Private Mortgage Insurance

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Risk & Regulatory Consulting, LLC

Background Private Mortgage Insurance

PMI Basics

- Pays the lender if the borrower defaults on a mortgage loan
- Typically required when down payments are below 20%
- Rates range from 0.5% to 6% of principal per year
- Can be borrower or lender paid

Background PMI (Cont.)

Benefits PMI is expected to provide

- Lower down payment facilitates earlier home ownership and building up of equity
- Default risk protection increases capacity of lenders to issue mortgage loans

Background PMI (Cont.)

PMI is expected to provide

- Intertemporal risk transfer – premium paid in good economic times can support losses in bad economic times
- Interspacial risk transfer – strongly performing markets can support poorly performing markets

Background PMI (Cont.)

Traditional Factors of Mortgage Default

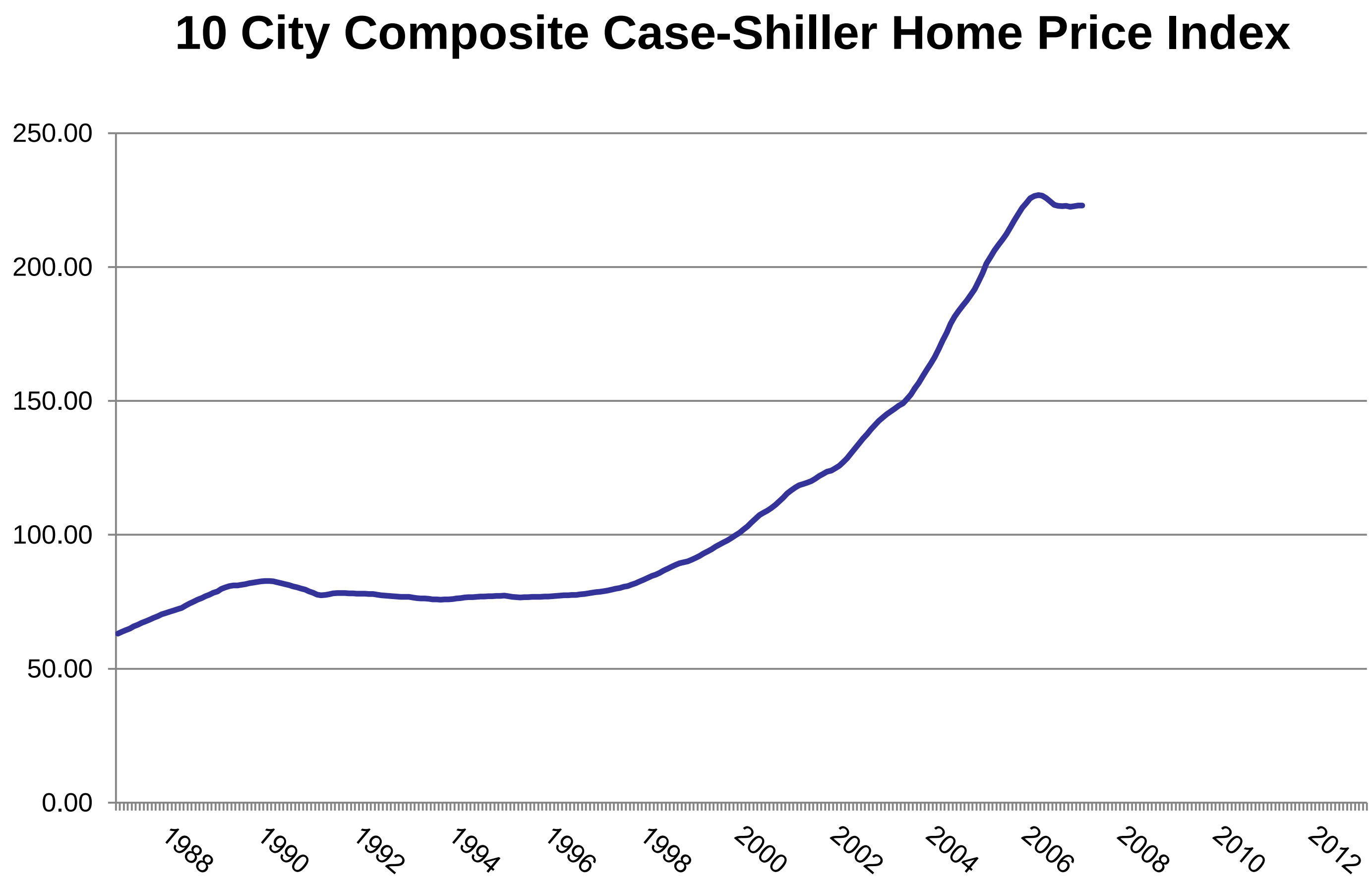
- Medical expenses
- Divorce
- Unemployment
- Inability to refinance

Current Crisis and Effects

The 2000-2007 period saw a 9% annualized increase in home prices aided by:

- Low interest rates
- Decreased lending standards
- General belief that housing is a good investment

Current Crisis and Effects



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Current Crisis and Effects

CNBC Interview with Ben Bernanke - July 1, 2005:

Interviewer: "What is the worst-case scenario if in fact we were to see prices come down substantially across the country?"

Bernanke: "Well, I guess I don't buy your premise. It's a pretty unlikely possibility. We've never had a decline in house prices on a nationwide basis. So, what I think what is more likely is that house prices will slow, maybe stabilize, might slow consumption spending a bit. I don't think it's gonna drive the economy too far from its full employment path, though."

Current Crisis and Effects

Ben Bernanke - May 17, 2007:

"Given the fundamental factors in place that should support the demand for housing, we believe the effect of the troubles in the subprime sector on the broader housing market will likely be limited, and we do not expect significant spillovers from the subprime market to the rest of the economy or to the financial system."

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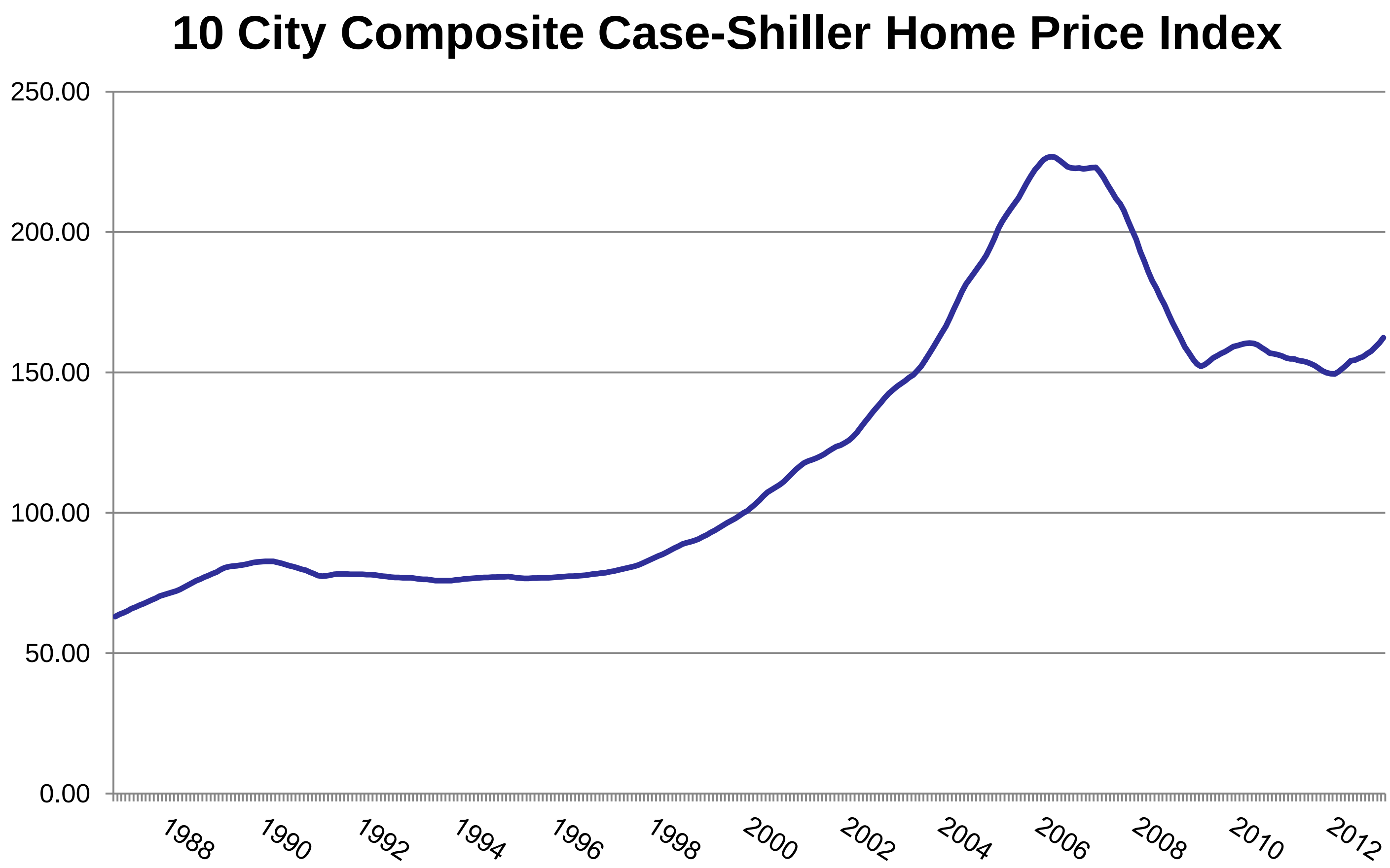
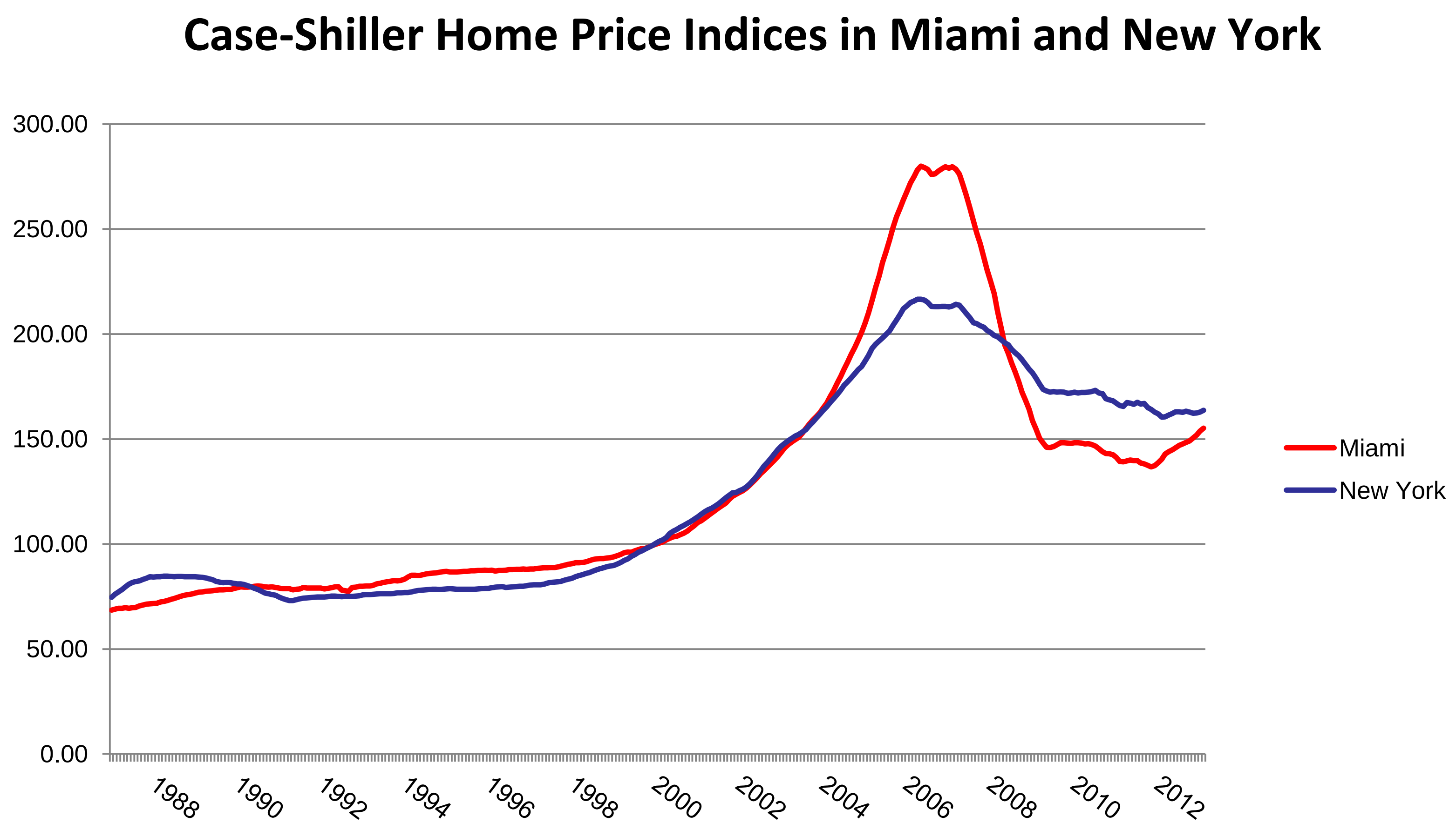
Current Crisis and Effects



Current Crisis and Effects



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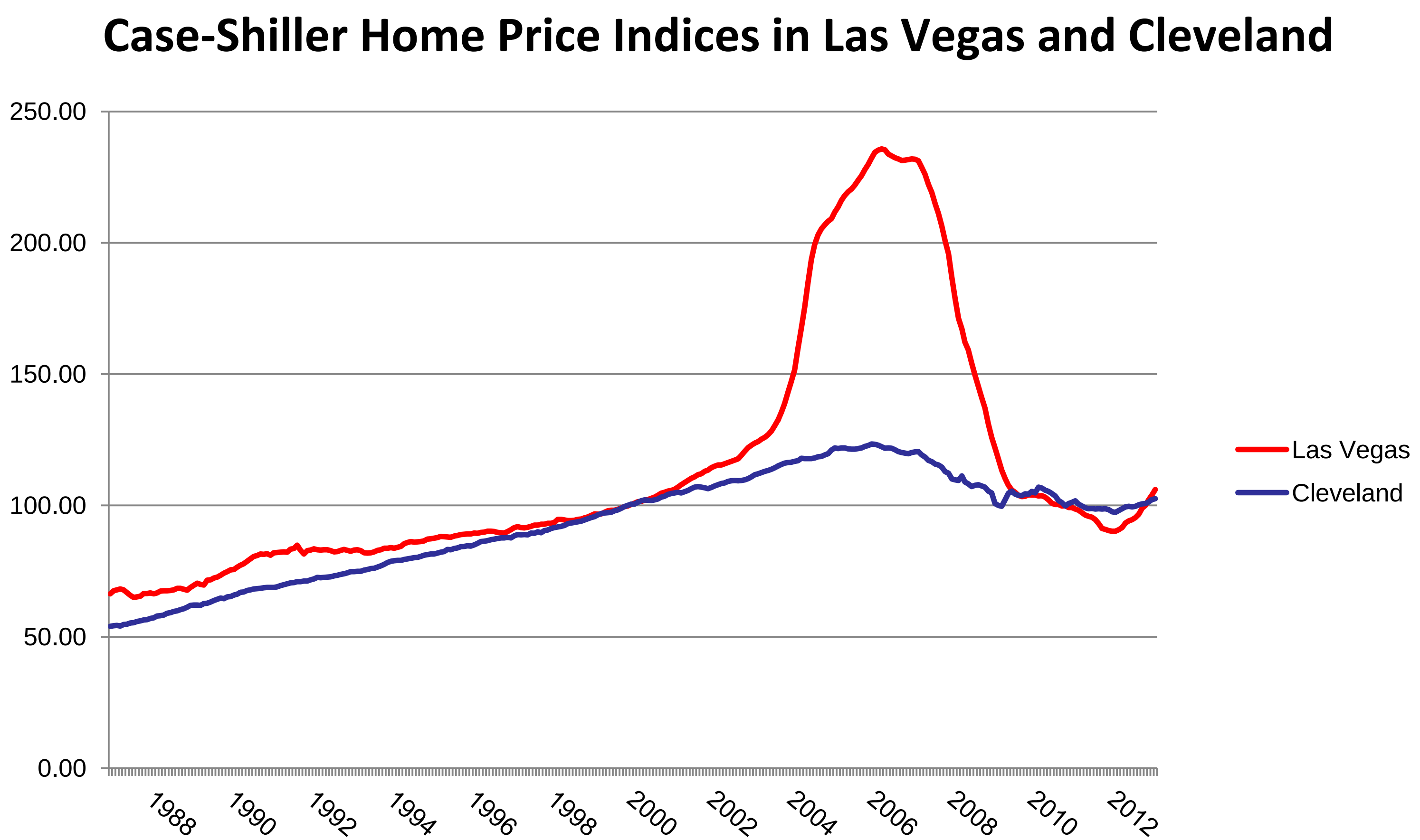
Current Crisis and Effects



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Current Crisis and Effects

Warren Buffett's testimony to the Financial Crisis Inquiry Commission:

> "People overwhelmingly came to believe that house prices could not fall significantly. And since it was the biggest asset class in the country and it was the easiest class to borrow against it created […] the biggest bubble in our history."

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Mortgage Guarantee Reserving

- What kinds of reserves do mortgage insurers hold? Do they reflect the risks that MI's carry?
- How have mortgage insurers performed financially?
- How are reserves calculated?
- What risks exist?
- Recent events and current outlook

Types of Reserves Held by Mortgage Insurers

- Contingency Reserve
- Unearned Premium Reserve
- Loss Reserve
  - Case basis reserve
  - IBNR reserve
  - Loss adjustment expense reserve
- Premium Deficiency Reserves

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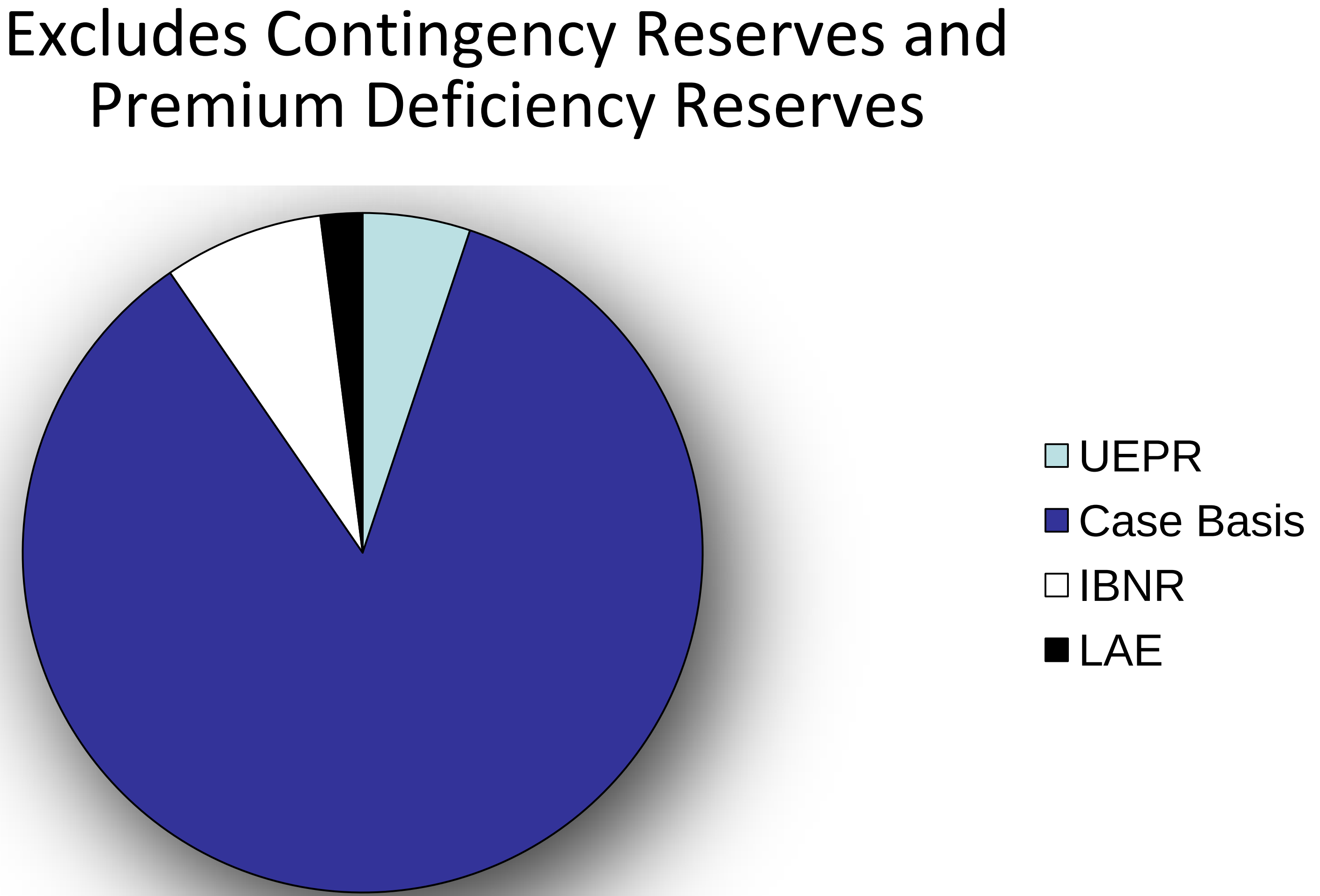
Types of Reserves Held by Mortgage Insurers



Contingency Reserves

- State insurance law requires mortgage insurers to set aside 50 cents from every premium dollar earned and hold it for 10 years.
- Contingency reserves may be released with the approval of the regulator in any year in which the insurer's loss ratio exceeds 35%.

Question:

What year did the industry loss ratio first exceed 35%, thus allowing release of contingency reserves?

A. 2003

B. 2005

C. 2006

D. 2007

E. 2008

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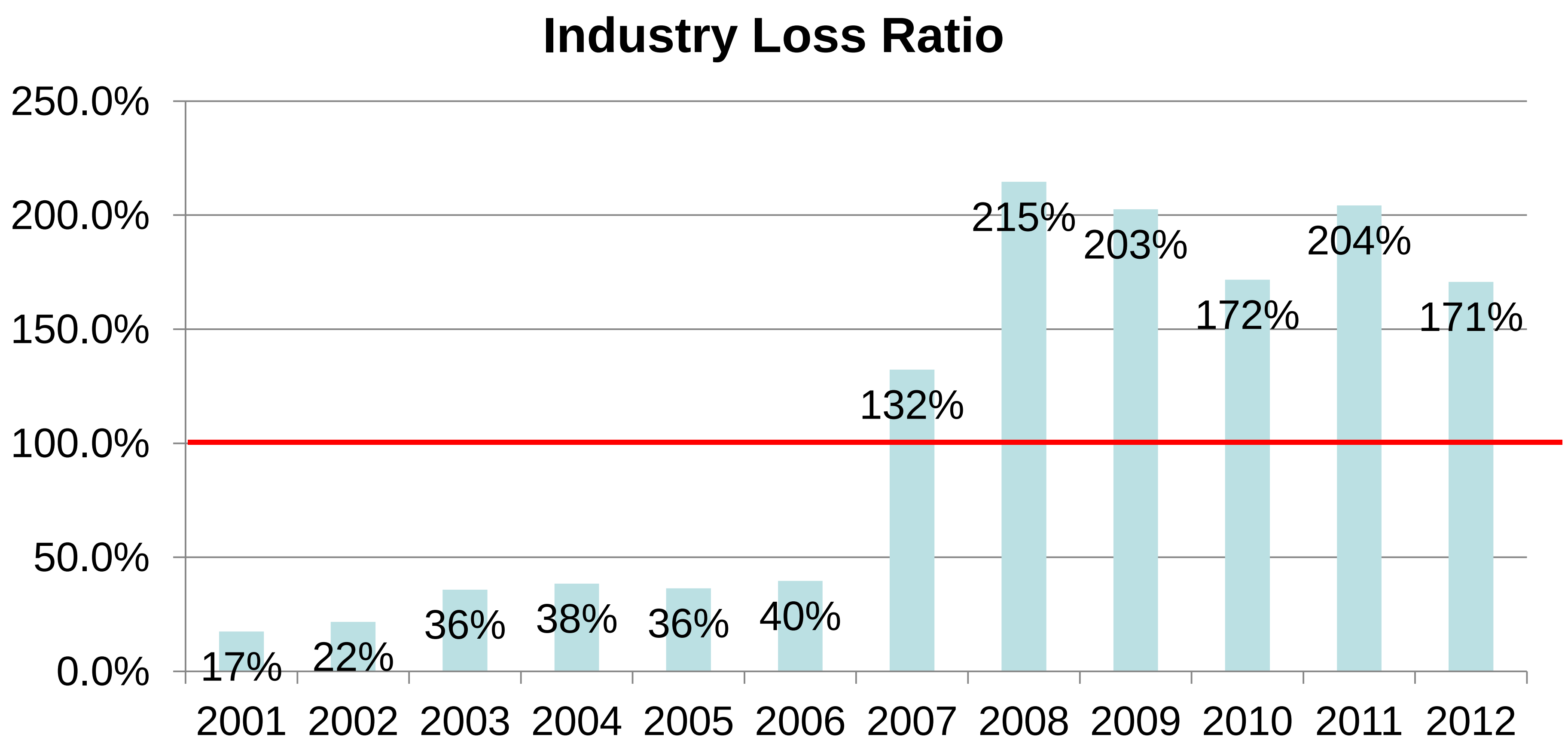
Industry Loss Ratio Exceeds 100% Since 2007



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Capital Has Been Depleted from PMI Carriers

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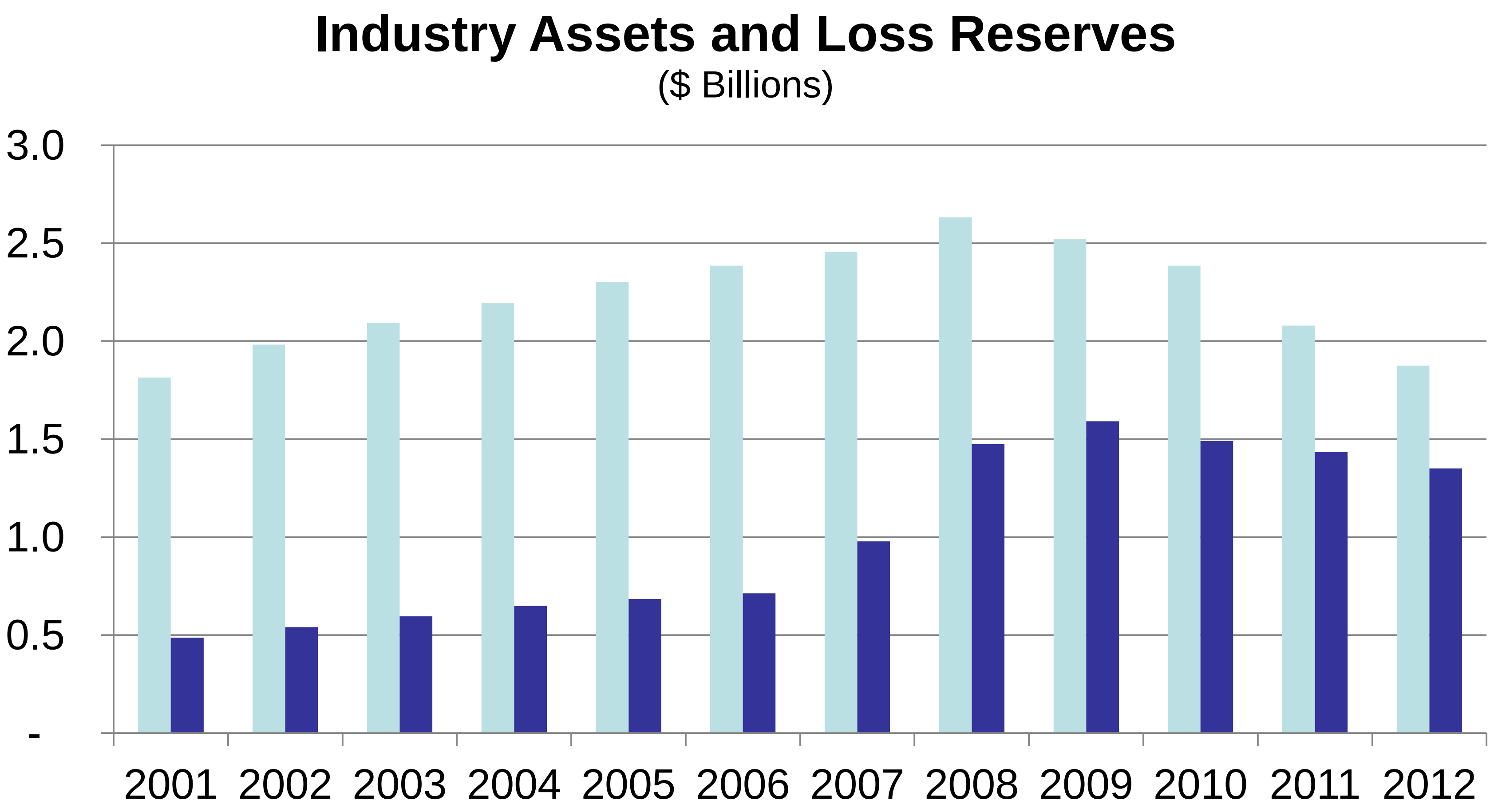
Loss Reserves Have Grown Relative to Total Assets



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Special Loss Reserving Considerations

- A loss is incurred when a loan becomes delinquent
- Losses are not Statistically Independent
- Triangular development methods do not work as well on mortgage insurance as on other P&C lines
- Frequency-severity methods are frequently used to estimate case basis loss reserves
- IBNR reserves are for loans which have gone into delinquency, but the delinquency has not yet been reported to the insurer

Sample Calculation of a Loss Reserve

Delinquent Loan Balance	x	Loan Coverage	x	Frequency	x	Severity	=	Total Reserve
$200,000	x	25%	x	50%	x	95%	=	$23,750

- Frequency-severity calculations can be performed on individual loans or on various groupings of loans.
- IBNR calculated as a percentage of case basis losses.

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Frequency Considerations

- Frequency = p(claim payment| loan is delinquent).
- P is less than 100% because some delinquent loans are cured.
- Frequency varies based on the age of the delinquency and the current loan to value ratio.

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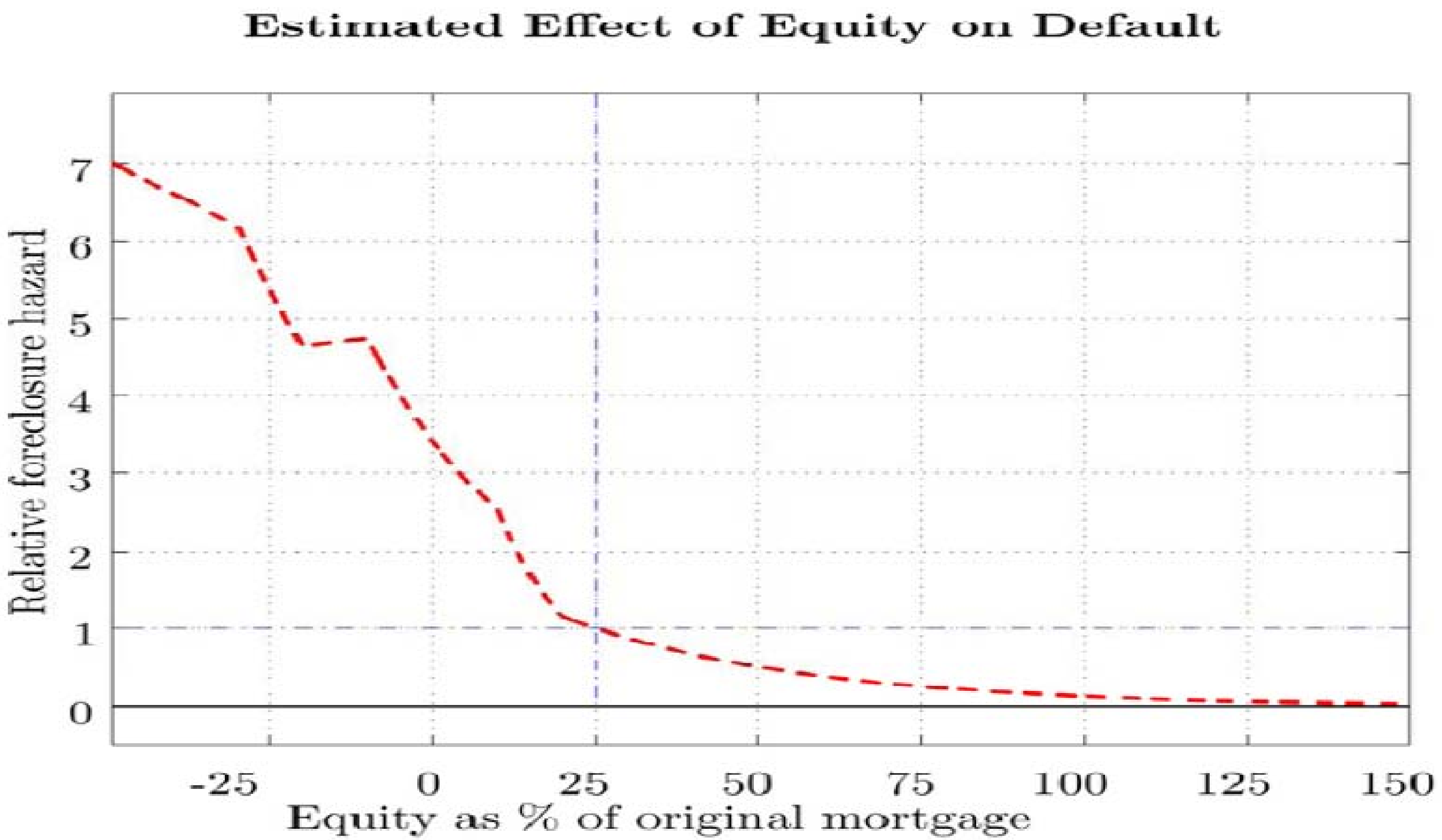
Equity Level and Default Risk



Source: Foote et al., "Negative Equity and Foreclosure: Theory and Evidence."[32]

Severity Considerations

- Expressed as a percentage of the Risk in Force.
- Usually between 85% and 105%.
- Severity can be higher than 100% because of the impact of accrued interest payments during delayed foreclosure proceedings.

Premium Deficiency Reserves

- Premium Deficiency Reserve = Projected Future Losses – Projected Future Premium – Projected Future Investment Income
- Despite Continued Loss of Surplus, Industry PDR Minimal
- Long Term Expected Profits Can Offset Near Term Expected Losses
- Premium Deficiency Reserve Models are a Useful Tool for Solvency Monitoring

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Risk Factors Impacting Mortgage Insurers

- Economic Risk – uncertainty in the future labor market
- Housing Price Risk – uncertain direction of future housing prices
- Interest Rate Risk – if interest rates rise adjustable rate mortgage payments will rise
- Mortgage market / refinance risk.

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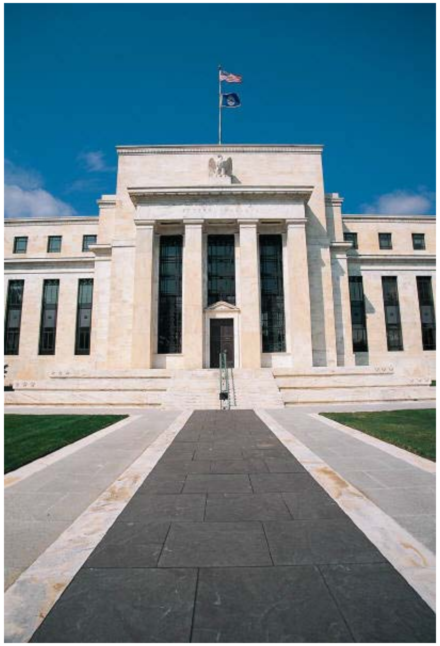
Risk Factors Impacting Mortgage Insurers cont'd

- Claims can come in bunches.
- Contracts last very long time.
- Limited ability to control risk through underwriting.
- Other Risks – litigation, impact of governmental action, performance of insurers' investment portfolios

Summary: What We Have Learned



- Types of reserves
  - Similar to P/C but different approaches
  - Contingency Reserves
- Forecasting can monitor performance
- Reserving: Frequency Severity by type of loan and phase of claim
- Major Risks
  - Housing prices
  - Long duration
  - Feast or famine

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Question:

What is your assessment of the future of the mortgage insurance industry?

A. The industry will be successful, in general.
B. Start-ups with fresh capital will be successful.
C. More time is required for the effect of the financial crisis to pass.
D. Major changes are needed before they can be expected to regain their former glory.
E. MI’s are dinosaurs and will ultimately fade away and not be a factor.

Question:

Which is the best way to improve regulation of mortgage insurers?”

A. Regulation of underwriting.
B. Vary minimum capital based on risk.
C. Fine tuning of contingency reserve procedure.
D. Attention to impact of future performance of contracts that have been entered into.
E. Regulation is fine as is; no changes are needed.

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Current Events and Challenges

1. Housing market appears more stable but the historical fundamentals are hard to predict:

- Significant government stimulus has artificially lowered rates/increased affordability
- Recent sales driven by investors versus traditional buyers
- Generous financing support from home builders
- Demographics and student debt are headwinds to traditional strength in demand
- Prices have increased in most markets which is increasing confidence
- Unemployment still high and economy has headwinds

Current Events and Challenges

2. Long term structure and role of GSE's not clarified
   - Fannie Mae ($17.2 billion) and Freddie Mac ($11 billion) were both profitable in 2012.
   - Fannie Mae lost $166.6 billion from 2007-2011.
   - Bailout money was $187.5 billion of which $62.2 billion repaid.
   - Politicians might take short term view that cash flow is positive and not restructure.
   - Restructuring planned but it's 2013 and the root cause of the crisis has not been addressed by Washington

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Current Events and Challenges

3. Long term risk management on mortgage insurance is being debated

- NAIC working group
- GSE restructuring
- Rating agency litigation

and impact

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Questions?

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