaring 3000%**

**Free Day Trading Classes**

**3 Stocks ready to explode**

Buy a link here



**About CNNMoney**

- Contact Us
- Advertise with Us
- User Preferences
- Career Opportunities
- Conferences
- Business Leader Council

**Content**

- Fortune Magazine
- Money Magazine
- Business News
- Markets
- Term Sheet
- Economy
- Tech
- Personal Finance
- Small Business
- Video

**Magazines**

- Subscribe to Fortune
- Subscribe to Money
- Give the Gift of Fortune
- Give the Gift of Money
- Reports
- Special Sections
- Magazine Customer Service

**Site Tools**

- Site Map
- Watchlist
- Search: Jobs
- Real Estate Search
- Mortgage and Savings Center
- Calculators
- Widgets
- Corrections
- Market Data Alerts
- News Alerts

**Stay Connected**

- My Account
- Mobile Site & Apps
- Facebook
- Twitter
- LinkedIn
- YouTube
- RSS Feeds
- Newsletters
- Tumblr

Market indexes are shown in real time, except for the DJIA, which is delayed by two minutes. All times are ET. Disclaimer LIBOR Warning: Neither BBA Enterprises Limited, nor the BBA LIBOR Contributor Banks, nor Reuters, can be held liable for any irregularity or inaccuracy of BBA LIBOR. Disclaimer. Morningstar. © 2011 Morningstar, Inc. All Rights Reserved. Disclaimer The Dow Jones indexesSM are proprietary to and distributed by Dow Jones & Company, Inc. and have been licensed for use. All content of the Dow Jones IndexesSM © 2011 is proprietary to Dow Jones & Company Inc. Chicago Mercantile Association. The market data is the property of Chicago Mercantile Exchange Inc. and its licensors. All rights reserved. FactSet Research Systems Inc. 2011. All rights reserved. Most stock quote data provided by BATS.

© 2011 Cable News Network. A Time Warner Company. All Rights Reserved. Terms under which this service is provided to you. Privacy Policy. Ad choices



Subscribe to Fortune Register Log In CNN

Enter symbol or keyword

Search

- Home
- Video
- Business News
- Markets
- Term Sheet
- Economy
- Tech
- Personal Finance
- Small Business
- Leadership

- Premarket
- After-hours
- Stocks
- Market Movers
- Dow 30
- Bonds
- Currencies
- Commodities
- Mutual Funds
- ETFs
- World Markets
- Alerts
- Video

Trade Now  
 Select Your Broker...



## Bonds & Interest Rates

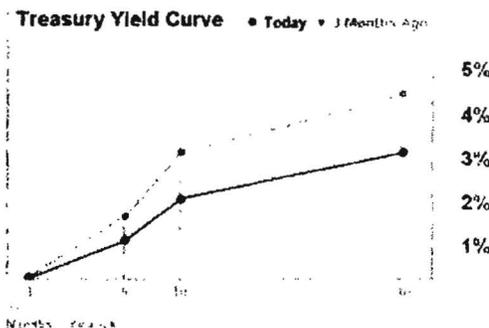
### Treasuries: 'Signs of fatigue'

See 23 12 41pm With Treasury prices rising and yields sliding all week it's leaving investors in the frenzied bond market in a state of exhaustion. Can yields go any lower? More

### U.S. Treasury Yields

Maturity	Last Yield	Previous Yield
3 Month	0.00%	0.00%
2 Year	0.13%	0.25%
5 Year	0.85%	0.77%
10 Year	1.81%	1.71%
30 Year	2.87%	2.79%

Data as of Sep 23



Last 5 Quotes My Watch List

### Inflation-Protected (TIPS)

Maturity	Last Yield	Previous Yield
5 Year	-0.71%	-0.87%
10 Year	-0.05%	0.50%

Data as of Sep 23

### Corporates

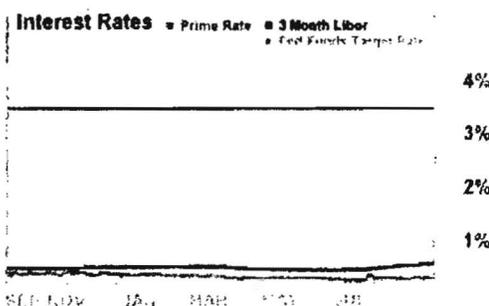
Index Name	Last Yield	Previous Yield
Investment Grade	3.61%	3.64%
High Yield	8.66%	8.85%

Data as of Sep 23

### Lending Rates 1 Year

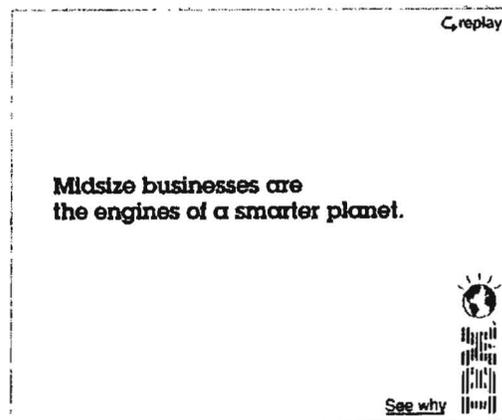
Interest Rate	Rate	1 Year Ago
Fed Funds	0.08	0.20
3 Month Libor	0.26	0.29
Prime	3.25	3.25

Data as of Sep 23



Fed Focus »  
 Get the latest news and analysis of the Federal Reserve.

For latest news and rates on home mortgages, CDs, and student or auto loans go to our Loan Center »



Sponsored Links

**Fidelity Online Trading**

\$7.95 on online trades. Plus trade 25 iShares ETFs online for free.

**Penny Stock Jumping 3000%**

Join our 100% Free Newsletter & get Penny Stock Picks that jump high!

**Overstock iPads: 95% Off!**

Get a NEW 32GB Apple iPad 95% off! Only \$32.22. One Per Day. Get Yours Now!

[Buy a link here](#)

Resource Center Special Offers  
PERSONAL FINANCE

**Fidelity Online Trading**

**Penny Stock Jumping 3000%**

**Overstock iPads: 95% Off!**

REAL ESTATE

**Reverse Mortgage Answers**

**What is Your Flood Risk?**

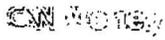
**Don't Fear a Recession!**

STOCKS

**Overstock iPads: \$30.93**

**3 Hot Penny Stock Alert**

**Learn How To Day Trade**



**About CNNMoney**

Contact Us

Advertise with Us

User Preferences

Career Opportunities

Conferences

Business Leader Council

**Content**

Fortune Magazine

Money Magazine

Business News

Markets

Term Sheet

Economy

Tech

Personal Finance

Small Business

Video

**Magazines**

Subscribe to Fortune

Subscribe to Money

Give the Gift of Fortune

Give the Gift of Money

Reprints

Special Sections

Magazine Customer Service

**Site Tools**

Site Map

Watchlist

Search Jobs

Real Estate Search

Mortgage and Savings Center

Calculators

Widgets

Connections

Market Data Alerts

News Alerts

**Stay Connected**

My Account

Mobile Site & Apps

Facebook

Twitter

LinkedIn

YouTube

RSS Feeds

Newsletters

Tumblr

Market indexes are shown in real time, except for the DJIA, which is delayed by two minutes. All times are ET. Disclaimer LIBOR Warning: Neither BBA Enterprises Limited, nor the BBA LIBOR Contributor Banks, nor Reuters, can be held liable for any irregularity or inaccuracy of BBA LIBOR. Disclaimer: Morningstar, © 2011 Morningstar, Inc. All Rights Reserved. Disclaimer: The Dow Jones IndexesSM are proprietary to and distributed by Dow Jones & Company, Inc. and have been licensed for use. All content of the Dow Jones IndexesSM © 2011 is proprietary to Dow Jones & Company, Inc. Chicago Mercantile Association. The market data is the property of Chicago Mercantile Exchange Inc. and its licensors. All rights reserved. FactSet Research Systems Inc. 2011. All rights reserved. Most stock quote data provided by BATS.

© 2011 Cable News Network. A Time Warner Company. All Rights Reserved. Terms under which this service is provided to you: Privacy Policy. Ad choices:



# Equity Risk Premiums: Looking backwards and forwards...

Aswath Damodaran

## If you choose to use historical premiums....

---

- Go back as far as you can. A risk premium comes with a standard error. Given the annual standard deviation in stock prices is about 25%, the standard error in a historical premium estimated over 25 years is roughly:

$$\text{Standard Error in Premium} = 25\% / \sqrt{25} = 25\% / 5 = 5\%$$

- Be consistent in your use of the riskfree rate. Since we argued for long term bond rates, the premium should be the one over T.Bonds
- Use the geometric risk premium. It is closer to how investors think about risk premiums over long periods.

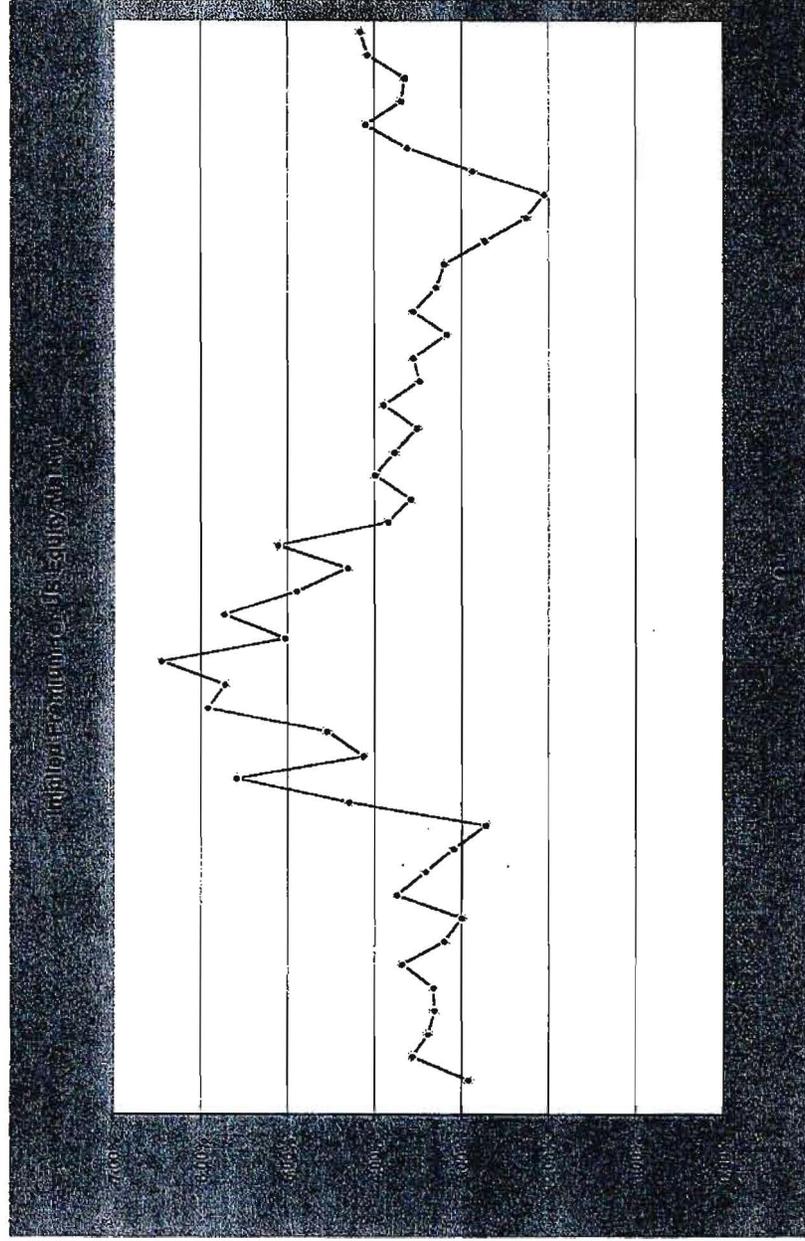
## Implied Equity Premiums

- We can use the information in stock prices to back out how risk averse the market is and how much of a risk premium it is demanding.

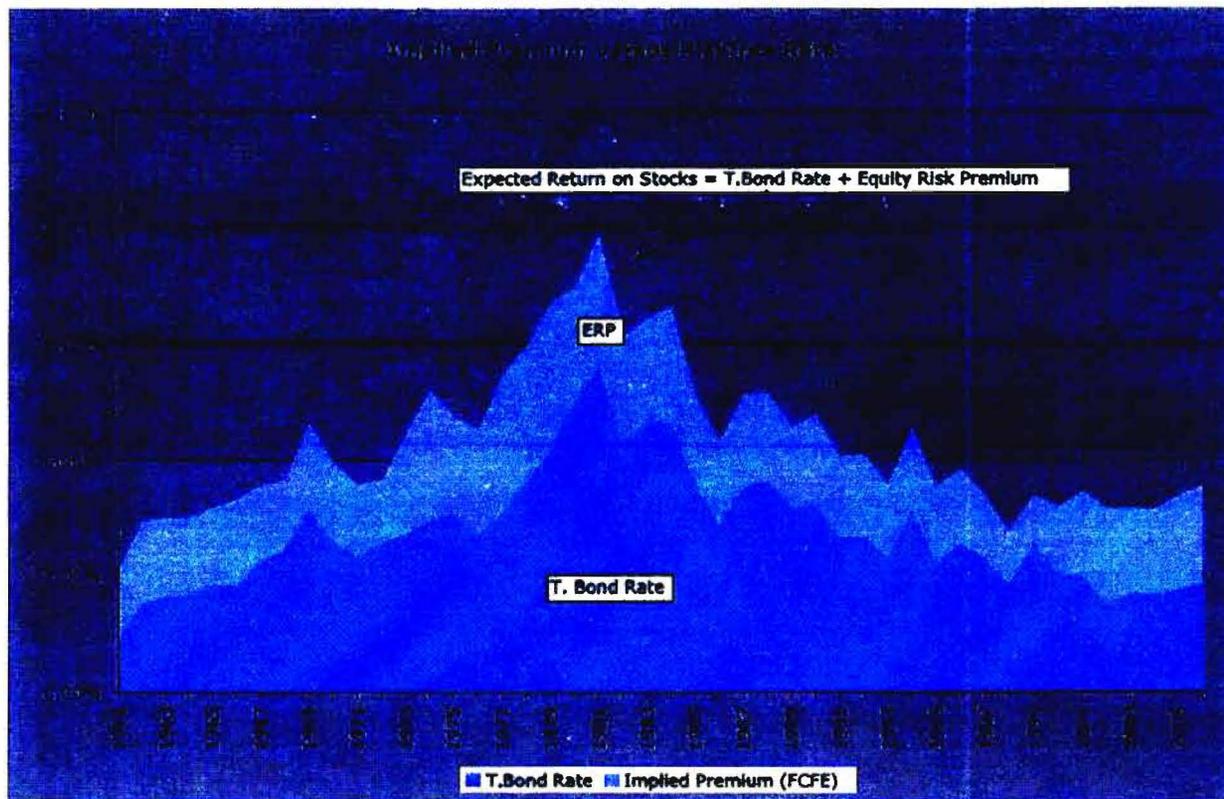
- If you pay the current level of the index, you can expect to make a return of 8.86% on stocks (which is obtained by solving for  $r$  in the following equation)

- Implied Equity risk premium = Expected return on stocks - Treasury bond rate = 8.86% - 4.7% = 4.16%

# Implied Premiums in the US



## Implied Premium versus RiskFree Rate



## 9% Forever?

**That's economist Roger Ibbotson's forecast for stock market returns. HE'S BEEN RIGHT--very right--in the past. So how come some people think we shouldn't believe him anymore?**

**By JUSTIN FOX**

December 26, 2005

(FORTUNE Magazine) – In May 1974, in the depths of the worst bear market since the 1930s, two young men at a University of Chicago conference made a brash prediction: The Dow Jones industrial average, floundering in the 800s at the time, would hit 9,218 at the end of 1998 and get to 10,000 by November 1999.

You probably have a good idea how things turned out: At the end of 1998, the Dow was at 9,181, just 37 points off the forecast. It hit 10,000 in March 1999, seven months early. Those two young men in Chicago in 1974 had made one of the most spectacular market calls in history.

What became of them after that? One, Rex Sinquefeld, went on to found a mutual fund company that now manages more than \$80 billion. The other, Roger Ibbotson, kept making market forecasts, forecasts of long-run stock and bond returns that have become deeply woven into the fabric of American life. Simply put, if you believe that stocks are fated to return 10% on average over the long haul, Ibbotson is probably the reason why.

It's hard to overestimate the influence of those numbers. The forecasts and historical return data churned out by Ibbotson Associates transformed the pension fund business in the late 1970s and 1980s, leading managers to make an epic shift out of bonds and into stocks. They formed the inescapable backdrop to the 1990s personal investing boom, as brokers, financial planners, and journalists endlessly repeated the Ibbotson mantra of double-digit stock market returns as far as the eye could see. Lately the Ibbotson forecasts have been finding their way into 401(k)s, as Ibbotson and other firms using similar methods build portfolios for those who opt not to build their own. Ibbotson even sells hundreds of thousands of charts each year showing how stocks build wealth over time--and beat the crap out of bonds.

All this means it's of more than academic interest that an academic debate has been raging for years now over the theories upon which Ibbotson and Sinquefeld based their forecast in 1974, and which Ibbotson has followed since. Ibbotson, now 62, has taken some of the criticism to heart, and in the process ratcheted down his long-run forecast for stock returns from more than 10% a year to 9.27%. That alone was something of a shock for many of his clients, Ibbotson says. But a few critics think the real number may turn out to be just 5% or 6%. In that case stocks would barely outperform government bonds--an eventuality that would entirely rearrange the investing world yet again.

\*\*\*

The most important thing to understand about the forecast that Roger Ibbotson and Rex Sinquefeld churned out in 1974 is that it wasn't an attempt to outsmart or outguess the market as Wall Street seers had traditionally done. Instead, Ibbotson and Sinquefeld were simply trying to use the information already embedded in stock prices to, as they put it, "uncover the market's 'consensus' forecast." Their tools were a half-century of historical data

and the bold new philosophy of stock market behavior that they had internalized as students at the University of Chicago's Graduate School of Business.

They did it at a time when theories batted about in Chicago classrooms really were changing the world, or were about to. In the early 1970s, Ibbotson says, "everything was going on at the University of Chicago." The professors on his Ph.D. dissertation committee included two future Nobel Prize winners (Merton Miller and Myron Scholes), another who would have won if he hadn't died before the Nobel committee got to him (Fischer Black), yet another whom many colleagues think should win the Nobel (Eugene Fama), and a father of Reagan-era supply-side economics (Arthur Laffer).

Not counting the Black-Scholes options-pricing formula and the Laffer curve, which don't have major roles in this drama, the biggest ideas at the Chicago Business School in the early 1970s were the efficient-market hypothesis and the capital asset pricing model. The gist of the efficient-market idea, as articulated in the 1960s by Eugene Fama, is that today's price is the best possible measure of a stock's value, and that nobody can reliably predict which way prices will be headed tomorrow. The capital asset model says that you nonetheless can predict long-run stock returns because they are a reward for taking risks, and those risks can be measured. While CAPM, as it is known, was devised elsewhere, Chicago's Fischer Black was among its most fervent adherents.

Ibbotson arrived on campus in 1968. He was a kid from the Chicago suburbs who studied math and physics at Purdue and got an MBA at Indiana University. After struggling in the workforce, he went to Chicago to earn a Ph.D. in finance and hit his stride. While still a student, he got a job managing the university's bond portfolio. Meanwhile his friend Siquefield, a 1972 MBA working at a Chicago bank, was launching one of the first S&P 500 index funds for institutional investors (this when Vanguard was still but a gleam in Jack Bogle's eye). Chicago really was a heady place for young finance geeks in those days.

Ibbotson and Siquefield both needed up-to-date historical data on security prices for their work, and both knew that the professors who ran the Chicago business school's Center for Research in Security Prices (CRSP) were in no hurry to repeat the epic number-crunching exercise they had undertaken in the early 1960s to build a database of stock prices going back to 1925. So the two men took on the job of updating the CRSP (pronounced "crisp") stock database and assembling a similar price history for bonds and Treasury bills.

They presented their preliminary findings in May 1974 at one of the twice-yearly seminars that CRSP hosted to share the latest academic research with bankers, mutual fund managers, and the like. "Just getting the data was a coup," Ibbotson says. Then there was the forecast, suggested to them by Fischer Black. Black thought of using the data to calculate the additional return that investors had historically received for investing in risky stocks rather than in relatively safe government bonds. According to CAPM theory, this "risk premium" reflects something real and durable about the rewards investors demand for taking the chance of losing money. Real and durable enough, it seemed in 1974, to build a stock market prediction on.

Once Ibbotson and Siquefield figured out the historical risk premium, all they had to do was add it to the prevailing risk-free interest rate (Treasury bonds or bills, depending on one's planning horizon) to get the "consensus" forecast of market returns. Actually they made it a little more complicated than that: When they finally published their work in 1976, they presented their forecast as the middle point of a wide range of different possible results. The mean forecast for the 25 years through 2000 was for 13% annual stock market returns, with

95% confidence that the return would be between 5.2% and 21.5%. (The actual return was 15%.)

"In some ways it was the first scientific forecast of the market," Ibbotson says proudly. Not everyone saw it that way at the time; some skeptics complained it was just a gussied-up extrapolation of the past into the future. But there turned out to be a ravenous hunger for such data. Both researchers were swamped with requests for more information and advice. For a while Ibbotson, by this time a very junior professor of finance at Chicago, just let the letters pile up unopened in a drawer in his office. In 1977 he decided to make a business out of his research project and started Ibbotson Associates. He also kept teaching at Chicago--until 1984, when his wife, health economist Jody Sindelar, got a job at Yale and he wangled an appointment there as a finance professor. Since then he's left the day-to-day management of the company, still based in Chicago, in the hands of others, while he remains its public face and chief researcher. Sinquefeld, meanwhile, launched small-cap index fund manager Dimensional Fund Advisors with another Chicago finance graduate, David Booth, in 1981.

\*\*\*

While Ibbotson Associates grew and prospered in the 1980s and 1990s, however, the theories upon which its forecasts are based began to crumble in the face of contradictory evidence. The initial onslaught came from skeptics of the efficient-market hypothesis like Ibbotson's Yale colleague Robert Shiller, who argued that investor mood swings drove stock prices too high or too low for years on end. The experience of the late 1990s confirmed to many that there was something to this. But Ibbotson says he can't base his forecasts on such arguments. "It's not that I believe markets are so efficient," Ibbotson says. "It's just that I don't want to use a mispricing to make predictions." He's trying to divine a middle-of-the-road consensus, not trot out a CNBC-style market call. Fair enough.

A harder-to-dismiss critique came from Mr. Efficient Markets himself, Ibbotson's dissertation advisor Eugene Fama. In a series of papers written with Dartmouth's Kenneth French, Fama has argued that the capital asset pricing model, or at least its 1970s corollary that the risk premium is constant, doesn't match the facts. "My own view is that the risk premium has gone down over time basically because we've convinced people that it's there," Fama says. Ibbotson's stock market forecasting model is thus a victim of its own success.

Ibbotson agrees that Fama has a point, and that he can no longer bank on the historical equity premium to predict future returns. The alternative he has come up with is an estimate based on fundamentals. He takes the 10.31% annual return on stocks from 1925 through the present and strips out the tripling of the market's price/earnings ratio that's occurred since then. "We think of that as a windfall that you shouldn't get again," he says. The drivers of stock returns that remain are dividends, earnings growth, and inflation. Make a forecast of future inflation using current bond yields, assume that dividend and earnings growth history will repeat themselves, and you get a long-run equity-return forecast of 9.27%. When Ibbotson and his company's director of research, Peng Chen, first ran the numbers in 2001, the gap between the new forecast and the one using the equity premium method was more than a percentage point. Because P/E's have dropped since then, the gap has shrunk. But Ibbotson's revised forecasting method doesn't insulate him from criticism any more than the old way. In fact, it invites new criticism.

The most persistent challenger has been Rob Amott, a Pasadena money manager and editor of the Financial Analysts Journal, who thinks future equity returns could be below 6%.

(See "Dueling Market Forecasts" chart.) The big difference between his forecast and Ibbotson's is that Arnott uses the current dividend yield (1.76%) as a starting point, while Ibbotson goes with the much higher long-term average yield (4.23%). Ibbotson believes the historical number provides a better picture of what investors think is ahead. He still relies on the assumption that markets are efficient, so current dividend yields must be low for a reason--his guess is that investors are expecting big growth in earnings (and dividends) in the future. Arnott, whose research has shown that low yields in the past were followed by slow earnings growth, thinks that's balderdash. "One of my biggest beefs with the academic community is the notion that theory is fact," he complains. "When they find evidence that contradicts the theory, instead of saying, 'Wonderful, let's improve the theory,' they throw it out because it conflicts with theory."

But the theoretical assumption that the market knows best is central to Ibbotson's whole forecasting endeavor, something even Arnott acknowledges. "In a sense Ibbotson is trying to infer what the consensus view is," Arnott says. "I'm trying to profit from that consensus." What Ibbotson is telling us is that the market still believes stocks will handily outperform bonds over the long haul. And if the market turns out to be wrong about that, it won't just be Roger Ibbotson who feels the pain.

FEEDBACK [jfox@fortunemail.com](mailto:jfox@fortunemail.com)

I D E A  
**exchange**

## Building the Future From the Past\*



WENDY BARRONS

BY ROGER G. IBBOTSON

Professor in the  
Practice of Finance,  
Yale School of  
Management

UNTIL THE LAST TWO YEARS, INVESTORS had not seen consecutive negative annual stock market returns since the 1970s. In contrast, during the 1980s and 1990s the market produced its best 20-year performance ever. But neither the last two years nor the last two decades are good predictors of the long run.

A forecast usually begins by comparing the expected return on stocks with that of a low-risk asset, such as U.S. government bonds. This differ-

ence is called the equity (stock) risk premium, because it is likely to be positive and represents the extra payoff that an investor demands (but does not always get) for investing in something risky (stocks) compared with something nearly risk-free (government bonds). Thus, the bond yield is our starting point, and adding the equity risk premium gives us the expected return on stocks.

volatile. The only way to get a good representation is to look back over a long period of time, so that the ups and downs of the market tend to cancel out and we get a reasonable average.

The compound average annual nominal rate of return (including inflation) for common stocks was 10.7 percent over the period 1926–2001. This return exceeded long-term U.S. Treasury yields by over 5 percent per year. That difference was the historical equity risk premium—the amount of extra return investors got over the last three-quarters of a century for invest-

about 14 over the whole 76 years.

This growth in the P/E ratio is not expected to repeat in the future. Thus, to a certain extent, the stock market has outrun the underlying real earnings power of corporations.

A long-term forecast should not extrapolate the separation of the P/E ratio indefinitely. But today's high P/E ratios are not necessarily going to soon revert to historical levels, because the prices reflect the future outlook of investors—all those people and institutions that hold, buy, or sell stocks. In fact, if today's P/E ratio is higher than in the past, it has to mean one of three things: The price is now unrealistically high, people are willing to accept a much lower expected return for the

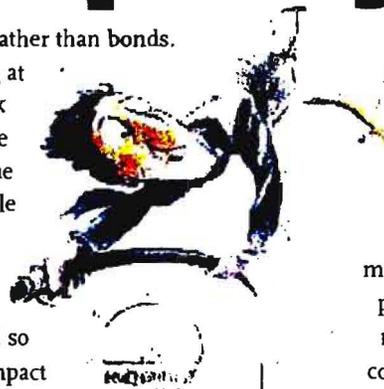
# Measuring Equity Risk

ence is called the equity (stock) risk premium, because it is likely to be positive and represents the extra payoff that an investor demands (but does not always get) for investing in something risky (stocks) compared with something nearly risk-free (government bonds). Thus, the bond yield is our starting point, and adding the equity risk premium gives us the expected return on stocks.

Generally, the best way to get a sense of what the future may bring is to look at the past. After all, the past is our primary source of data. But, as you already know from recent market results, the stock market is quite

ing in stocks rather than bonds.

But looking at historical stock returns relative to bond income is not the whole picture. The bull market of the 1980s and 1990s had so much of an impact on stock prices that the price of stocks in the S&P 500® Index is almost 30 times the earnings of the same companies. This contrasts with a price/earnings (P/E) ratio closer to 10 back in the 1970s—and only



risk of stocks, or the market is optimistic that the earnings per share growth of corporations will be higher than it was in the past. In fact, I believe in the market's optimism. Earnings per share will grow at faster rates for two reasons. First, corporations are paying out lower dividends and retaining more earnings. These extra retained earnings are reinvested back into firms. If the money is used productively, extra growth can be achieved.

continued on page 12

I D E A  
**exchange**

## Stock Returns for a New Century\*

BY JOHN Y. CAMPBELL

WHAT RETURNS SHOULD INVESTORS expect the U.S. stock market to deliver on average during this century? Does the experience of the last century provide a reliable guide to the future?

Perhaps the simplest way to try to forecast future returns is to use some average of past realized returns, but there are serious difficulties with this approach. Stock returns are so variable that even an average measured over a century is an unreliable guide to the true long-term average. Also, if the expected future stock return is not constant, but changes over time, it can have a perverse

have happened during the long bull market of the 1980s and 1990s.

An alternative approach is to forecast future returns using valuation ratios—ratios of stock prices to accounting measures of value, such as dividends or earnings. One variant of this approach, known as the Gordon growth model, breaks returns into income

Professor of Applied  
Economics,  
Harvard University



consistent with average realized returns. For instance, from 1871–2001, the average dividend/price ratio was just under 5 percent, while the average real growth rate was just over 2 percent, adding to about 7 percent, which is the long-term compound average realized stock return in real terms, that is, correcting for inflation. The average earnings/price ratio was also close to 7 percent.

But current valuation ratios are wildly different from historical averages, reflecting the unprecedented 20-year bull market that ended about two years ago. The dividend/price ratio, for example, has fallen dramatically to about 1.5 percent. In part, this may be due to a shift in corporate financial policy away from paying dividends and toward repurchasing shares. One way to correct for this is to add repurchases to conventional dividends, but this still implies a dividend/price ratio of only about 2.5 percent. The earnings/price ratio has also declined. In the short term, this ratio may be affected by temporary cyclical fluctuations in earnings. But even correcting for this, the earnings/price ratio is about half its long-term historical average.

The implications of current valuations for future returns depend on

# k Premium

effect on the average realized return: Consider what happens if the expected future stock return declines—perhaps because investors have become more comfortable with equity (stock) market risk and require a smaller compensation for bearing it. Investors' willingness to reduce their equity risk premium itself tends to drive up the price of stocks, causing an increase in realized returns. Thus, at precisely the wrong time, when the expected future stock return is declining, the average of past stock returns will actually increase. This may well

(the dividend/price ratio) and capital gains (the long-term average growth rate of dividends). Return is estimated by the dividend/price ratio plus the dividend growth rate. Another variant argues that stock returns come from corporate earnings: Earnings that are paid out generate income, while earnings that are reinvested generate growth. In the long run, both components of earnings are equally valuable and thus return should equal the earnings/price ratio.

Over long periods of time, these formulas have given results that are

\*Ibbotson's and Campbell's columns refer to returns on the S&P 500<sup>®</sup> Index, in nominal terms and real (inflation-adjusted) terms respectively.

continued on page 12

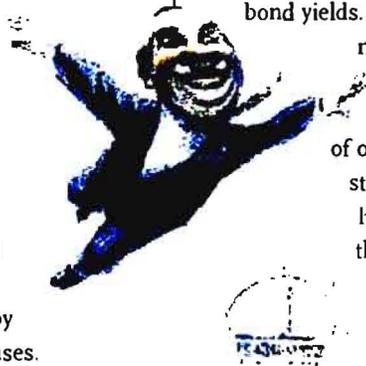
I D E A

## exchange

### Building the Future From the Past continued from page 10

Second, investors are rationally willing to pay high prices for current earnings when they think future earnings will grow. The evidence demonstrates that over time investors who buy when the market's P/E ratios are high do just about as well as those who buy when the market's P/E ratios are low.

Stocks are predicted to outperform bonds in the future, but not by further P/E ratio increases.



Instead, stocks will tend to participate with the overall U.S. economy and earnings per share growth. My forecast for stocks is somewhat less than 4 percent in excess of long-term bond yields. Applying this premium to recent bond yields gives a long-term forecast of over 9 percent for the stock market. It is high, but lower than the historical stock market return. But, of course, there is no free lunch. The

reason stocks are expected to outperform bonds is that they are riskier than bonds. Although stocks belong in most people's portfolios, the smart investor will still want to diversify across different types of stocks, as well as across bonds and other asset classes.



To learn more about Ibbotson's research, go to <http://mba.yale.edu/faculty/professors/ibbotson.htm>.

### Stock Returns for a New Century continued from page 11

whether the market has reached a new steady state, in which current valuations will persist, or whether these valuations are the result of some transitory phenomenon.

If current valuations represent a new steady state, they imply a substantial decline in the equity returns that can be expected in the future. The future expected stock return might be 3.5 percent to 4.5 percent, rather than the historical average of 7 percent. This would allow for only a very modest equity premium relative to Treasury bills or inflation-indexed Treasury bonds, which currently offer a safe 3.5 percent real yield.

If current valuations are transitory, it matters critically what happens to restore traditional valuation ratios. Rapid earnings and dividend growth could restore traditional valuations without any decline in stock prices. While this is always a possibility, it would be historically unprecedented. The U.S. stock market has an extremely poor record of predicting

long-term earnings and dividend growth. Historically, stock prices have increased relative to earnings during decades of rapid earnings growth, such as the 1920s, 1960s, and 1990s, as if the stock market anticipates that rapid earnings growth will continue in the next decade. But there is no systematic tendency for a profitable decade to be followed by a second profitable decade. The 1920s, for example, were followed by the 1930s, and the 1960s by the 1970s. Thus, stock market optimism often fails to be justified by subsequent earnings growth.

A second possibility is that stock prices will decline or stagnate until traditional valuations are restored. This has occurred at various times in the past after periods of unusually high stock prices, notably in the 1900s, 1910s, 1930s, and 1970s. This would imply extremely low and perhaps even negative returns during the adjustment period and then higher returns afterward.

It is too soon to tell which of these

views is correct, and I believe it is sensible to put some weight on each. That is, I expect valuation ratios to return part way but not fully to traditional levels, with the adjustment coming primarily from stock prices rather than earnings growth. A rough guess for the long-term stock return, after the adjustment process is complete, might be a compound average real equity return of 5.0 percent to 5.5 percent, corresponding to an equity premium of 1.5 percent to 2.0 percent.



To learn more about Campbell's research, go to <http://post.economics.harvard.edu/faculty/campbell/campbell.html>.

"Idea Exchange" is a forum for presenting alternative views on topics of interest to readers of *Investment Forum*. The ideas expressed in these columns are those of the authors, who are experts in their field, and unaffiliated with TIAA-CREF. Their opinions are based on their research and do not necessarily represent the position of TIAA-CREF. The research relies in part upon past performance, which we can't guarantee will be replicated. Forecasts cannot accurately predict future results.

[Log in](#) | [Contact us](#) | [Branch Locator](#)

Call us at 866-232-9890

[Send us an email](#)

Charles Schwab & Co., Inc.

## Portfolio Planning Article

[Market Insight](#) > [Investing](#) > [Portfolio Planning](#)

[On Portfolio Planning](#)

# Q&A: Estimating Long-Term Market Returns

David Suarez  
Senior Research Analyst, Schwab Center for Financial Research,  
Charles Schwab & Co., Inc.  
April 4, 2011

[Email to a friend](#)

[Subscribe](#)

[Share](#)

[Connect with Schwab](#)



Each year, the Schwab Center for Financial Research calculates long-term return estimates for stocks, bonds and cash investments. Here, we'll answer common client questions concerning this research, including an explanation of the methodology behind our estimates.

- Why are long-term return estimates important?
- How do you define "long term"?
- How do short- and long-term forecasts differ? Is one better than the other?
- What are your long-term return estimates for stocks, bonds and cash investments?
- How do you calculate your estimates?

## Why are long-term return estimates important?

Severe market fluctuations make it hard for investors to reliably plan their financial futures. Having a sound financial plan serves as a road map to reaching long-term financial goals, but to get there, you need reasonable estimates of what long-term stock- and bond-market returns might be.

For example, if your return estimates are too optimistic, you run the risk of not being able to retire on time or pay for a child's education. If they're too pessimistic, you may needlessly sacrifice some of your current lifestyle by over-saving for retirement.

Similar to the axiom "garbage in, garbage out," you can't use unrealistic assumptions to determine realistic outcomes, and this is especially true when developing your long-term financial plan.

## How do you define "long term"?