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**“An inordinate amount of risk looms over the US economic recovery. Indeed, we believe that the situation is the worst in this regard since the Second World War.”**

-John Lonski, Chief Economist, Capital Markets Research Group, Moody's Investors Service.

Quoted in : Rising Economic Risk Could Dampen US Corporate Bond Enthusiasm, Gordon Platt  
*Global Finance Magazine, September 2011*



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**“And across the financial markets a sea change is taking place. Investors are abandoning the time-tested ‘stocks for the long run’ optimism.”**

-Pivot Point: Investors Lose Faith in Stocks, Tom Lauricella

*The Wall Street Journal, Sep 26, 2011*



**“The impact of human reactions and choices is what, in total, makes up an economy. In short: People’s reactions matter... Adam Smith did not refer to the invisible algorithm – he referred to the invisible hand because people are what economics is about. It’s not that there is no role for quantitative models and approaches to risk: But theories and models offer insights, not inevitabilities.”**

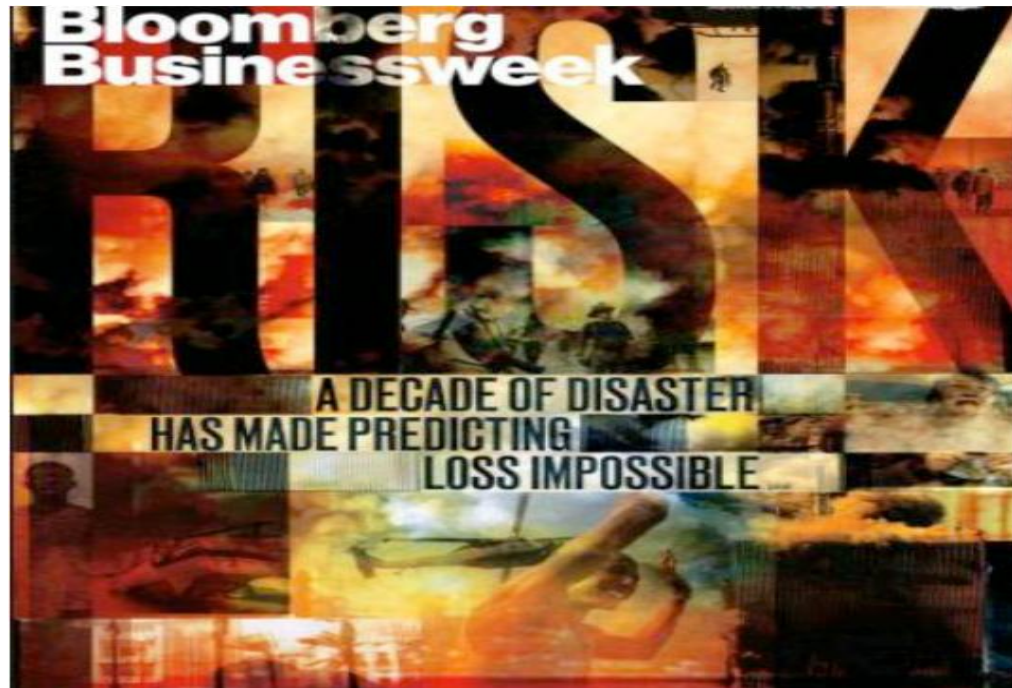
-Paul Walker, Insight Consulting



# Why Should We Care About Risk?

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Overreliance on the mystery and the sanctity of complicated economic models has led to major underestimations of risk – those risk errors continue to affect world markets in historic ways.



# Risk

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“No one can predict the future with certainty...

Investments expose one to additional uncertainty...

Most people, though, dislike uncertainty. They prefer the certain receipt of \$1,000 to a 50/50 chance of receiving either nothing or \$2,000.

Therefore, people must be paid a premium if they are going to willingly accept the uncertainty that necessarily accompanies investments.”

- ▶ Economics, Private and Public Choices, 5<sup>th</sup> Edition, Gwartney & Stroup, Pg. 626



“Emotions and mental imagery are linked, and emotions underlie decision making when confronting risk and uncertainty.

People react to risks more strongly when they can visually imagine the consequences of a possible outcome.”

- ▶ The Fat Tail, The Power of Political Knowledge in an Uncertain World, Bremmer & Keat, Pg. 184



# Risk

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Risk and uncertainty decrease people's willingness to undertake an action – the greater the risk and uncertainty, the less likely the person is to act.

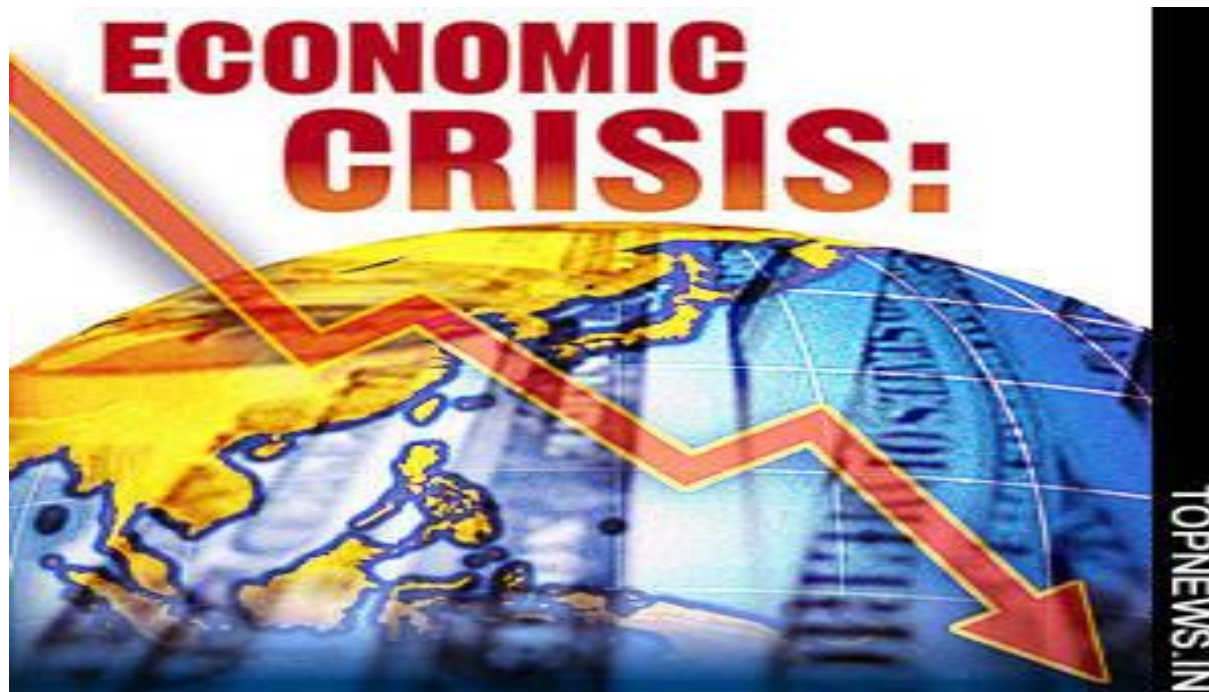
*To get people to act, there needs to be an incentive. To get someone to invest money (receiving no service, just the chance of gain) requires an incentive AND an understanding of the amount of risk and uncertainty in the investment.*



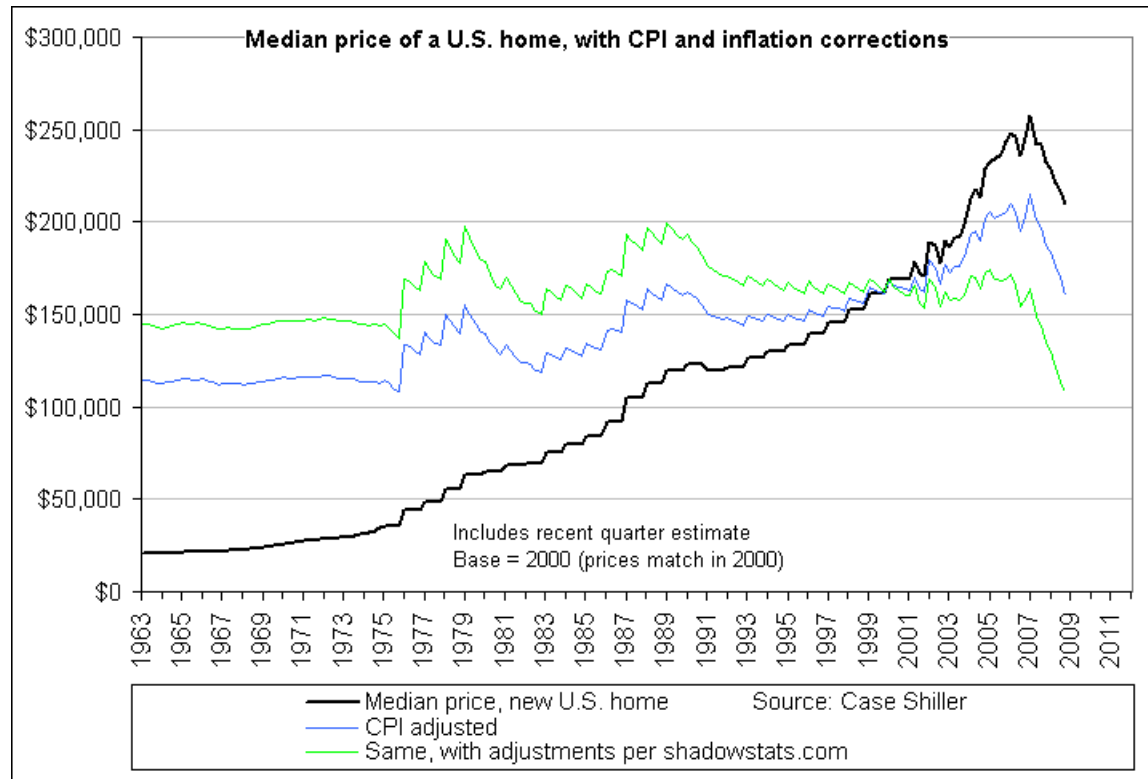
# Risk

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Housing has collapsed, foreclosures have soared, subprime loan scandals and the overhang from marginal mortgages have left homeowners struggling and contributed to over 400 bank failures.

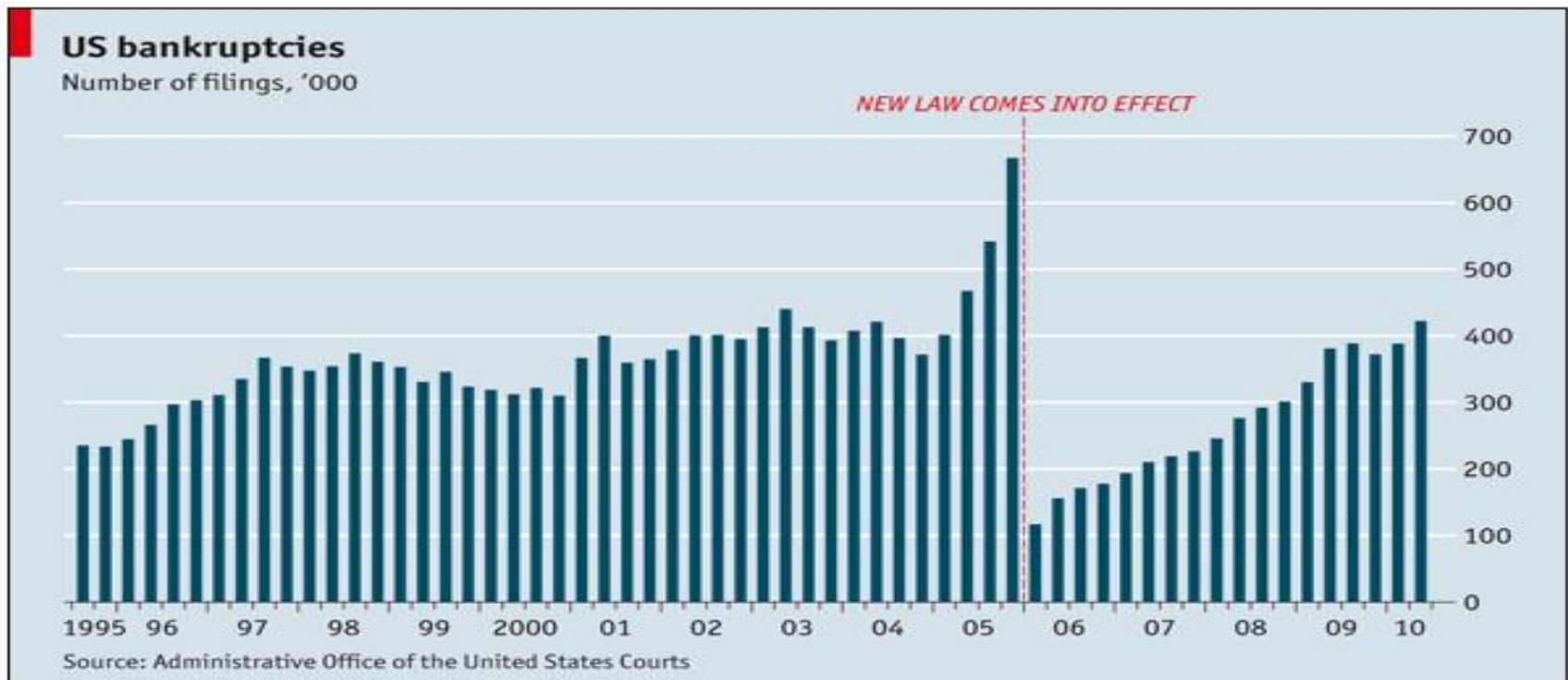


# Risk



# Risk

Personal bankruptcies have doubled in five years, 8 of the 10 largest corporate bankruptcies in history have occurred since 2009.



# Risk

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Stock market volatility has consistently been higher, often much higher, since 2007.



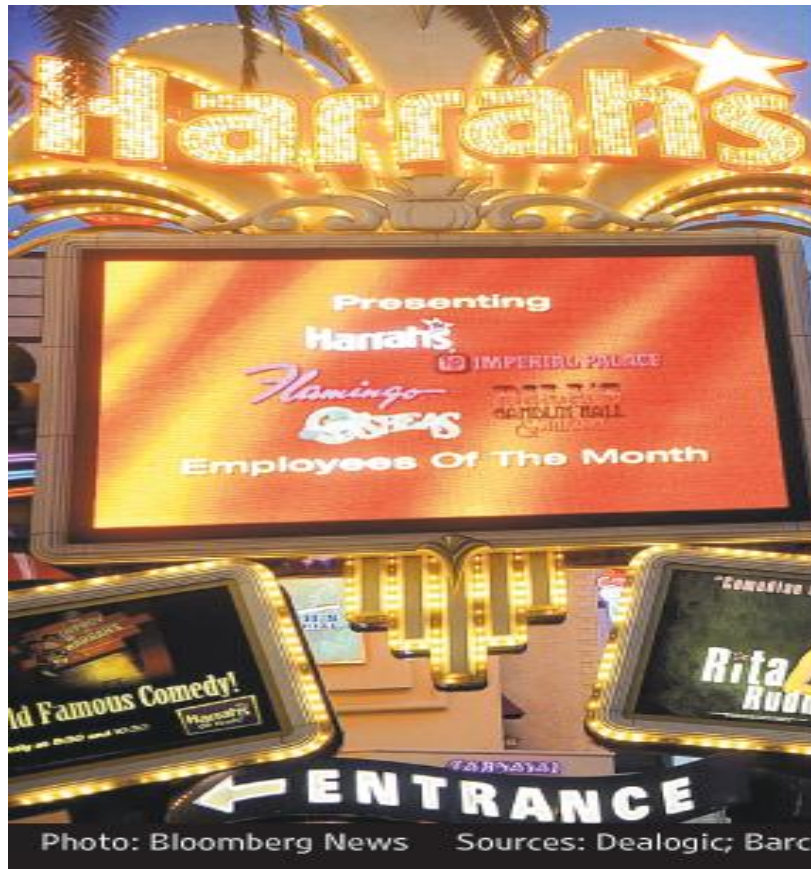
# Risk

## “Insane Volatility” *Seeking Alpha*, Oct 5, 2011



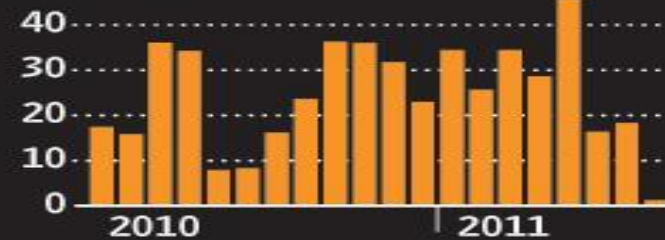
# Risk

“A Rush Out of Junk”, The Wall Street Journal, August 25, 2011

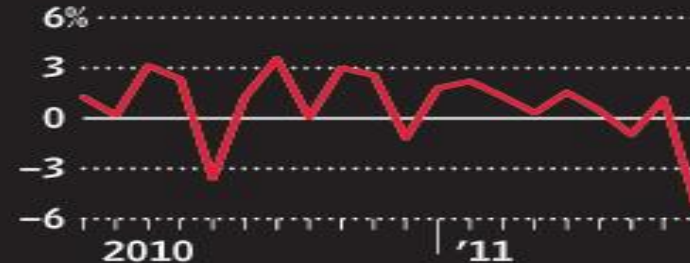


## Junk Yard Rumble

U.S. high-yield bond issuance  
\$50 billion

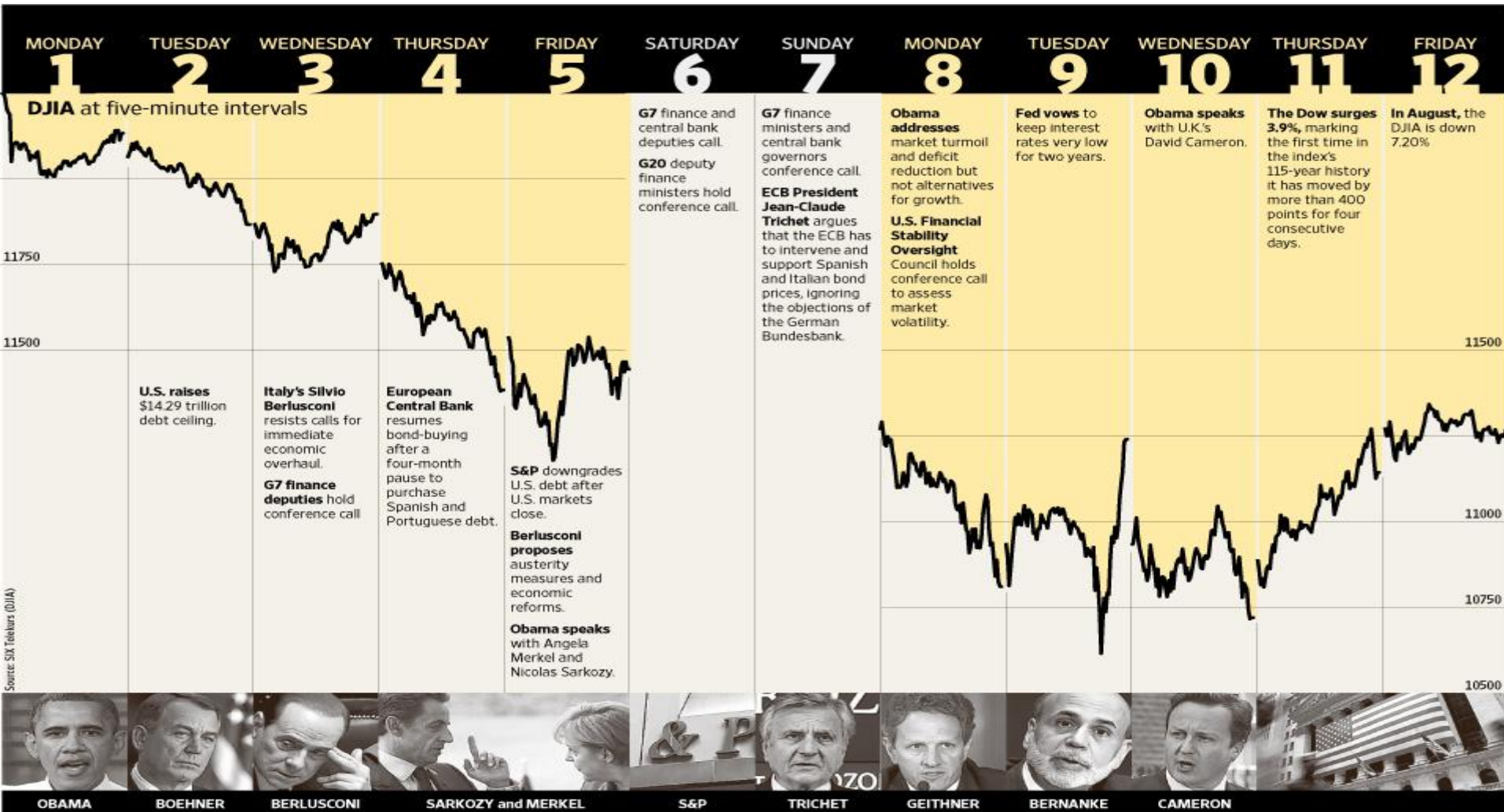


Barclays High Yield Index, total return



# Risk

“Global Crisis of Confidence”, The Wall Street Journal, Aug 13-14, 2011



# Risk

14 of the 20 Largest One-Day Losses in the History of the DJIA have occurred since 2008

Largest Point Losses				
Rank	Date	Close	Net Chg	% Chg
1	09/29/2008	10365.45	-777.68	-6.98
2	10/15/2008	8577.91	-733.08	-7.87
3	09/17/2001	8920.70	-684.81	-7.13
4	12/01/2008	8149.09	-679.95	-7.70
5	10/09/2008	8579.19	-678.91	-7.33
6	08/08/2011	10809.85	-634.76	-5.55
7	04/14/2000	10305.77	-617.78	-5.66
8	10/27/1997	7161.15	-554.26	-7.18
9	08/10/2011	10719.94	-519.83	-4.62
10	10/22/2008	8519.21	-514.45	-5.69
11	08/04/2011	11383.68	-512.76	-4.31
12	08/31/1998	7539.07	-512.61	-6.37
13	10/07/2008	9447.11	-508.39	-5.11
14	10/19/1987	1738.74	-508.00	-22.61
15	09/15/2008	10917.51	-504.48	-4.42
16	11/05/2008	9139.27	-486.01	-5.05
17	09/17/2008	10609.66	-449.36	-4.06
18	11/20/2008	7552.29	-444.99	-5.56
19	11/06/2008	8695.79	-443.48	-4.85
20	03/12/2001	10208.25	-436.37	-4.10

# Risk

- **413 failed U.S. banks since 2000**
- **All 10 of the largest bankruptcies in U.S. history have occurred since 2001**
  - *6 of the 10 largest have occurred since 2008, and 4 of the 5 Largest U.S. bankruptcies have occurred since 2009*
- **The U.S. government had its debt rating downgraded**, and its borrowing costs *went down!*
- **U.S. stock market volatility is at all-time highs**
  - In the past 4 years, the DJIA peaked at 14,164 and bottomed at 6,547, before rebounding to current levels



# Risk

- ▶ Tech stock bubble of the late 1990s,
- ▶ Telecom bubble of the early 2000s,
- ▶ Electric deregulation and Enron,
- ▶ California energy crisis and market gaming,
- ▶ WorldCom,
- ▶ Arthur Anderson,
- ▶ Housing bubble of the 2000s,
- ▶ Subprime mortgages,
- ▶ Collapse of the mortgage-backed securities market,
- ▶ Countrywide,
- ▶ Lehman Bros.,
- ▶ WaMu,
- ▶ GM & Chrysler bailouts,
- ▶ 2008 Stock Market collapses,
- ▶ European Debt crises,
- and
- ▶ The highest volatility in U.S. equity markets in history.

***Are Markets Always Efficient & Transparent?***



## Investors' Reactions?

Flee to Safety – Buy Gold, Bonds, and U.S. Treasuries.

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**“Until this storm passes we are still trying to find safe places to keep our money as opposed to places where we will make a return on our money.”**

-Kit Juckes, Head of Foreign-Exchange Strategy at Societe Generale

*(Quoted in Tom Keene's EconoChat, Bloomberg BusinessWeek, Sep 19 – Sep 25, 2011)*



## Investors' Reactions?

### Flee to Safety – Buy Gold, Bonds, and U.S. Treasuries.

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**“We’re not going back to normal. The post-crisis world will be different...but that message takes a long time to hammer home.”**

-Philip Poole, global head of investment strategy at HSBC Asset Management which oversees \$103 billion. *(Quoted in Pivot Point: Investors Lose Faith in Stocks, Tom Lauricella The Wall Street Journal, Sep 26, 2011)*



## Investors' Reactions?

Flee to Safety – Buy Gold, Bonds, and U.S. Treasuries.

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**“These are clearly uncertain times... While the trade business has long thrived on a degree of uncertainty and instability, many of the market influencers impacting the industry today have not been witnessed before.”**

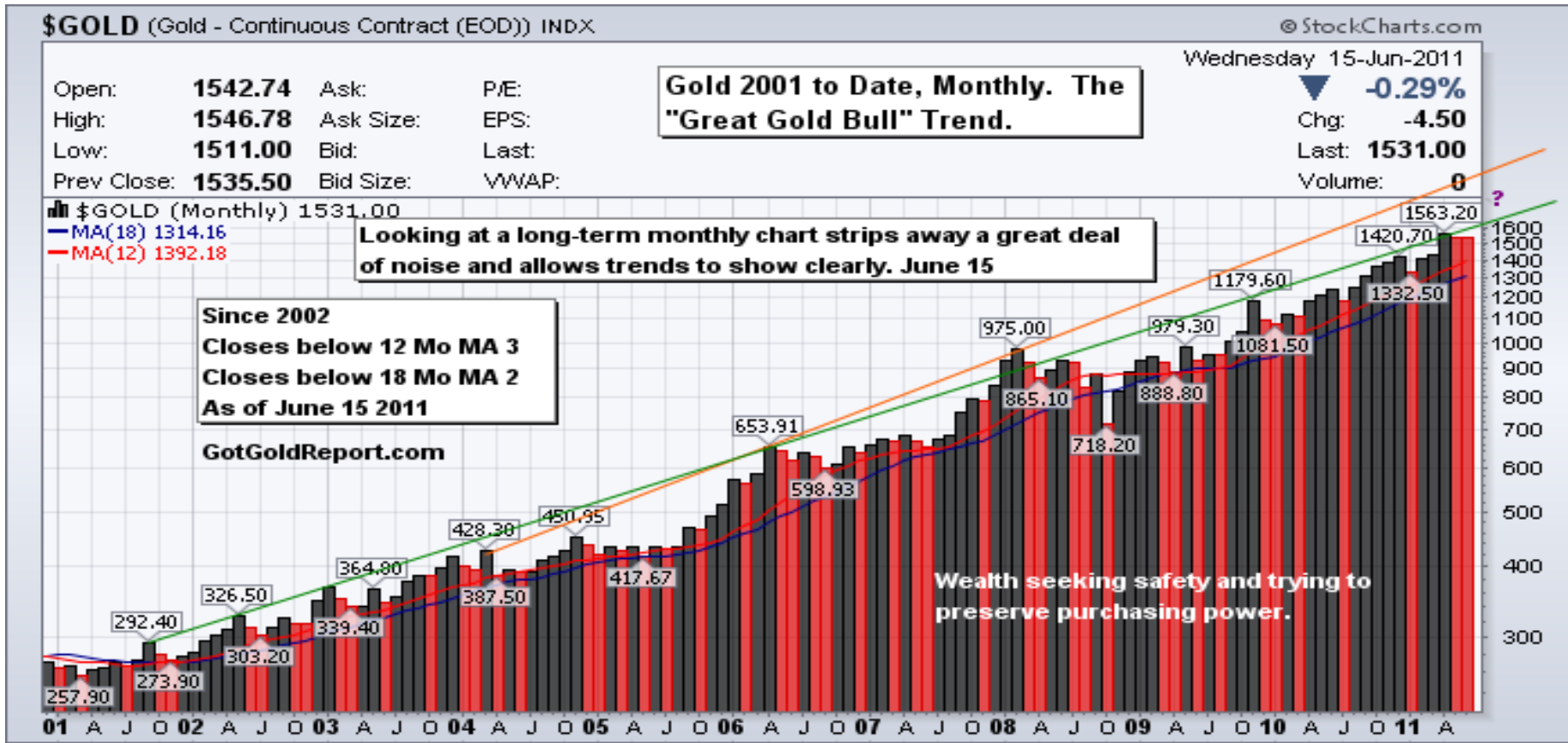
-Craig Weeks, CitiBank, “A Brave New, Uncertain World,” Global Finance magazine October 2011



# Investors' Reactions?

## Flee to Safety – Buy Gold, Bonds, and U.S. Treasuries.

Gold prices soar as investors seek to buy a “safe” commodity – in this case demand pushes up price because of limited supply.



# Investors' Reactions?

## Flee to Safety – Buy Gold, Bonds, and U.S. Treasuries.

### “The Stampede Into Debt Continues”

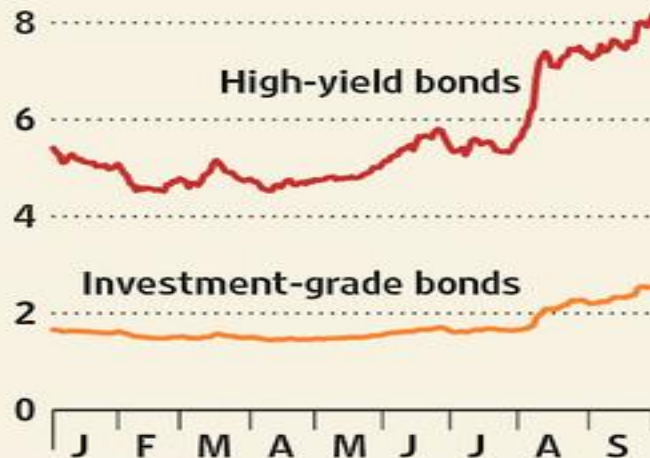
The Wall Street Journal, October 3, 2011

#### Flashback to the '40s

Yields on corporate bonds rose relative to Treasuries, as the yields on U.S. debt sank to levels not seen in 70 years.

Corporate-bond spreads\*

10 percentage points



Treasury yields

5%



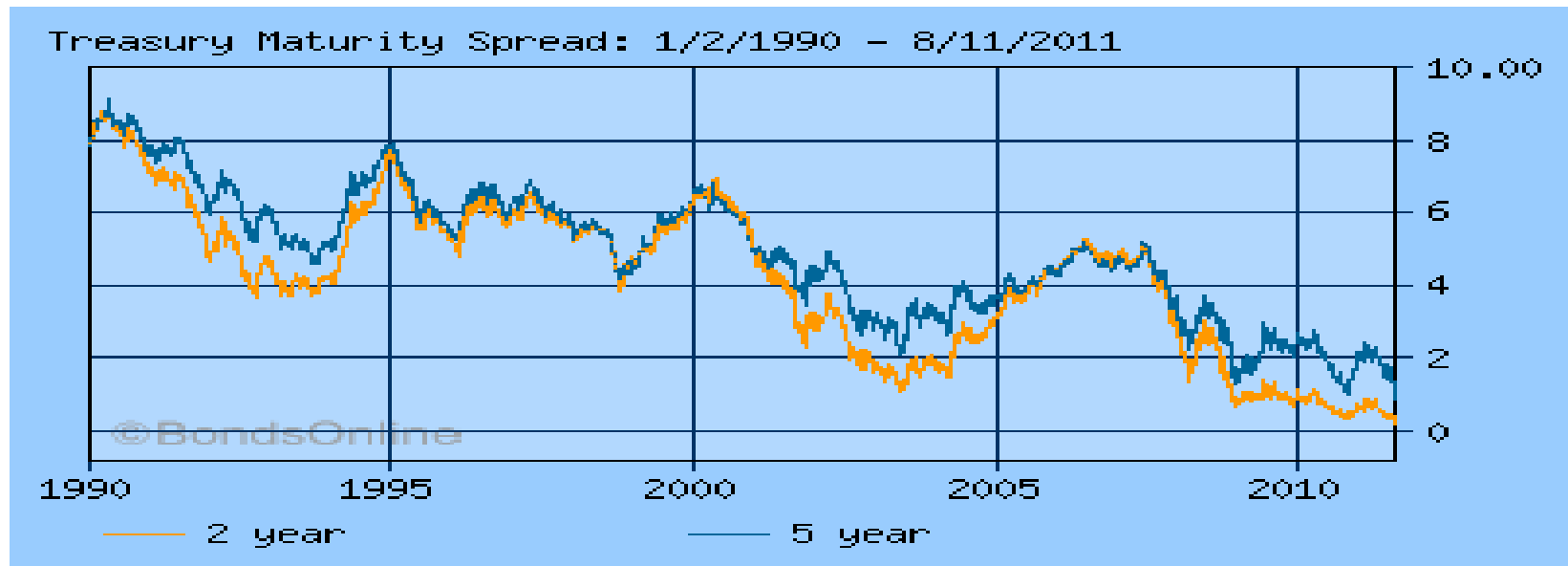
\*Versus comparable U.S. Treasuries, as of Thursday

Sources: Merrill Lynch Indexes; Ryan ALM via WSJ Market Data Group

## Investors' Reactions?

### Flee to Safety – Buy Gold, Bonds, and U.S. Treasuries.

This is flight to safety: Even **after** U.S. Treasuries were downgraded, investors flocked to them, allowing the U.S. Treasury to pay lower and lower returns to borrow money.



# The Wall Street Journal Headlines

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**“Treasury Yields Hit Historic Lows”**

August 19, 2011

**“Yields on Safe-Haven Bonds Near Historic Lows”**

September 3-4, 2011

**“Advisors Preach Caution”**

September 7, 2011

**“Volatility Spurs Hedge Recalibration”**

September 7, 2011

**“Pivot Point: Investors Lose Faith in Stocks”**

September 26, 2011

**“Spooked Investors Seek Safety”**

October 3, 2011

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# Have Investments Become Less Risky?

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## **Volatility is Up, Dramatically**

- ▶ *14 of 20 Largest One-Day Losses in DJIA history have occurred since 2008*
- ▶ *CBOE Vix Index continues to show record levels of volatility*

## **Housing, unemployment and general economy show no signs of significant improvement**

## **Flight to safety**

- ▶ Gold prices have *quintupled*,
- ▶ Bond Yields are down,
- ▶ U.S. Treasuries get *downgraded* and still fall to record lows



# Are Investors Indifferent to Risk?

**Bloomberg Businessweek**  
**Why The Debt Crisis Is Even Worse Than You Think.**

Jeffrey D. Sachs  
**AMERICA'S ECONOMIC CRISIS**

NASDAQ  
NASDAQ LISTED  
**RECESSION**



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# Firm-Specific Risk & Bundling Risks Away: Lessons from Subprime Mortgages



“The presumption was that although there would be a higher default rate at the higher interest rates **there would be some lenders large enough to pool these mortgages and even with their higher default rates make a higher rate of return.**”

- Thayer Watkins, San Jose State University, Department of Economics, “The Nature and the Origin of the Subprime Mortgage Crisis”, [www.sjsu.edu/faculty/watkins/subprime.htm](http://www.sjsu.edu/faculty/watkins/subprime.htm)

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**“This was the logic behind junk bonds market created by Michael Milken at Drexel Burnham Lambert.**

In the case of the junk bonds the higher interest rates were not enough higher to compensate for their higher risk and the junk bond market collapsed. **A similar sort of thing occurred with the subprime mortgages.”**

- Thayer Watkins, San Jose State University, Department of Economics, “The Nature and the Origin of the Subprime Mortgage Crisis”, [www.sjsu.edu/faculty/watkins/subprime.htm](http://www.sjsu.edu/faculty/watkins/subprime.htm)

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# What Tools Are Used to Gauge Risk and Uncertainty

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There are two major schools of thought:

1. The Efficient Market Hypothesis  
Focus on models and quantitative analysis.
2. Behavioral Finance  
Focus on people and the choices they make.



# Efficient Market Hypothesis

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1. Investors are assumed to be rational and hence, value investments rationally,
2. Those investors who *are irrational don't* affect the market because rational investors (and some irrational ones) cancel out their moves, and
3. If investors act irrationally in separate ways, arbitrageurs eliminate their influence on prices.

▶ Inefficient Markets, Andrei Shleifer

# Understanding Risk

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Two types of risk and uncertainty in the Efficient Market Hypothesis:

1. The chance of the economy, or the economic sector, turning bad.
  - a) You invested right before an economic recession,  
**(Systematic risk)**
  - b) You invested in a VHS tape manufacturer right before DVDs came out and destroyed the VHS sector,  
**(Systematic risk)**
  
2. The chance of the company itself failing.
  - a) You invested in the worst DVD manufacturer,  
**(Unsystematic or firm-specific risk)**



# Behavioral Finance's View of the EMH

“From a theoretical point of view, **it is far from clear that smart money has the power to drive market prices to fundamental values...**

[Economic models show that] **smart money tended to amplify, rather than diminish, the effect of feedback traders...**

[S]mart money never choose to offset all of the effects of irrational investors because [smart money is] rationally concerned about the risk generated by the irrational investors.”

- From Efficient Markets Theory to Behavioral Finance, Robert J. Shiller,, pg 23



# The Capital Asset Pricing Model Theory

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1. Risk premiums are based on very long investment horizons,
2. Volatility, fear, and greed are countered by “smart money” *which ignores the effects of greed and fear and ensures the market is rational*, and
3. Investors *ignore* firm-specific risk because they *manage* diverse portfolios so that the risk of an individual investment failing is eliminated because many investments are bundled.



# Trying to Understand Risk

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“The field of finance has distinguished two different definitions of risk:

(1) the risk of the individual security (standard deviation of expected return), and

(2) the risk of the individual security as a component of a portfolio (beta).”

- ▶ Multinational Business Finance, 9<sup>th</sup> Edition, Eiteman, Stonehill, and Moffett, Pg. 473



# Three Essential Questions about CAPM

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1. Do investors ignore firm-specific risks when investing?
2. Does bundling similar investments eliminate risk?
3. Can CAPM deal with today's levels of risk uncertainty and volatility?



# Investors & Risk in CAPM

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“The Efficient Market Hypothesis” or “EMH”

- ▶ The idea that **speculative asset prices** (stock prices, value of subprime mortgage-backed securities, e.g.) **always incorporate the best available data.**

CAPM extrapolates from EMH and concludes:

- ▶ **Investors will, as a whole, act rationally and with the best information – and will have a very long investment horizon.**



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Are “smart money”, large institutional investors ignoring firm-specific risks and market volatility as they pursue 70-year norms in steadfast loyalty to the Efficient Market Hypothesis?

Answer: No.







**\$456 billion managed**

“AllianceBernstein has developed a tool called Dynamic Asset Allocation that **analyzes dozens of metrics, such as volatility, to constantly adjust the allocation of assets** in a portfolio.”

**Institutional Investor**

“How Have Asset Managers Handled Risk in the Recent Crisis?”, **Institutional Investor**, 8/15/11 by Steve Rosenbush



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**“analyzes dozens of metrics, such as volatility, to constantly adjust the allocation of assets”**

Not a 70-year horizon, not ignoring short term volatility. Rather, they are constantly willing to dump an investment that isn't meeting near-term expectations.



**\$382 billion in assets**

**“Evaluate the business in its entirety.”**

<http://www.fool.com/investing/value/2007/09/20/buffetts-equity-investment-strategy.aspx>

**“If you can’t rationally layer **10 years of reasonable projections into a discounted cash flow analysis...** then you have something that is not analyzable and a pass is warranted.”**

[http://www.rcbinvest.com/resources/letters/isl\\_6.00.pdf](http://www.rcbinvest.com/resources/letters/isl_6.00.pdf)



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**“Evaluate the business in its entirety... 10 years of reasonable projections into a discounted cash flow analysis...”**

Not ignoring firm-specific (aka Unsystematic) risk.

Looking at 10-year horizon, not 70 years.

Using traditional cash flow analysis to assess returns



# BLACKROCK

**\$3.66 trillion in assets**

**“Central to BlackRock’s investment management process is market risk management.** [BlackRock] takes a globally integrated approach to the analysis and management of risk... While **risk can never be totally eliminated**, this structure allows [BlackRock] to apply global best practices while working hands-on with individual portfolio managers.”

<http://www2.blackrock.com/global/home/AboutUs/index.htm>



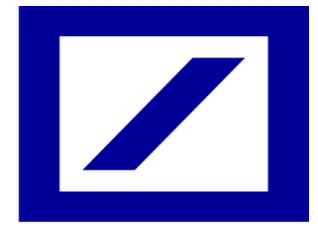
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**“market risk management... risk can never be totally eliminated”**

Not believing that bundling enough securities together eliminates risk.



# Deutsche Bank



**\$238 billion** managed through DB Advisors,  
Deutsche Bank's institutional asset management  
business

DB works with DB Advisors Analysts, asking them to **assess how the markets they cover would react to various scenarios. That information is then shared with portfolio managers so they can modify portfolios.**

**Institutional  
Investor**

“How Have Asset Managers Handled Risk in  
the Recent Crisis?”, **Institutional Investor**,  
8/15/11 by Steve Rosenbush



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**“assess how the markets they cover would react to various scenarios. That information is then shared with portfolio managers so they can modify portfolios”**

Not a 70-year horizon, constantly modifying portfolios to adjust for risk and uncertainty impacts on individual investments.





## \$1.3 trillion in assets


Assets are held across the full spectrum of asset classes:

- ▶ Equity
- ▶ Fixed income
- ▶ Cash liquidity
- ▶ Currency
- ▶ Real estate and infrastructure
- ▶ Hedge funds
- ▶ Private equity

“Success requires: Insight to identify changing trends that point to substantial, prolonged growth in addressable markets, along with **the ability to recognize the companies best positioned to exploit that growth.**”

JP Morgan Insights, August 2011, “Where insight, vision and humility converge”

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**“recognize the companies best positioned to exploit that growth”**

Assessing firm-specific (aka Unsystematic) risk and using that assessment to drive investment decisions.



# Spring Mountain Capital

**\$1.58 billion managed**

“Tactical asset allocation [which] is different from portfolio diversification because it **over-weights assets that are expected to outperform the market and actively assesses whether or not it’s prudent to take risk, and if it is, what type of risk is appropriate.**”

“How Have Asset Managers Handled Risk in the Recent Crisis?”, **Institutional Investor**, 8/15/11 by Steve Rosenbush

**Institutional  
Investor**



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**“over-weights assets that are expected to outperform the market... actively assesses whether or not it’s prudent to take risk, and if it is, what type of risk is appropriate”**

Not ignoring firm-specific (aka Unsystematic) risk.

Seeking firms that will outperform the market.

Actively assessing and reacting to risk.



# The Global Economy 2007 to the present:

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- ▶ Market volatility soars,
- ▶ Markets set record highs and lows,
- ▶ Investors flee to safety and eschew risk,
- ▶ Destabilizing events continue to mount.
  - ▶ Huge bankruptcies, government bailouts, global debt and deficit concerns, massive shifts in energy sources and prices, Middle East turmoil, the U.S. debt downgrade, the U.S. housing crisis, European debt crises, China's economic slowdown.

**CAPM's answer?**

**LOWER THE RETURN**

# Trying to Understand Risk: CAPM's Definitions

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“A **systematic risk** is any risk that affects a large number of assets, each to a greater or lesser degree. An **unsystematic risk** is a risk that specifically affects a single asset or a small group of assets.”

- ▶ Corporate Finance, 6<sup>th</sup> Edition, Ross, Westerfield & Jaffe, Pg. 287



# Does CAPM Accurately Reflect Risk?

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A Principle of Economics is that, in all investments, the greater the risk of loss, the higher the potential return must be to attract investment.

**Bottom Line: The greater the risk, the higher the potential return *must be* to attract investment.**



# Does CAPM Accurately Reflect Risk?

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CAPM is premised on the idea that investors *don't care about Unsystematic risk (the risk unique to the individual investment.)*

So firm-specific risk is ***totally ignored*** in determining the return investors would seek when investing in that firm.

- ▶ CAPM argues that because investors can hold a diverse portfolio of investments **Unsystematic or firm-specific risk goes away.**

# Does CAPM Accurately Reflect Risk?

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**The CAPM holds that the only risk that matters is Systematic risk.**

- ▶ Systematic risk is the risk inherent in the economy or the sector.



# Does CAPM Accurately Reflect Risk?

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CAPM deals with Systematic risk with two tools:

- ▶ “Market Risk Premium”
  - ▶ An estimate of the “extra return” investors need in order to choose a broad portfolio of risky investment instead of a “risk free” investment,

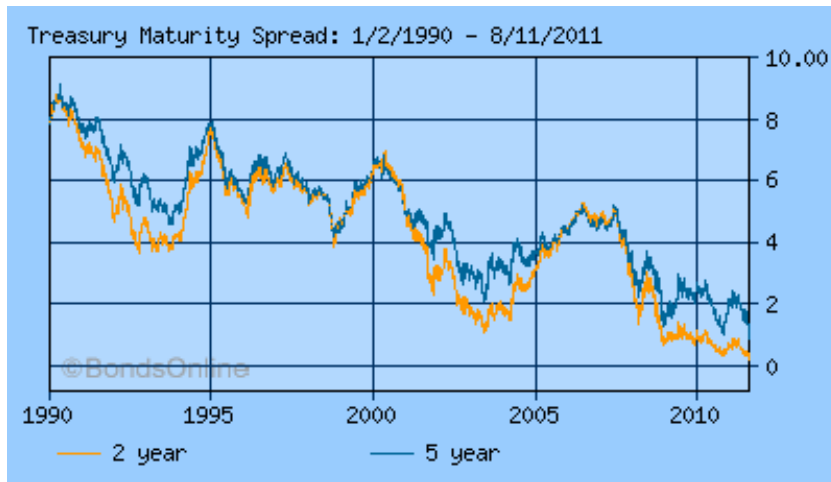
*and*

- ▶ Beta
  - ▶ Beta estimates the relationship between an individual security’s return and the market risk premium.

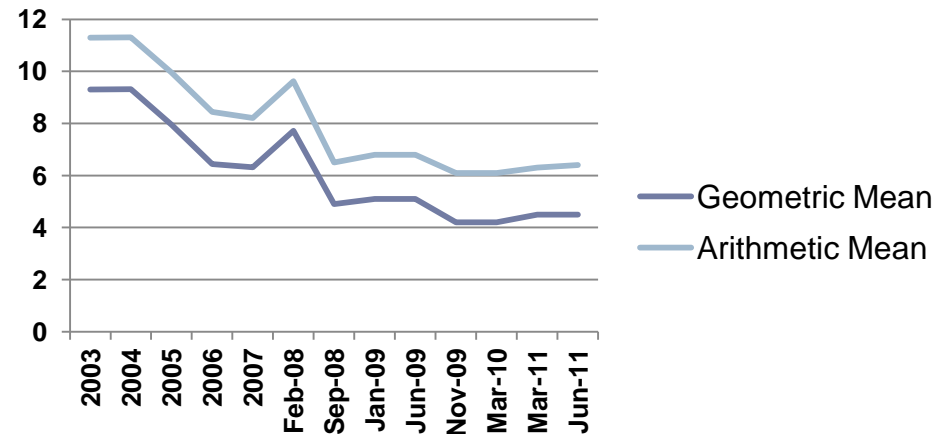
# Reprise of an Earlier Slide: Lowering The Return with CAPM

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## Risk Free Rate



## Risk Premium



**As investors flee from risk and to safety – the very moment when investors need incentives, CAPM produces LOWER RETURNS.**

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# Is Reacting to This Kind of Volatility Rational?

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# Is Reacting to a Plethora of Record One-Day Losses Rational?

## Dow Jones Industrial Average

Largest Point Losses				
Rank	Date	Close	Net Chg	% Chg
1	09/29/2008	10365.45	-777.68	-6.98
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14	10/19/1987	1738.74	-508.00	-22.61
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# What is Rational?

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Risk is **UP**

Risk aversion is **UP**

Market Volatility is **UP**

**CAPM ROEs are **DOWN****

**What rational investor would accept a LOWER  
return in a higher risk, more volatile, more  
uncertain environment?**

# How Has CAPM Responded to Increased Risk?

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Volatility is UP

Risk Aversion is UP

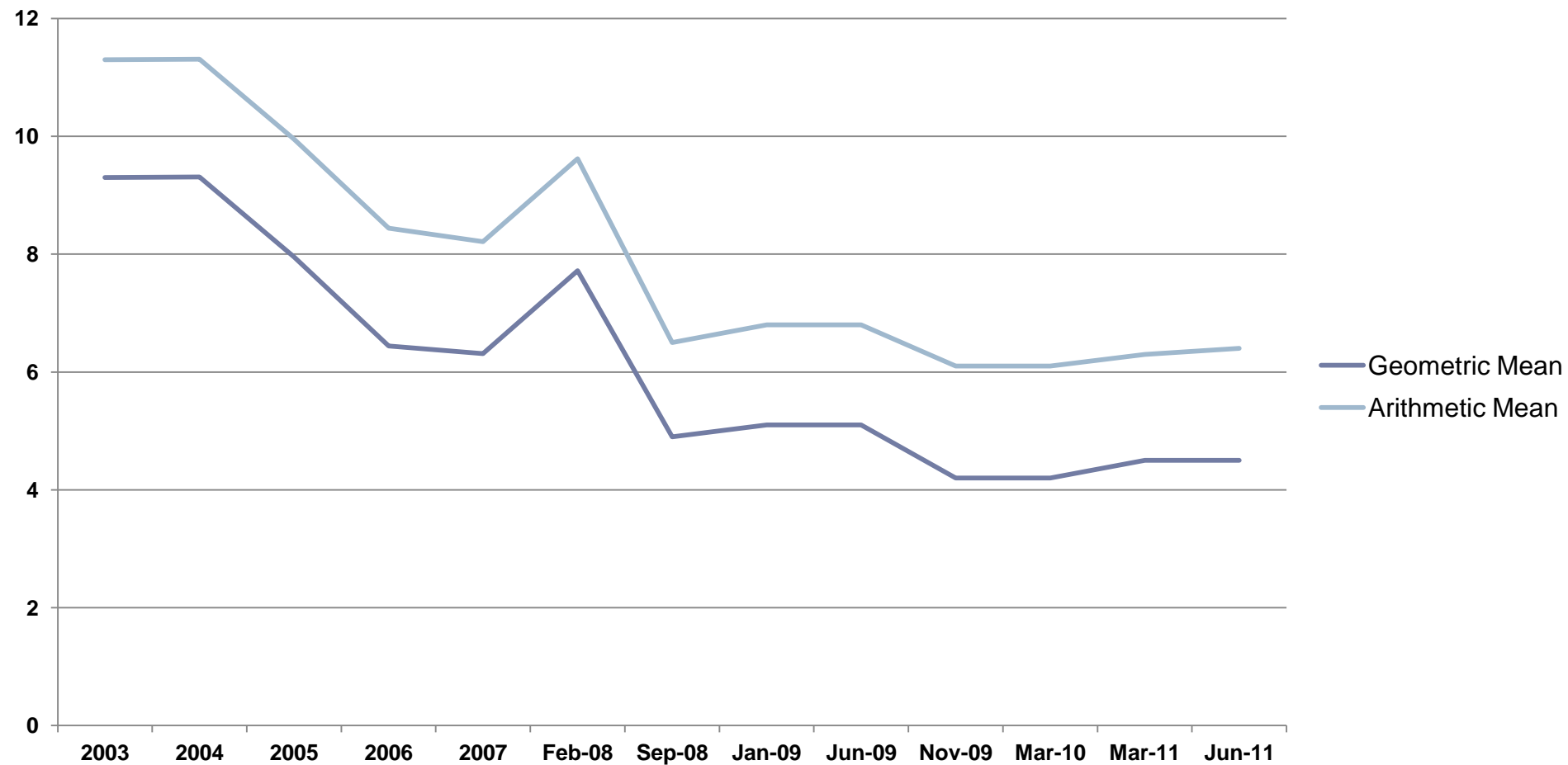
US Treasuries and bonds are DOWN dramatically  
Investors fleeing to Gold and Cash to avoid Risk,

*BUT*

**CAPM is recommending LOWER and LOWER  
ROEs...**



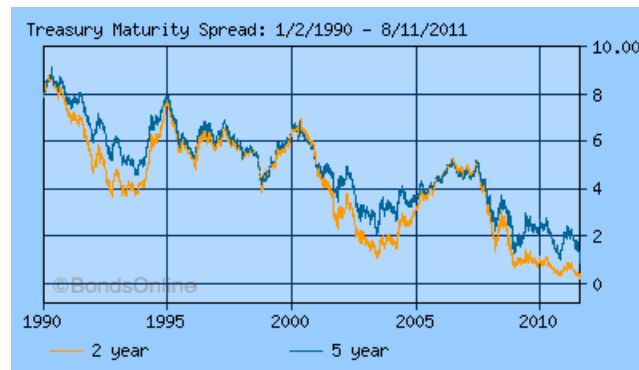
# Risk Premiums in Cost of Equity Testimony



# U.S. Treasuries

## Has fallen over 500 BP since 2006

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# A Brief Reprise of an Earlier Slide

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No one can predict the future with certainty, but investments expose one to additional uncertainty...

Most people dislike uncertainty. They prefer the certain receipt of \$1,000 to a 50/50 chance of receiving either nothing or \$2,000.

**“Therefore, people must be paid a premium if they are going to willingly accept the uncertainty that necessarily accompanies investments.”**

- ▶ Economics, Private and Public Choices, 5<sup>th</sup> Edition, Gwartney & Stroup, Pg. 626



# The markets are acting *exactly* as one would expect...

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- ▶ Uncertainty, risk, and volatility are up dramatically,
- ▶ The future looks highly uncertain,
- ▶ So Investors look for safe options for their money and eschew riskier options.



# What is the CAPM Response to the Flight to Safety?

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The Risk Premium is the CAPM's "lure", it is the amount above "risk-free" that investors need to risk investment.

CAPM views the Risk Premium as a static element – based on very long horizons (many CAPM supporters use a 70-year average).

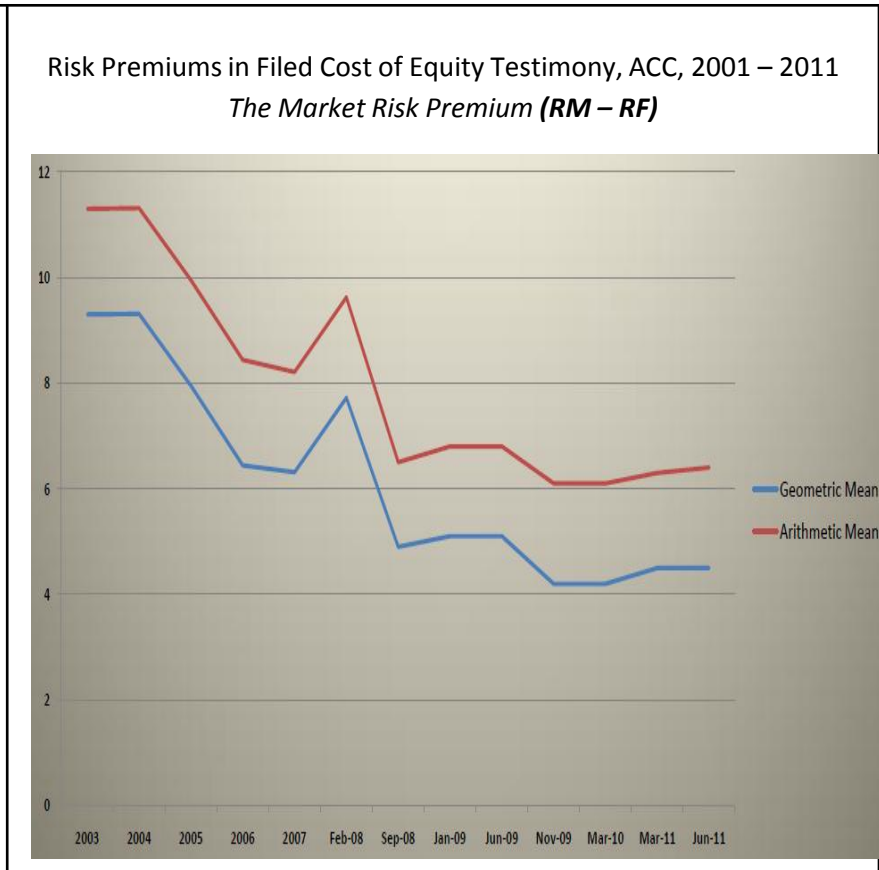
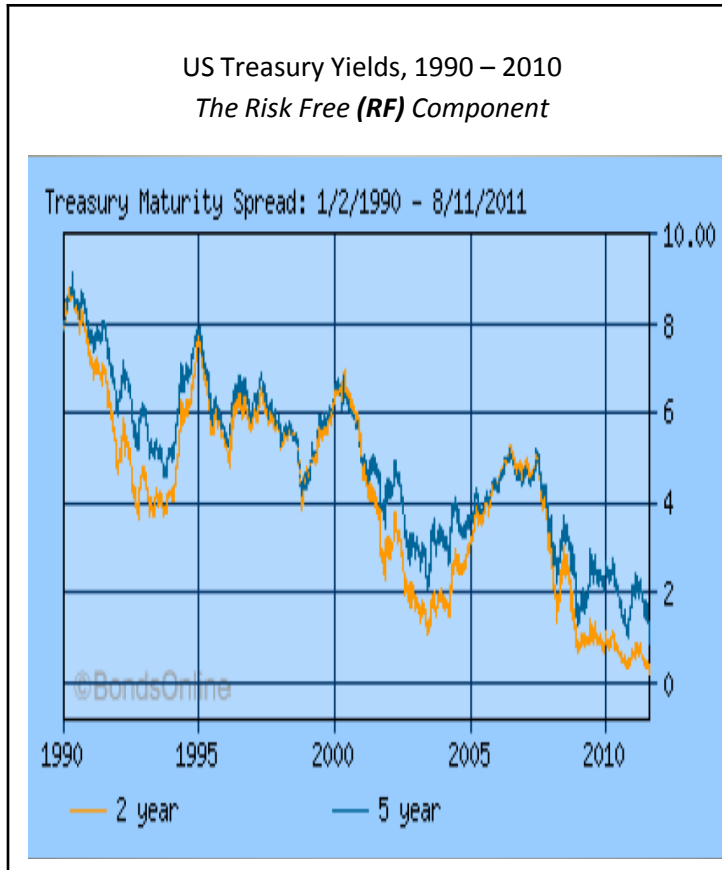
# How Does CAPM Calculate a “Risk Free” Rate?

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- ▶ CAPM uses U.S. Treasuries as the “risk free” rate – it is considered the world’s least risky investment.
- ▶ But, as the world’s investors flee from risk and to U.S. Treasuries, they drive the yields down – the “risk free” option thus offers lower and lower returns because demand is so high.

# Lowering The Return with CAPM

$$\text{Risk Free} + \text{Risk Premium} = \text{ROE}$$



***At the very moment when investors need incentives to take on Risk, CAPM is pulling the ROE down.***

# A Fundamental Flaw with CAPM

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CAPM Analysis relies on a short-term U.S. Treasury Bill Rate.

- ▶ Some CAPM users argue that the 5-Year Treasury Rate mirrors investor horizons in utilities (which have three to five year rate case horizons), so they use that rate.

## ***BUT***

CAPM determines the “risk premium” by using a 70+ year horizon, not a 5-year one.

- ▶ This allows CAPM to *ignore* recent market volatility, despite all evidence indicating that investors do not.

# A note on the CAPM

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There is a gap between the CAPM in theory and the CAPM as used in practice:

The theoretical risk free rate in fact does not exist in reality and the theoretical market risk premium is impossible to calculate in practice.

Practitioners use real world proxies for these theoretical values and the choice of proxies is often subjective and controversial.

# Does Smart Money have a 70-year Risk Tolerance?

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CAPM models undervalue the risk premium by using extremely long time horizons, and

CAPM models assume a static relationship between risk-free investments and risky investments.

But in practice fear and volatility drive investors away from risk and drives down the “risk free” rate.

**CAPM holds that risky investments can pay smaller returns to attract investors back to risk.**



# Going Forward

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The CAPM should not be used to estimate equity return needs:

- ▶ The Risk Free rate pulls the ROE down, which is the opposite of what investors are actually seeking,
- ▶ The Risk Premium uses 70-year horizons when investors are reacting to changes constantly and in near-real time.



# Going Forward

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Using Discounted Cash Flows and Comparable Earnings Models to assess proper returns is much more conservative.

- **CAPM's volatility and inability to deal with 'outside the norm' risk and uncertainty punishes long-term investors by offering returns that don't match the market.**



# Going Forward

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If the sanctity and the mystery of CAPM and the EMH are too great a lure to resist, regulators should, at a minimum, develop an awareness of the CAPM's problems and consider methods for correcting them:

- Discourage gaming of CAPM through use of short term risk free rate combined with a long term risk premium,
- Allow upward adjustments to risk free rate, and
- Constantly search for other possible solutions.

