Econ 133 (Thank you to Professor Joshua Aizenman)

Overview of

The Greenspan Era: Lessons for the Future

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http://crisiscartoon.blogspot.com/

The essence: growing endogenous exposure to under-valuated tail risk

- *Expansion of financial sector's ability to spread risks*
- *New Financial Intermediaries*
- *These intermediaries leave themselves exposed to certain small probability risks*
- *The paper suggests market-friendly policies that would reduce the incentive of intermediary managers to take excessive risk.*

"investment managers," have displaced banks and "reintermediated" themselves between individuals and markets

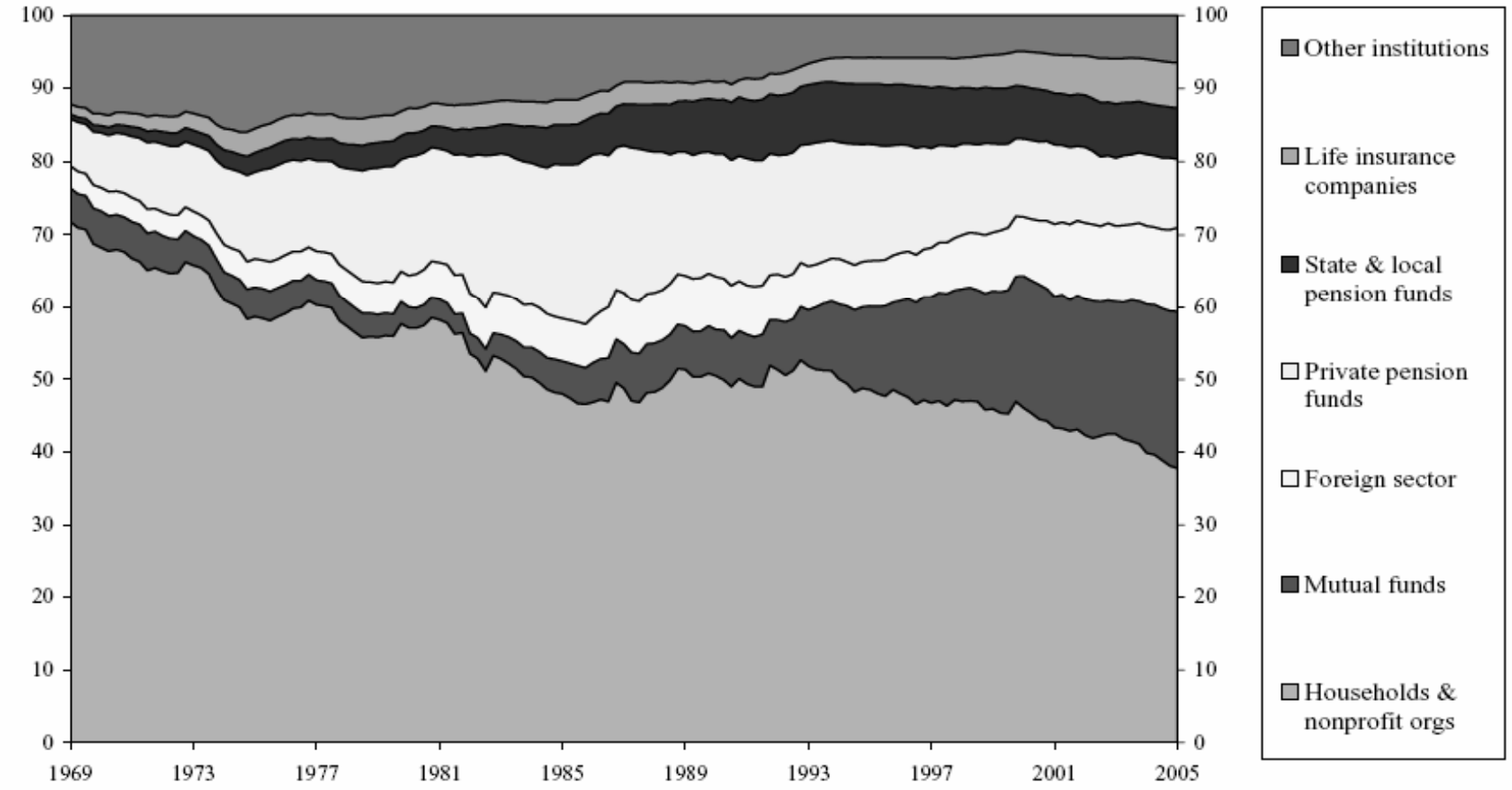


Fig. 3. Ownership of corporate equities in the USA (in percent of total market value)

Source: US Flow of Funds.

Incentives post deregulation, recent trends

- In this new environment, investment managers need the incentive to search for good investments. New investors are attracted by the high returns generated by a manager.
- Flows into an average U.S. mutual fund as a function of the returns it generates -- positive excess returns generate substantial inflows.
- The compensation structure is convex in returns. Similar shape for hedge fund managers or venture capitalists.

There is typically less downside and more upside from generating investment returns, → these managers have the incentive to take more risk.

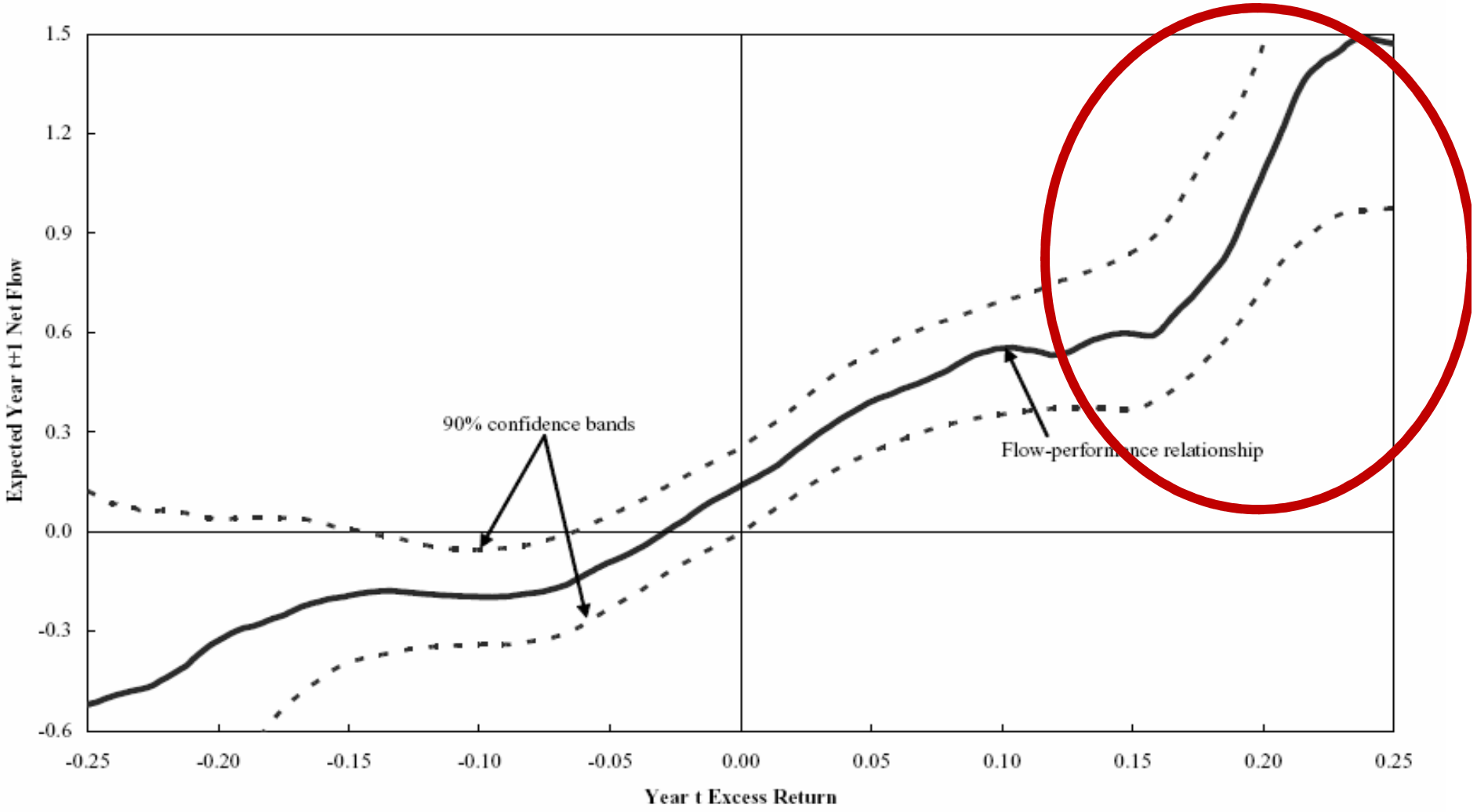


Fig. 7. US mutual funds' returns and net flows 1/

Incentives for goosing up returns for seemingly no additional risk

- Their performance relative to other peer managers matters, either because it is directly embedded in their compensation, or because investors exit or enter funds on that basis.
- Risk and return are related →the manager conceals risk, it looks as if he outperforms peers given the risk s/he apparently takes.
- **Risks that can most easily be concealed are "tail" risks- a small probability of generating severe adverse consequences and, in exchange, offer generous compensation the rest of the time.**

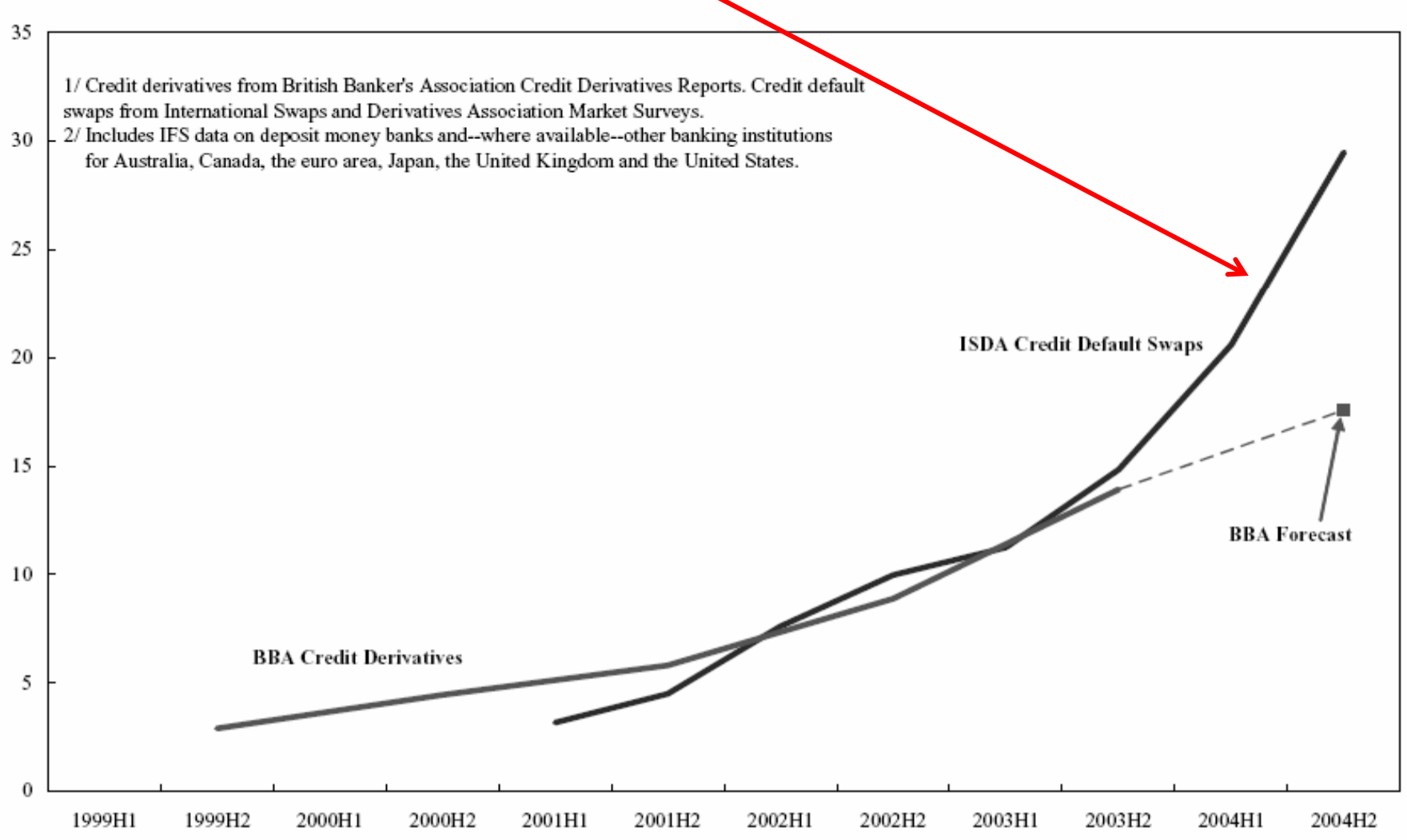
Example of short run gains associated with "tail risk" exposure

- **Provide "Disaster Insurance":** A guarantees against a creditor defaulting.
- I will earn the premiums on this guarantee most of the time, without any additional volatility on my portfolio holdings. I will look as if I am outperforming my comparison group for I will have generated returns with no apparent risk.
- Once in a while, disaster will strike and the creditor will default. My true risk profile will then be revealed but too late for my investors.
- **Incentives for goosing up returns for seemingly no additional risk.**

CDS

- A **credit default swap** (CDS) is a contract in which the protection buyer of the CDS makes a series of payments (referred to as the CDS "fee" or "spread") to the protection seller and, in exchange, receives a payoff if a credit instrument (typically a bond or loan) experiences a credit event.
- A holder of a bond may “buy protection” to hedge its risk of default. In this way, a CDS is similar to credit insurance,

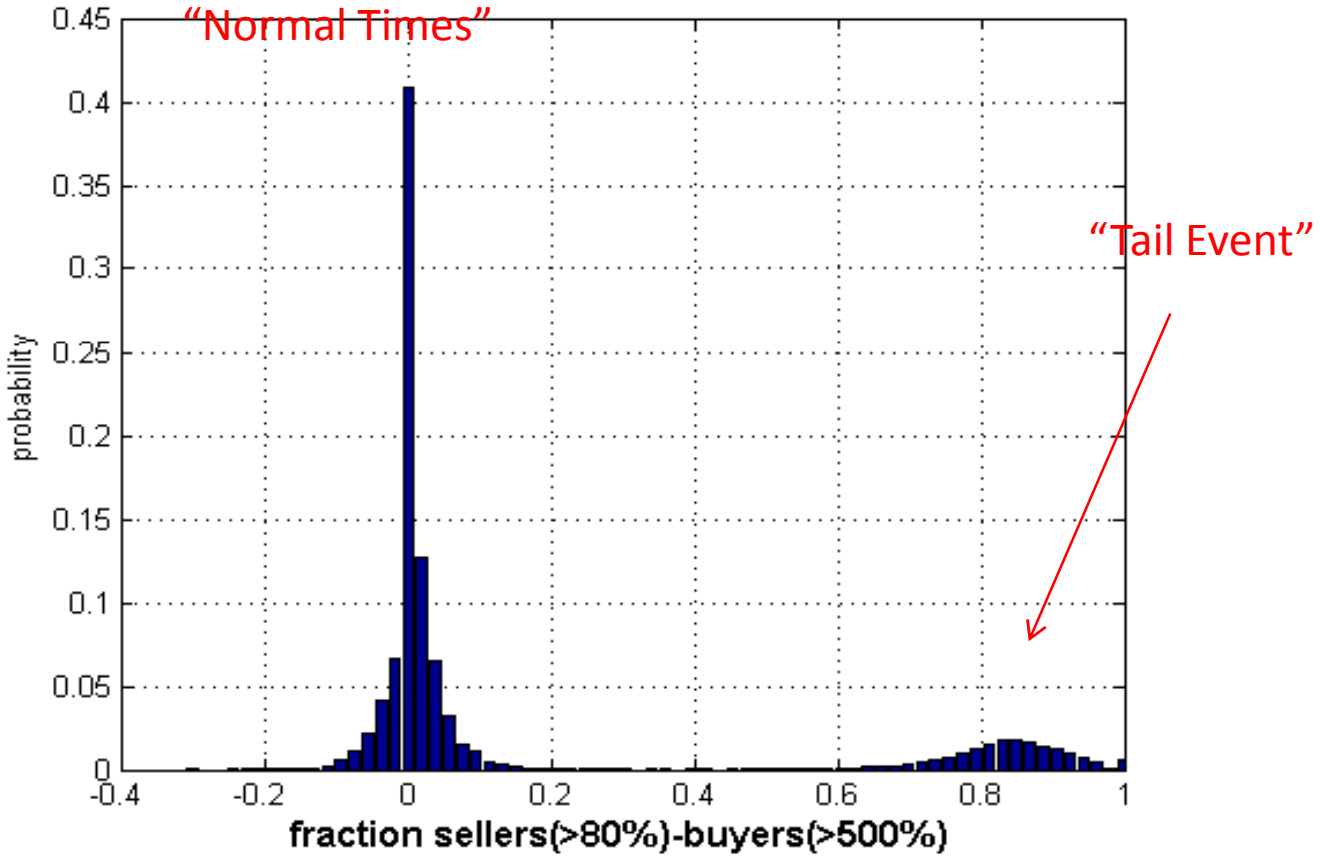
Credit default swaps (the blue line) expanding from 5% private sector bank credit, 2001 to over 30% 2004, with the pace of growth accelerating



Incentive to herd with other investment managers

- Herding – insuring that the manager will not underperform his peers.
- Herd behavior can move asset prices away from fundamentals.

Histogram of Institutional Investors Liquidating S&P500 Stocks (2002:Q1-2008:Q1)



Private-Social costs diverge

- **Liquidity is a Public Good**

so, private sector has no incentive to provide it, but every incentive to free ride on the liquidity provided by others

- **Private Risk-Taking Exceeds Socially Optimal Level**

Both investors and managers have short horizons, so no incentive for restrain risk-taking in short-term

Past crises [1998] and banks

- Were able to provide liquidity in part because their sound balance sheets allowed them to attract available spare liquidity in the market.
- **When the commercial paper market dried up for many issuers following the Russian crisis in 1998 and LTCM collapse, banks with higher levels of transaction deposits were perceived (by the stock market) to be lower risk.**

Banks now

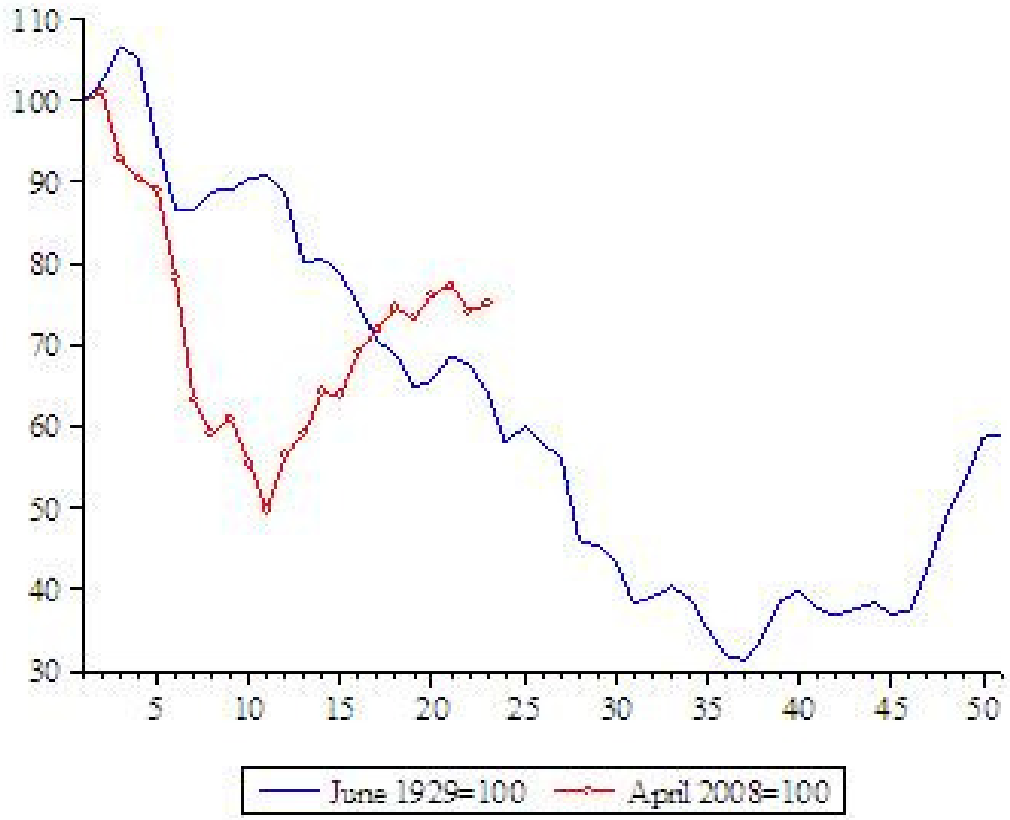
- Arm's Length Financing
- Stuck with most complex/illiquid loans
- This time will need liquidity themselves in times of crisis

3 Years Later

VoxEu What do the new data tell us?

Barry Eichengreen Kevin H. O'Rourke

All graphs in this column track behavior after the peaks in world industrial production, which occurred in June 1929 and April 2008.



World equity markets are now 25% below peak (figure 3). (At their trough they were 50% below peak.)

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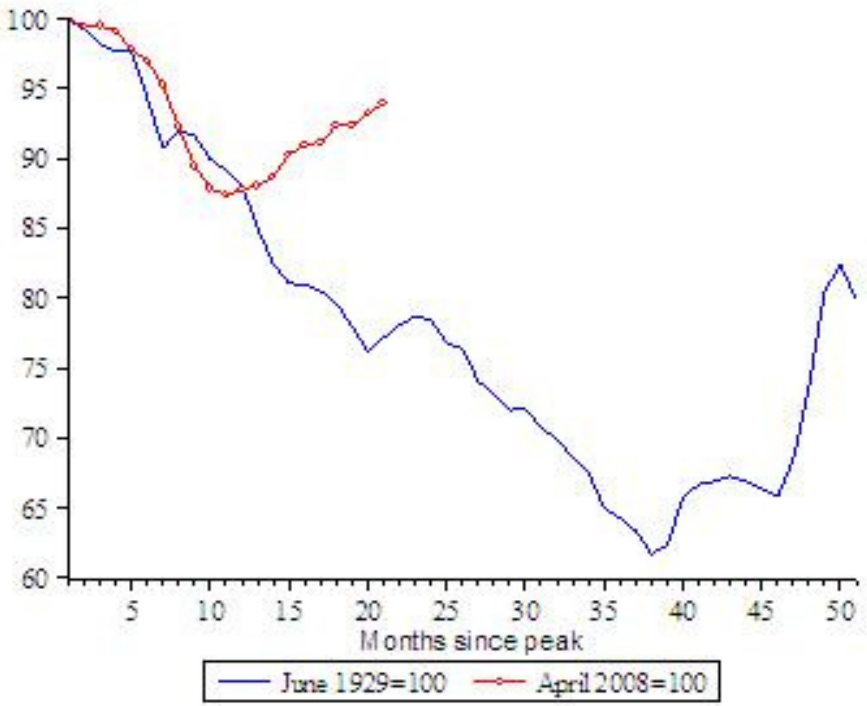


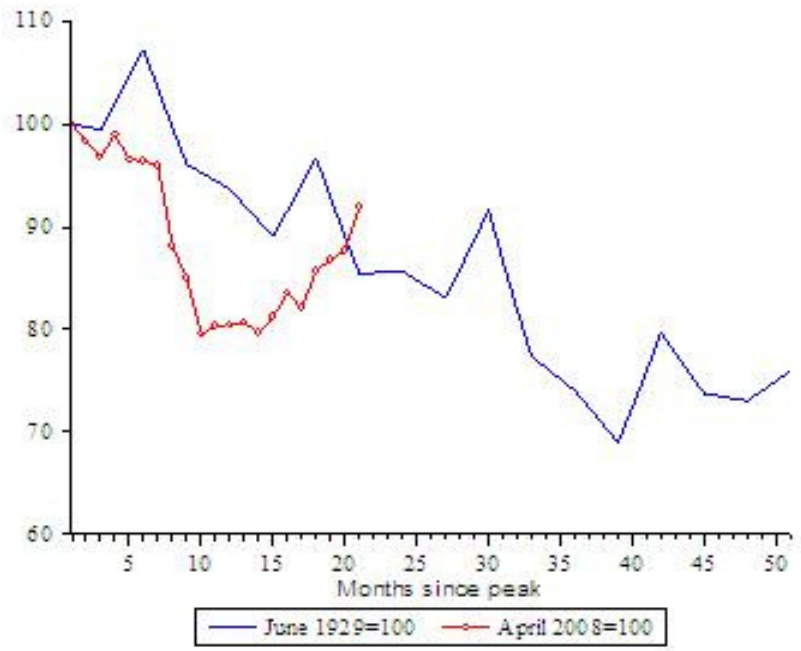


Figure 2:

World industrial production Volume of world trade, now vs. then

1. Industrial production is still 6% below its previous peak (At the trough it was 13% below its previous peak.)
2. World trade also continues to recover but remains 8% below its previous peak

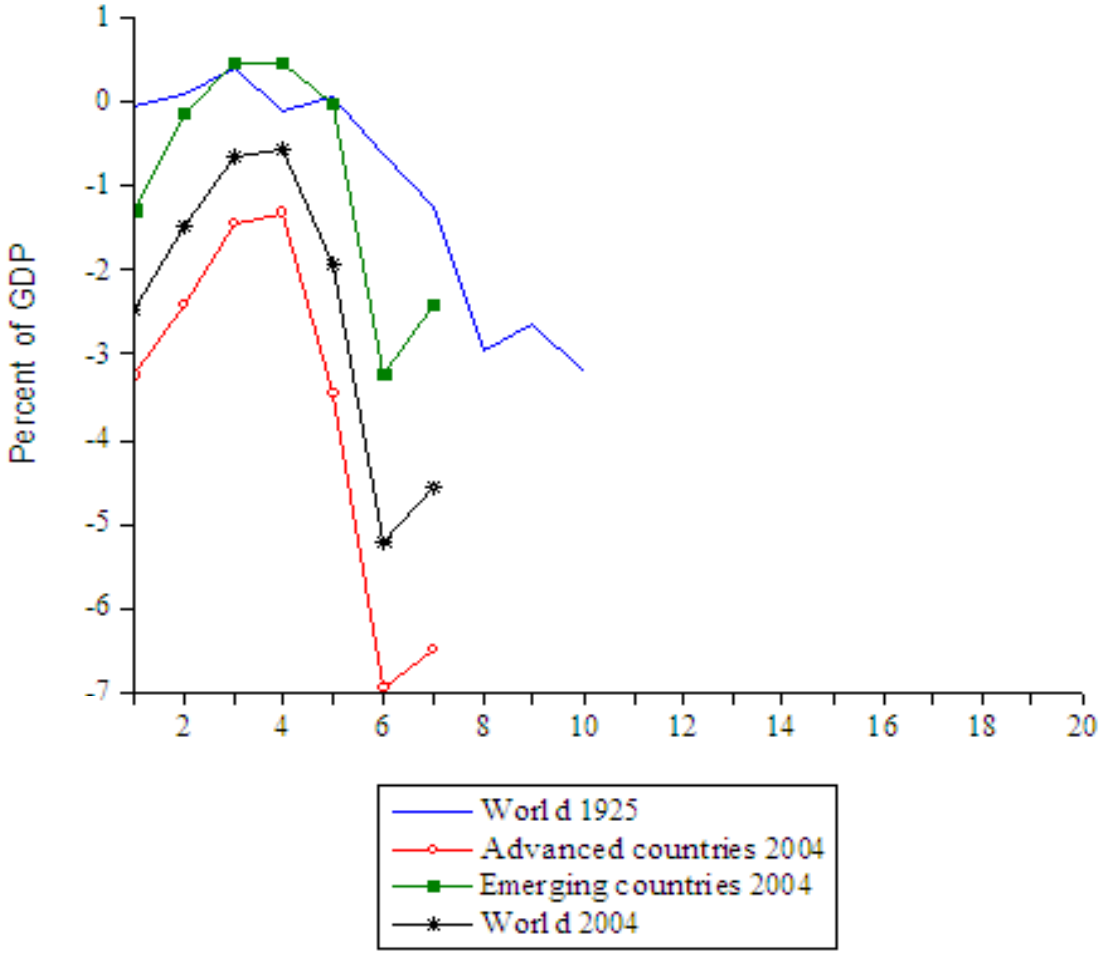
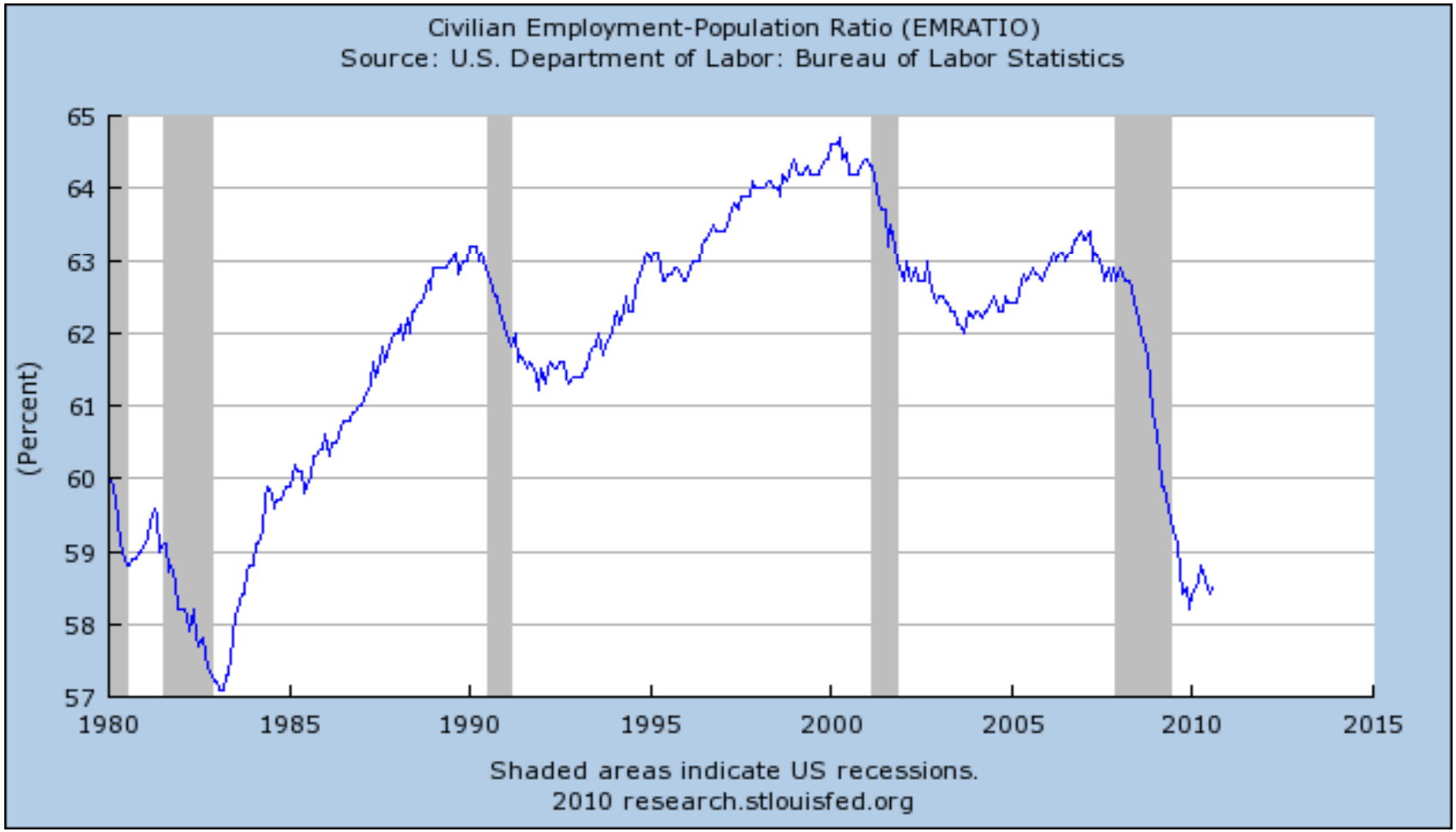


Figure 6. Government Budget Surpluses

Clearly, willingness to run deficits today is considerably greater.

US employment rate



Chapter 7

Capital Asset Pricing and Arbitrage Pricing Theory

Capital Asset Pricing Model (CAPM)

- Equilibrium model that underlies all modern financial theory
- Derived using principles of diversification, but with other simplifying assumptions
- Markowitz, Sharpe, Lintner and Mossin are researchers credited with its development

Simplifying Assumptions

1. Individual investors are price takers
2. Single-period investment horizon
3. Investments are limited to traded financial assets
4. No taxes and no transaction costs

Simplifying Assumptions (cont.)

5. Information is costless and available to all investors

6. Investors are rational mean-variance optimizers

7. Homogeneous expectations

Resulting Equilibrium Conditions

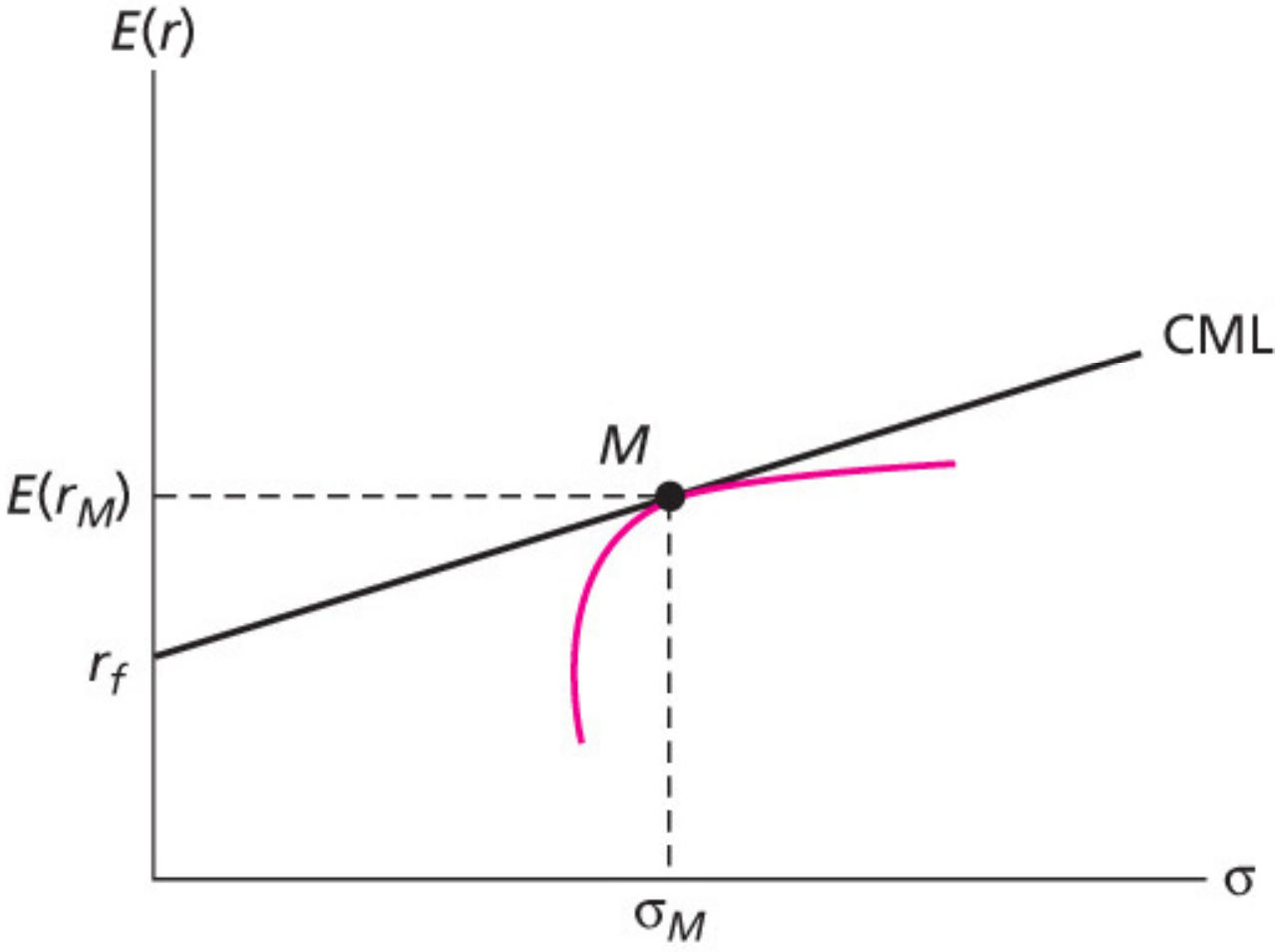
- All investors will hold the same portfolio for risky assets; the “market portfolio” (M)
- Market portfolio contains all securities and the proportion of each security is its market value as a percentage of total market value
- Market price of risk or return per unit of risk depends on the average risk aversion of all market participants

Resulting Equilibrium Conditions

- Risk premium on the market portfolio proportional to the it's variance by average investor's risk aversion

$$E(r_M) - r_f = A^*\sigma^2_M$$

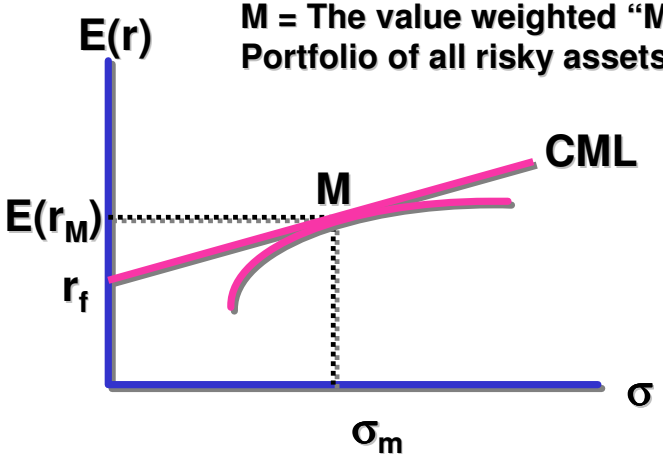
Capital Market Line



Known Tangency Portfolio of CML

- Equilibrium conditions: All investors will hold the same portfolio for risky assets; the "market portfolio"

Capital Market Line



Pricing of individual securities is therefore related to the risk that individual securities have when they are included in the market portfolio.

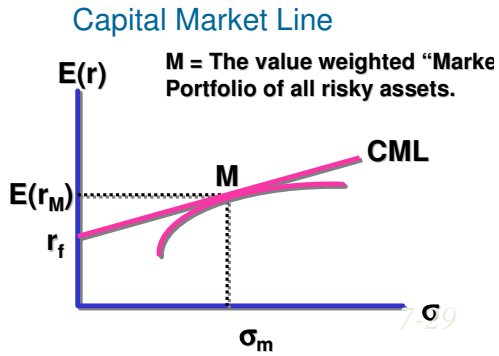
Slope and Market Risk Premium

M = Market portfolio

r_f = Risk free rate

$E(r_M) - r_f$ = Excess return on the market portfolio

$$\frac{E(r_M) - r_f}{\sigma_M}$$ = Optimal Market price of risk = Slope of the CML



Expected Return and Risk on Individual Securities

- The risk premium on **individual** securities is a function of the individual security's
  contribution to the risk of THE market portfolio
- **What type of individual security risk will matter, systematic or unsystematic risk?**
- **An individual security's total risk (σ^2_i) can be partitioned into systematic and unsystematic risk:**

$$\sigma^2_i = \beta_i^2 \, \sigma_M^2 + \sigma^2(e_i)$$

M = market portfolio of all risky securities

Expected Return and Risk on Individual Securities

- Individual security's contribution to the risk of the market portfolio is a function of the _____ of the stock's returns with **the** market portfolio's returns and is measured by BETA

covariance

With respect to an individual security, systematic risk can be measured by β_i =

$$[COV(r_i,r_M)] / \sigma^2_M$$

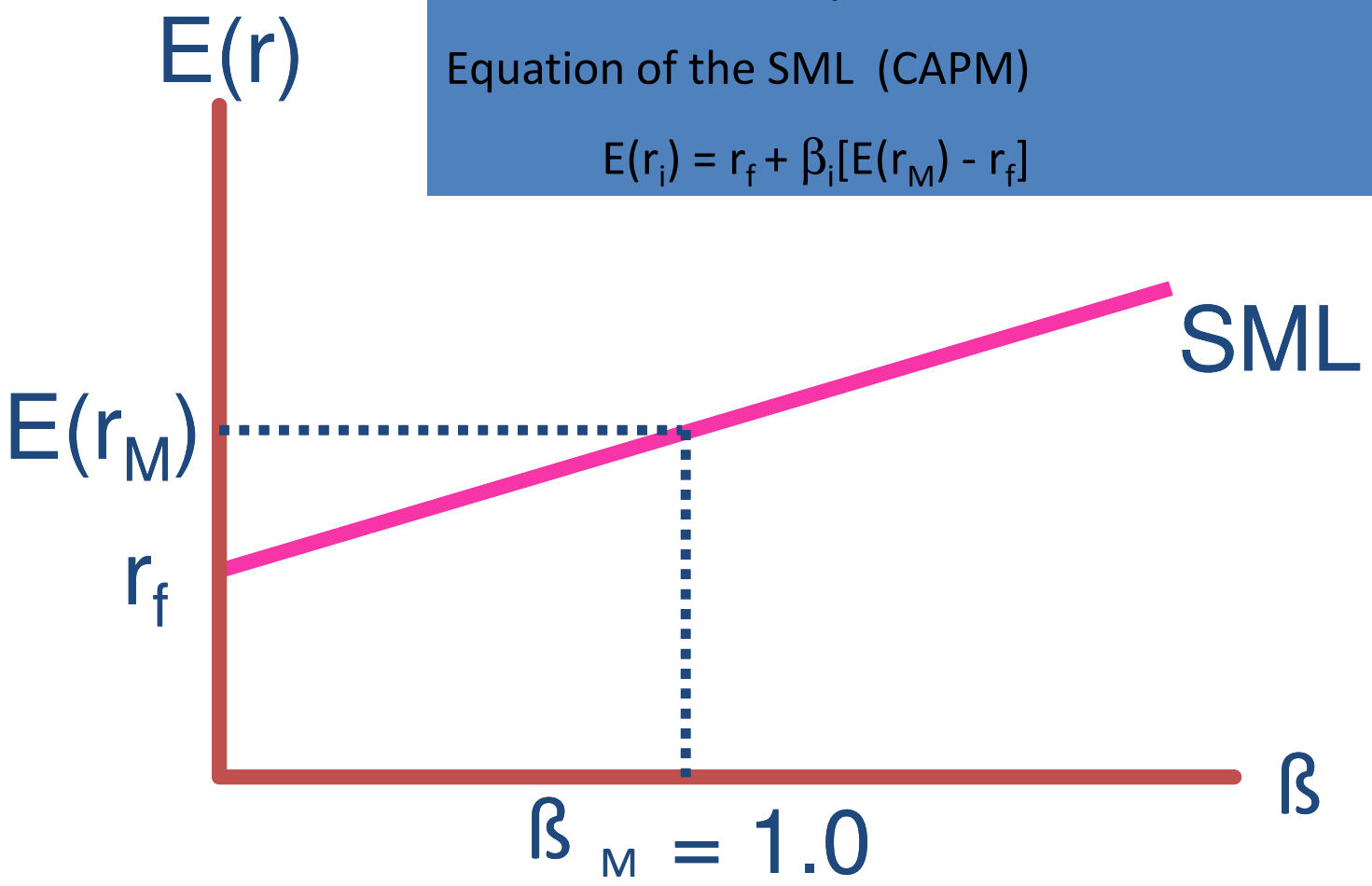
Individual Stocks: Security Market Line

Slope SML = $(E(r_M) - r_f)/\beta_M$

= price of risk for market

Equation of the SML (CAPM)

$$E(r_i) = r_f + \beta_i[E(r_M) - r_f]$$



Sample Calculations for SML

Equation of the SML

$$E(r_i) = r_f + \beta_i[E(r_M) - r_f]$$

$E(r_m) - r_f =$ .08 $\quad r_f =$ .03

Return per unit of systematic risk = 8% & the return due to the TVM = 3%

$\beta_x = 1.25$

$E(r_x) =$ 0.03 + 1.25(.08) = .13 or 13%

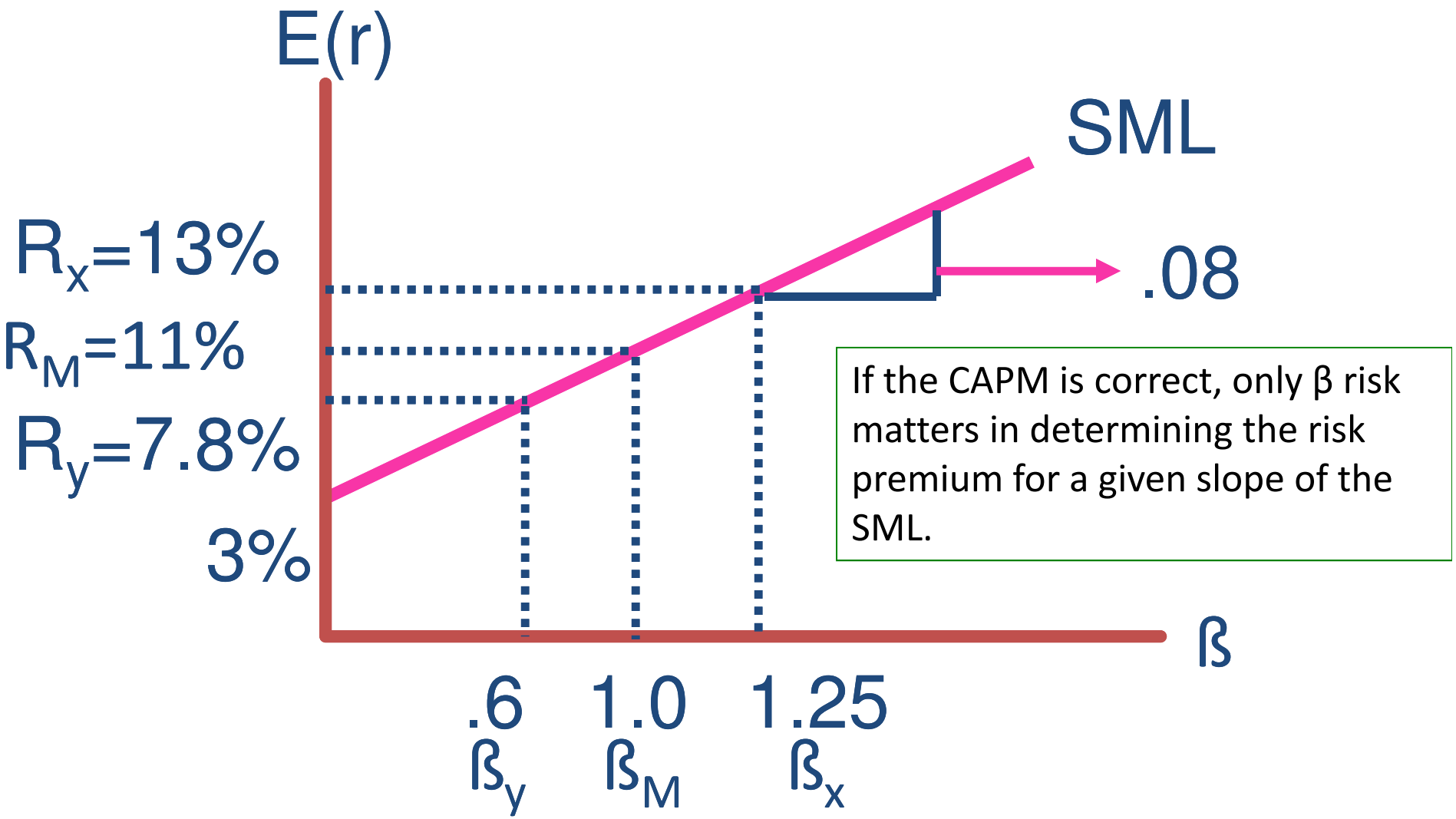
$\beta_y = .6$

$E(r_y) =$ 0.03 + 0.6(0.08) = 0.078 or 7.8%

If $\beta = 1$?

If $\beta = 0$?

Graph of Sample Calculations



If the CAPM is correct, only β risk matters in determining the risk premium for a given slope of the SML.