

Investments and ERM: A Credit Crunch Perspective

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Overview

- **Overview of 2008 Investment Returns**
- **Asset Side vs. Liability side view of risk: “Eyeglasses with mismatched lenses”**
- **Some Potential “Cross balance sheet” scenarios**
- **Stand-alone investment risk- in search of the efficient frontier...**

Overview of 2009 Fixed Income

Fixed Income Segments	Excess Returns in bps*					# of st. dev. for 2008 year
	2007	2008	1998-2006 Period			
<u>Segment</u>	<u>2007</u>	<u>2008</u>	<u>Average</u>	<u>Std. Dev</u>	<u>Worst Case</u>	
Barclays Capital Aggregate Bond Index	(206)	(710)	29	93	(131)	8.0
Agency Debt	(56)	(110)	38	48	(49)	3.1
Mortgage Backed Securities (MBS)	(177)	(232)	31	106	(90)	2.5
Asset Backed Securities (ABS)**	(634)	(2,223)	73	88	(88)	26.1
CMBS (Commercial)	(435)	(3,274)	107	86	(41)	39.3
Investment Grade Corporate Bonds	(464)	(1,786)	31	302	(463)	6.0
High Yield Corporate Bonds	(777)	(3,832)	50	1,355	(1,897)	2.9
Emerging Markets Bonds	(457)	(2,842)	550	1,405	(2,046)	2.4
*Excess Return = Total Return of segment - Total return of duration matched treasuries						
** Includes Subprime						

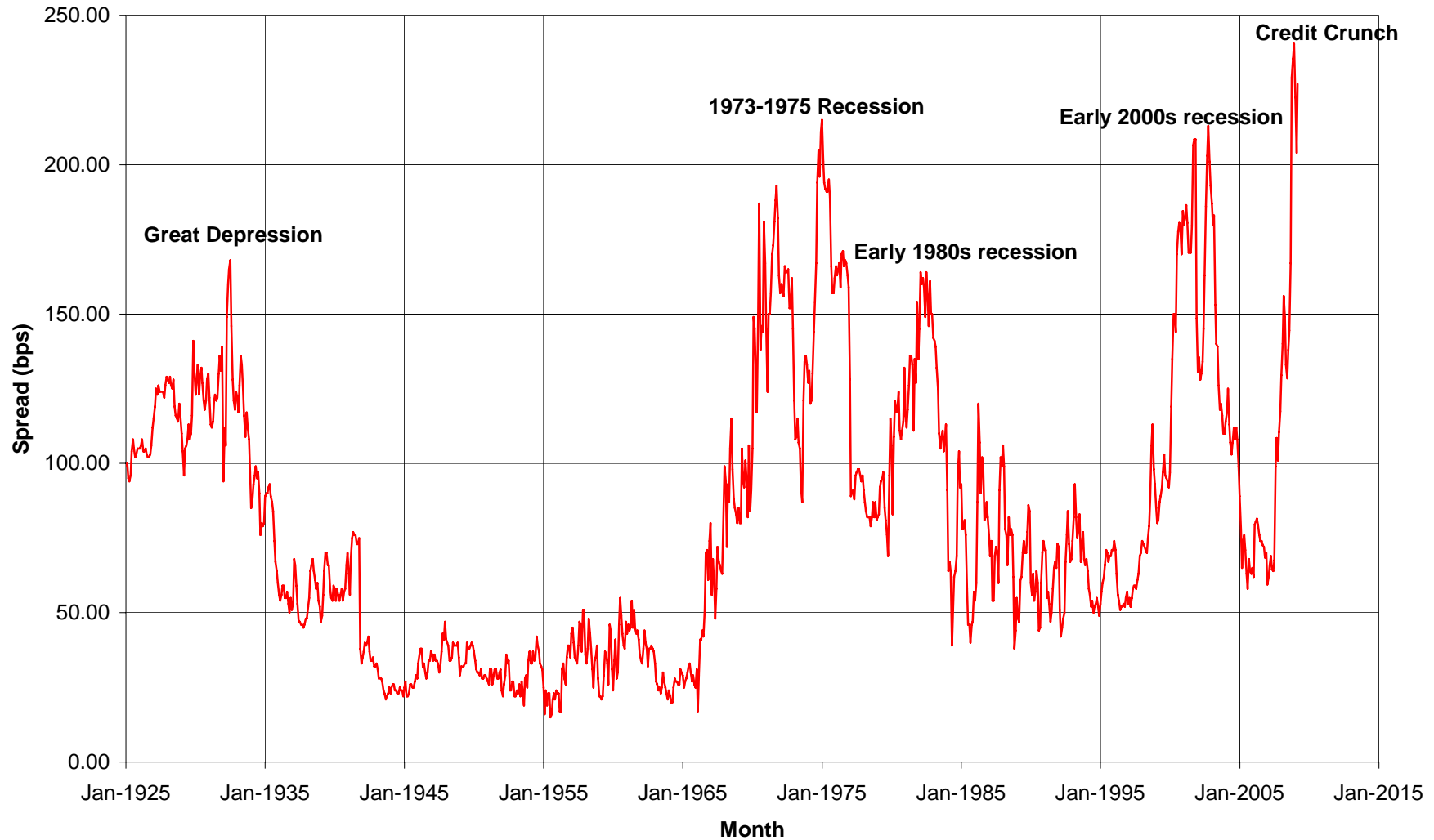
2008 Fixed Income Excess Returns, ctd.

- **ABS/CMBS- we all know the story...**
- **But Corporate Bonds 6 st. dev. event?**
- **Maybe 1998-2006 period is too short?**
 - **worst year was 2000 with -463 bps**
- **Here are the 1989-1997 stats:**

Corporate Bond Excess Returns (bps)			
Period	mean	st dev	worst case
1989-1997	57	131	(189)
1989-2006	44	226	(463)

Spread Data from 1925-present

AAA LT Corporate Bond spreads (bps)



Asset side vs. Liability side ERM

- **Differing views of risk**
 - **Eyeglasses with “mismatched lenses”**
 - **lack of consistency in how to think about risk and extreme events**
 - **easy to get disoriented**
- **Liability side**
 - **look at 100 year, 250 year events**
 - **New Madrid Earthquake (1812), Great Miami Hurricane (1926)**

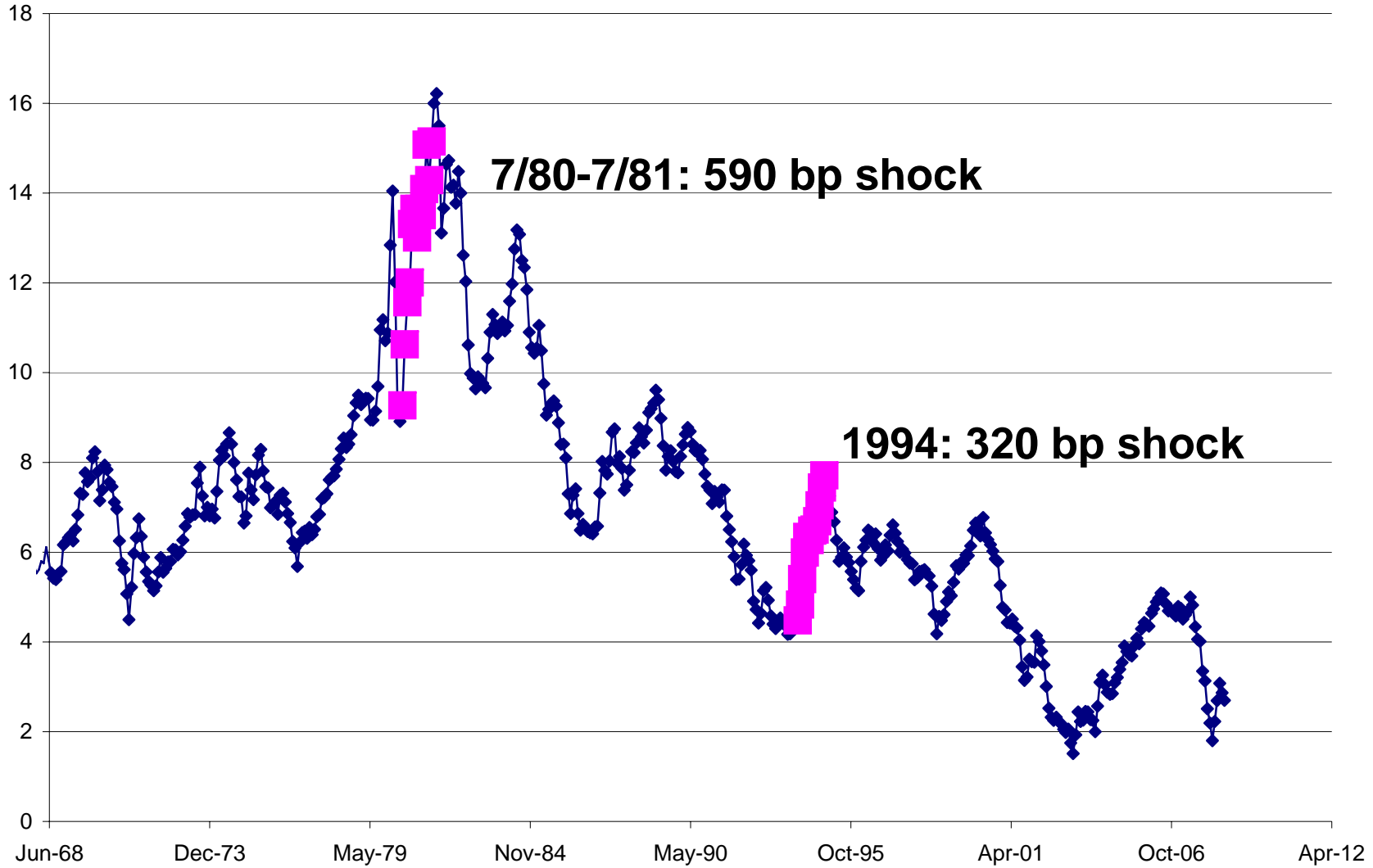
Asset side risk: one view

- **“ We were seeing things that were 25-standard deviation moves, several days in a row. There have been issues in some of the other quantitative spaces. But nothing like we saw last week.”**
 - **David Viniar, Goldman’s CFO re the performance of Goldman’s flagship Global Alpha Hedge Fund during the week of August 6,2007. As quoted in the Financial Times, 8/13/07**

Asset side view ctd.

- **10 yrs. of volatility data if lucky, often less**
- **Then extrapolate out to longer return periods using normal/lognormal models**
- **Bias against looking at actual extreme historical events (the world is different now!)**
 - **typically look at 100 bp/ 200 bp interest rate shocks**
 - **yet much bigger interest rate shocks occurred in 1980 & 1994 (590 & 320 bps)**
 - **100 year interest rate shock = 1200 bps?**

3 year Treasury Yields



Asset side vs Liability side ctd.

- **Liability side**
 - Need sufficient reward to write a peak zone cat risk
- **Asset side**
 - Fannie and Freddie subordinated debt with spread of 40 bps- no problem!

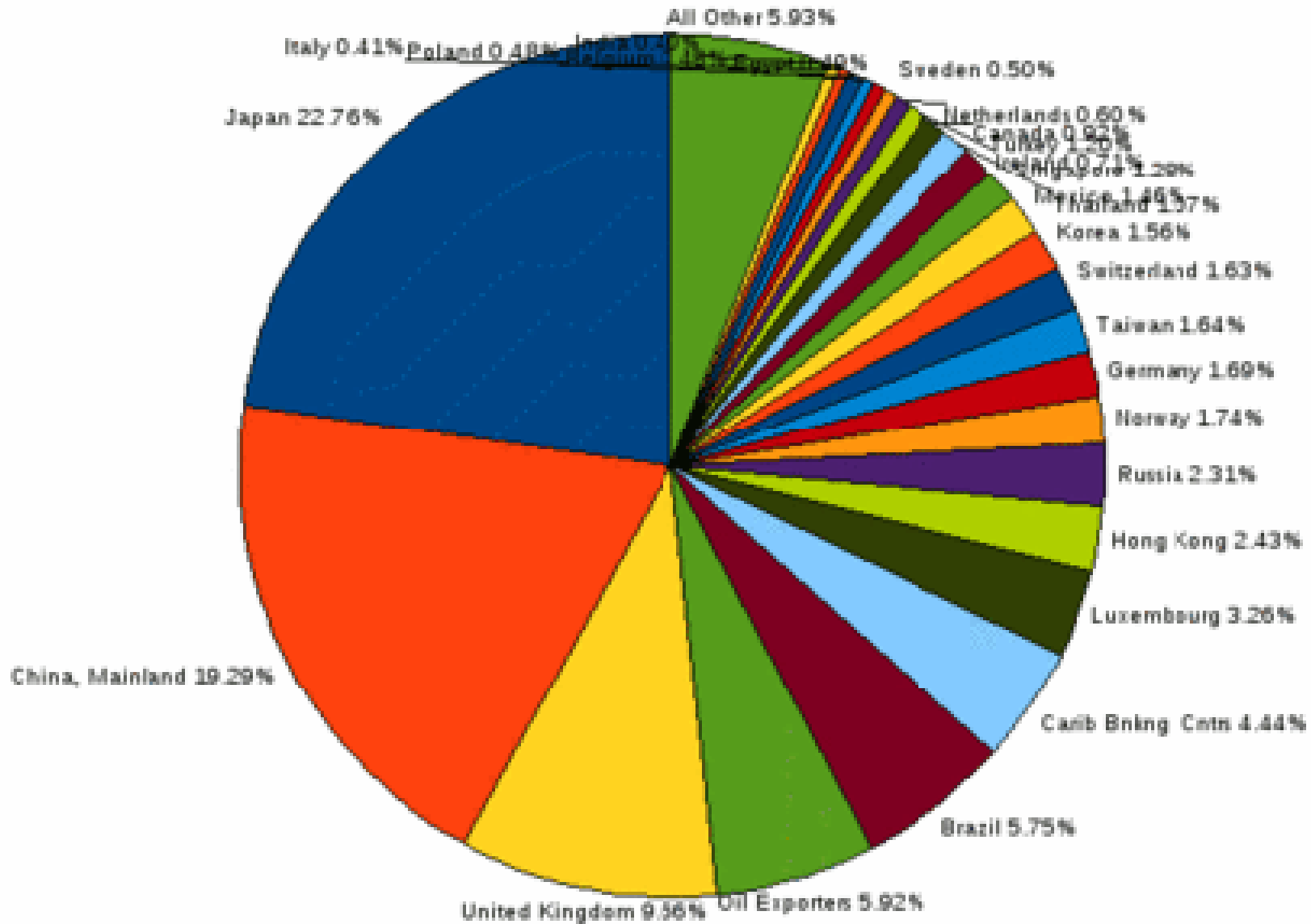
Cross Balance Sheet scenarios

- **Surety Bond (re)insurance and corporate bond investments**
 - Enron
- **California Earthquake**
 - Property (re)insurance contract losses
 - RMBS/CMBS investments hit?

Cross Balance Sheet, ctd.

- **Major Japanese EQ**
 - **Property (re)insurance contract losses**
 - **To assist rebuilding effort, Japan sells its US Treasury Portfolio (\$600 BN > total annual US Treasury issuance, = 5% US GDP)**
 - **Treasury prices drop, US interest rates spike**
 - **(Re)insurer bond investments hit**

Foreign Holders of US Treasury Securities (April 2008)



Cross Balance Sheet, ctd2.

- **Cat Losses and muni bond portfolio**
 - **US (re)insurers suffer cat losses**
 - **Resulting in Net Operation Losses (NOL) for tax purposes**
 - **Triggering AMT**
 - **Limits effectiveness of muni bond investments**

Stand-alone investment risk

- **How much investment risk should I take?**
- **Where should I take my investment risk?**
 - Bonds, stocks, alternative assets?
- **Bonds: Treasuries, TIPs, investment grade bonds, structured securities, high yield**
- **Stocks: large cap, small cap, international?**
- **Alternative assets?**
 - Are Hedge Funds worth the risk?
- **Where is the efficient frontier?**

A radical proposal

- **Is it better not to take investment risk on the fixed income side at all?**
 - **Stick to Treasuries, TIPs?**
- **Take risk on the equity side**
 - **Better upside compensation (unlimited) vs. limited upside from risky bonds**

Efficient Frontiers

