



Inflation in (Re)insurance



Presented by

Stephan L. Christiansen, FCAS, MAAA
Managing Director

Conning Research provides analyses, forecasts and consulting focused on strategic changes in the insurance industry.

- ◆ **Forecasting** (Benchmarking, analysis of drivers)
 - ❖ Industry segments and peer groups
 - ❖ Semi-annual three-year forecasts
- ◆ **Industry Segment Analyses** (Current events, influencers)
 - ❖ Semi-annual for 30 lines of business
- ◆ **Strategic Studies** (Analysis of longer-term change and opportunity)
 - ❖ 10-14 executive-level analyses of strategic issues
- ◆ **Proprietary Research** (Applications of research to company needs)

Key messages about inflation to explore today

- ◆ **Complexity and volatility** are more significant than the headline
- ◆ **Historical performance** illuminates the impact of inflation
- ◆ **Broader model analysis** useful to understand integrated effect
- ◆ **Enterprise Risk Management** would encourage inflation planning and mitigation steps
- ◆ **Review P&C** from recent research, then **Life** from upcoming research.

◀ Inflation can surprise, and show up unexpectedly ▶



Economic Drivers Form a Baseline for Our Outlooks

Annual Data	2006	2007	2008	2009	2010	2011	2012
GDP Growth	2.9%	2.0%	0.4%	(2.4%)	3.0%	3.4%	4.0%
CPI	3.2%	2.9%	3.8%	(0.3%)	2.0%	1.8%	2.2%
Capacity Util.	81%	81%	77.6%	70.1%	74.2%	77.8%	80.4%
Fed Funds (EOY)	5.25%	4.25%	0.25%	0.16%	0.18%	1.5%	3.9%
2-Year T-Note	4.8%	4.4%	1.9%	.95%	1.2%	2.7%	4.2%
10-Year T-Note	4.8%	4.6%	3.7%	3.3%	4.1%	4.8%	5.3%

Source: Federal Reserve Board, Action Economics

Complex parts of the CPI – many don't apply

Major Components of CPI-U and Current Values

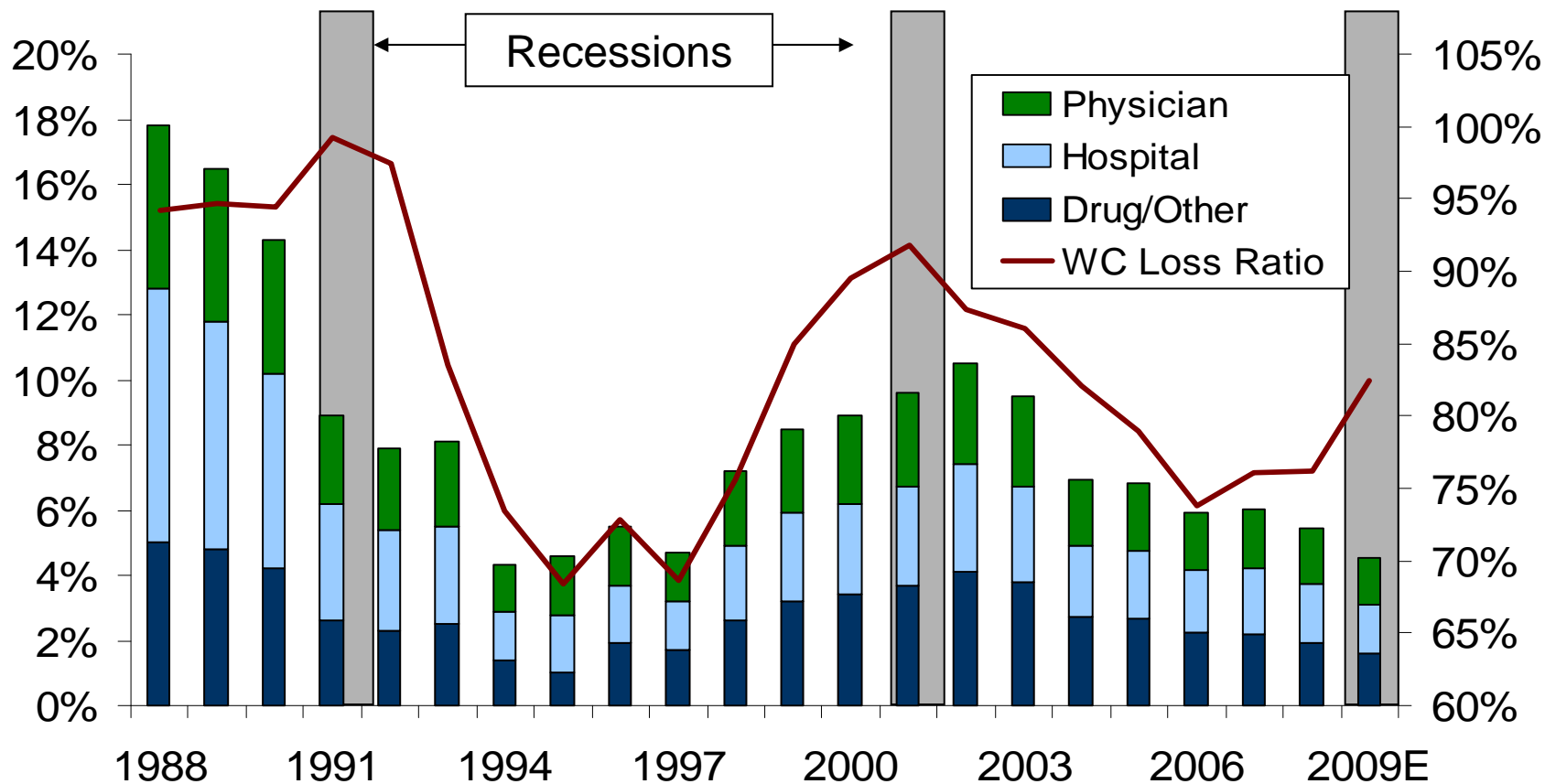
Category	Weight*	Index Dec. 2009	Y-O-Y Change
All Items		216.0	(0.3%)
Food and Beverages	15.76%	218.0	1.9%
Housing	43.42%	215.5	0.4%
Apparel	3.69%	119.4	1.0%
Transportation	15.31%	188.3	(8.3%)
Medical Care	6.39%	379.5	3.2%
Recreation	5.74%	113.2	0.9%
Education and Communication	6.30%	128.9	3.0%
Other Goods and Services	3.39%	377.3	8.0%

Note: Weight calculated as of December 2008, Y-O-Y represents average for year, not Dec over Dec

Source: Bureau of Labor Statistics

U.S. Medical Inflation and Casualty Losses

Workers' Compensation Loss Ratio vs. Change in Health Expenditure Components (Private Insurance)



Source: CMS Private Insurance, Company Statutory filings, Conning Research & Consulting, Inc. analysis

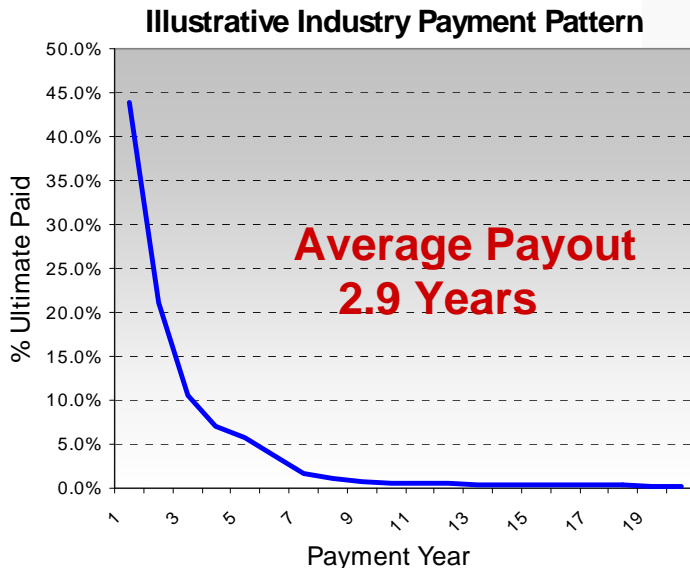
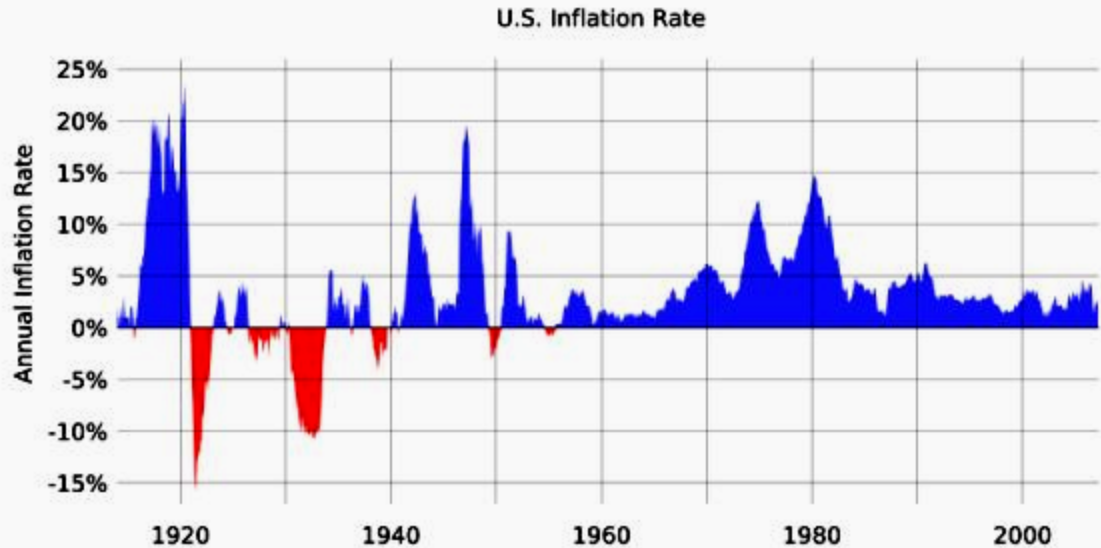
Complex parts of the PPI

Category	Weight*	Index Dec. 2009	Y-O-Y Change
ALL COMMODITIES (Overall PPI)		178.1	4.2%
<i>By Stage of Processing</i>			
<i>Finished Goods</i>		176.2	4.4%
• Finished Consumer Goods	73.4%	184.1	6.0%
• Capital Equipment	26.2%	157.2	0.0%
<i>Intermediate Materials, Supplies, Components</i>		176.7	3.0%
• Materials, Components for Manufacturing	44.1%	167.4	2.3%
• Materials, Components for Construction	10.3%	202.2	(2.7%)
• Containers	2.8%	193.0	(2.6%)
• Supplies	25.4%	172.5	(0.5%)
<i>Crude Materials for Processing</i>		193.8	12.3%
• Foodstuffs and Feedstuffs	40.4%	138.6	2.3%
• Nonfood Materials	59.6%	228.3	19.2%

*Weight calculated as of December 2008 / Source: Bureau of Labor Statistics

Inflation Overview and Impact on Property Casualty

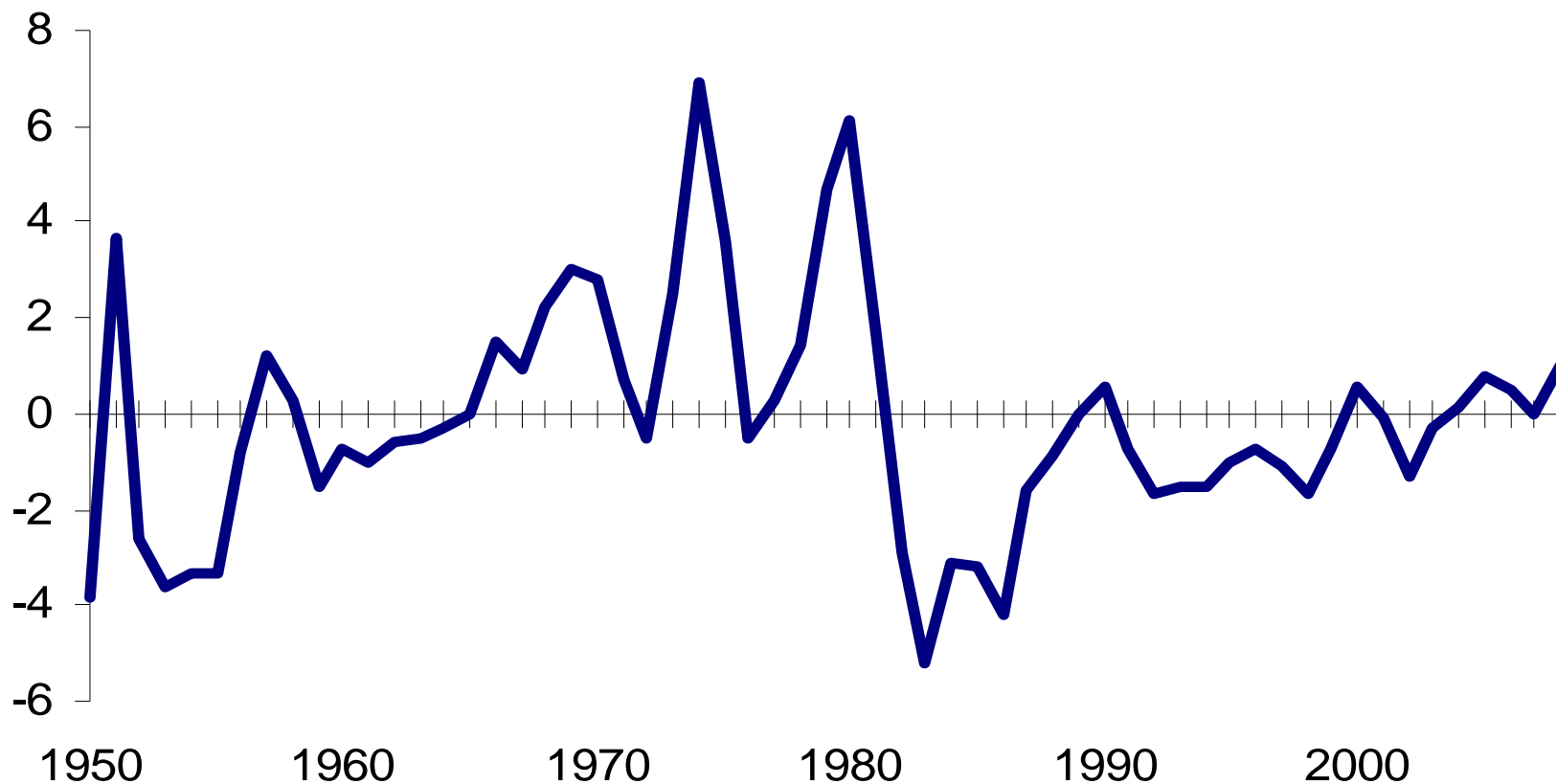
- ◆ Inflation has been relatively stable over the past 10 years.
- ◆ However, periods of high inflation have occurred historically.



- ◆ Insurers collect premium now, and pay losses in the future. Using an illustrative industry payment pattern, the average time between premium collection and losses paid is 2.9 years.
- ◆ The time between premium collection and loss payout is susceptible to inflation. Premium stays the same while losses increase.
- ◆ Further, inflation has a compounding effect on loss development.

Anticipating inflation – how wrong can you be?

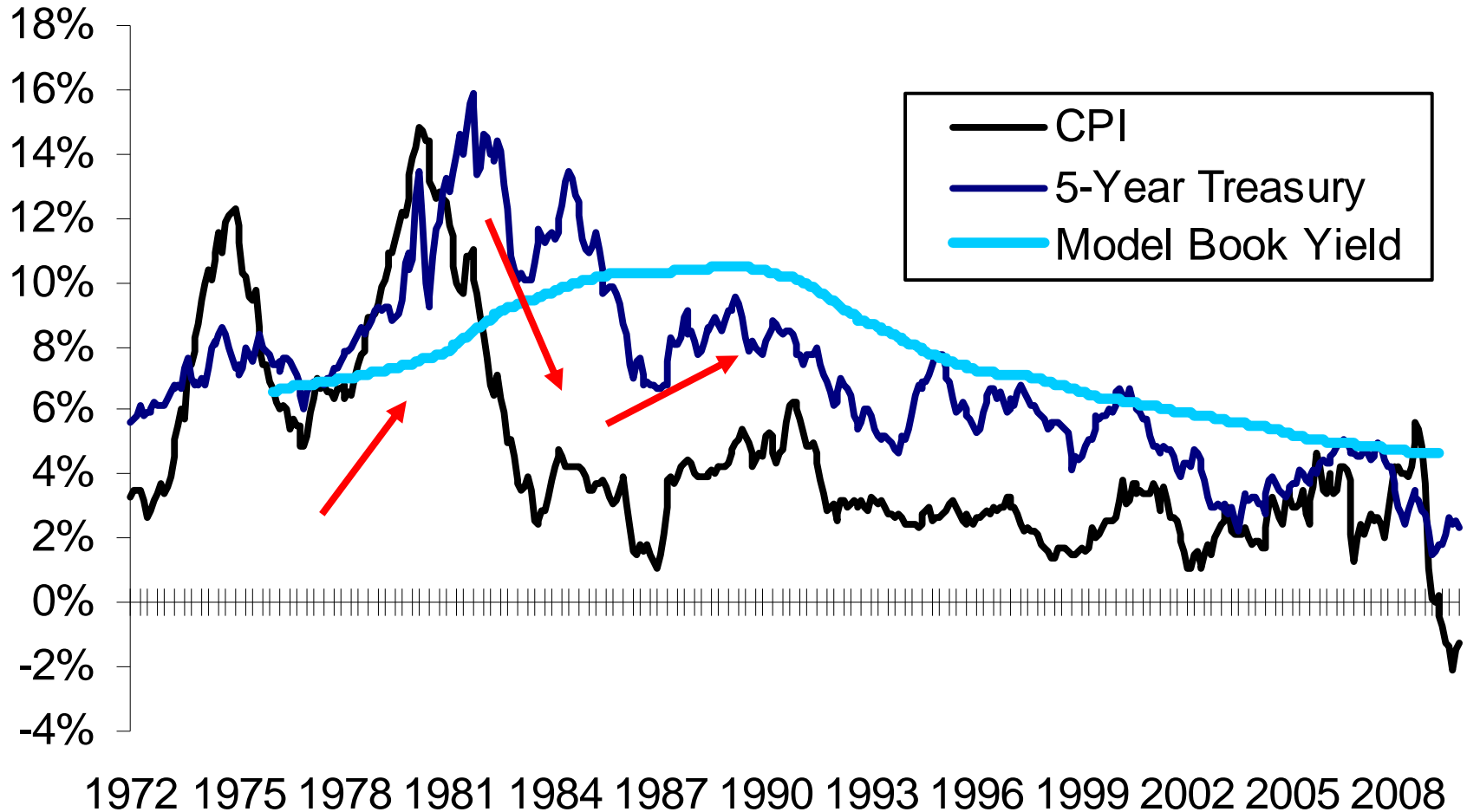
Deviation in Actual Inflation from One-Year Forward Expected
(in percentage points)



Source: Bureau of Labor Statistics, Conning model and analysis

Interest rates lag, book yield stable compared to CPI

Change in CPI versus 5-Year Treasury Rates



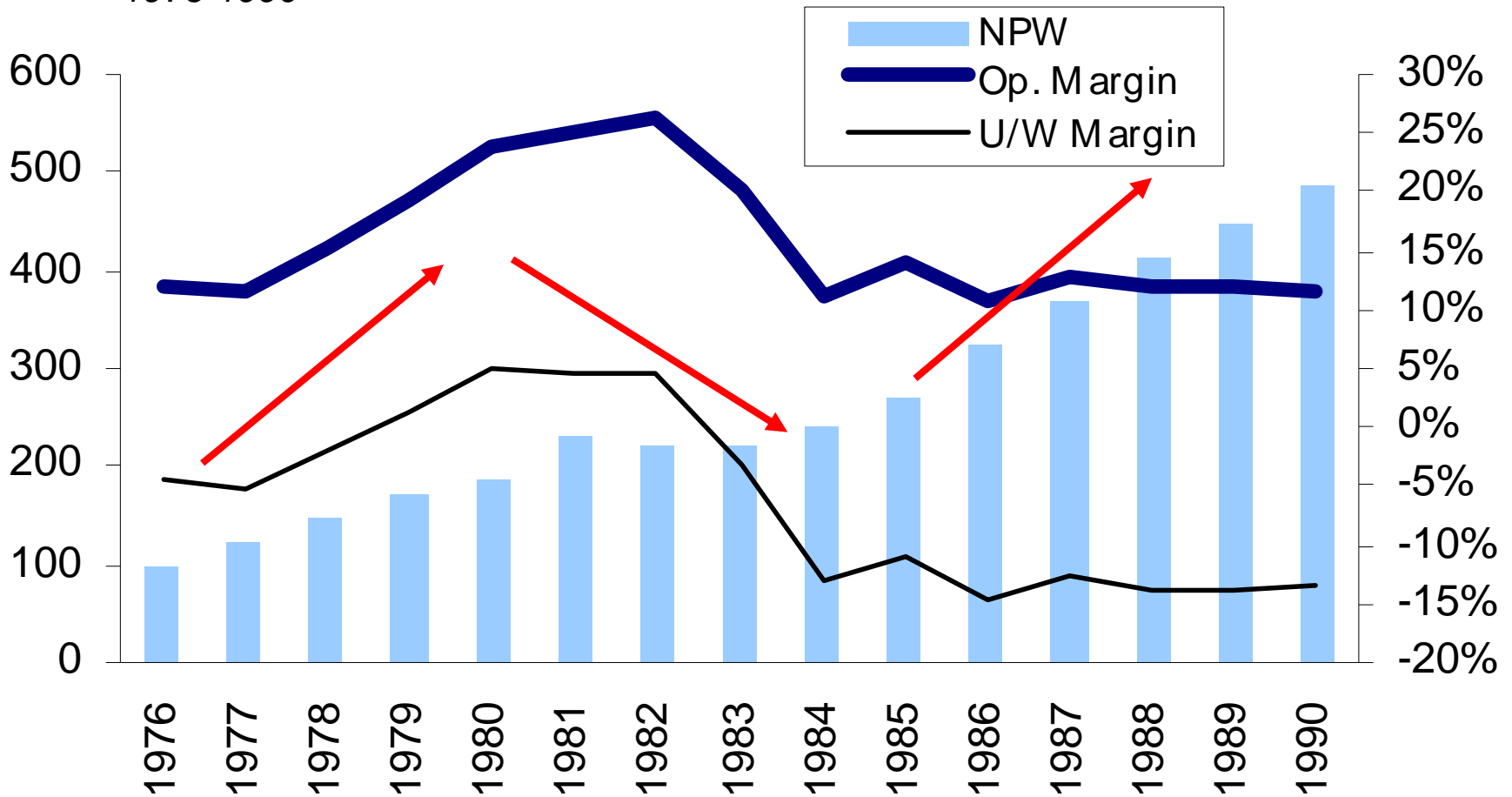
Source: Bureau of Labor Statistics, Treasury Department, Conning analysis

◀ Historical performance tells us something



Historical performance during inflation – 1976-1990

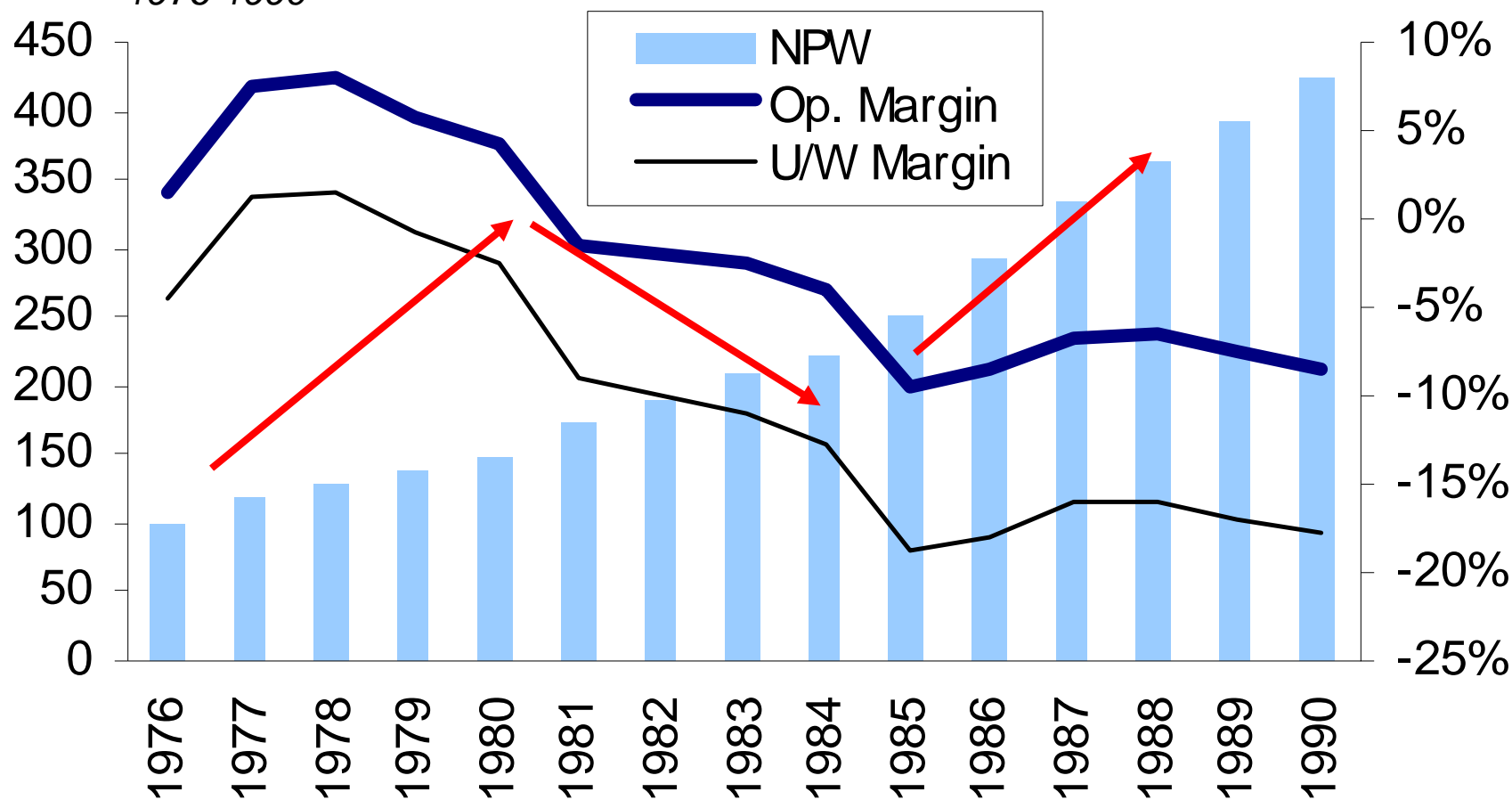
Industry Workers' Compensation Results 1976-1990



Source: Company filings, Conning analysis

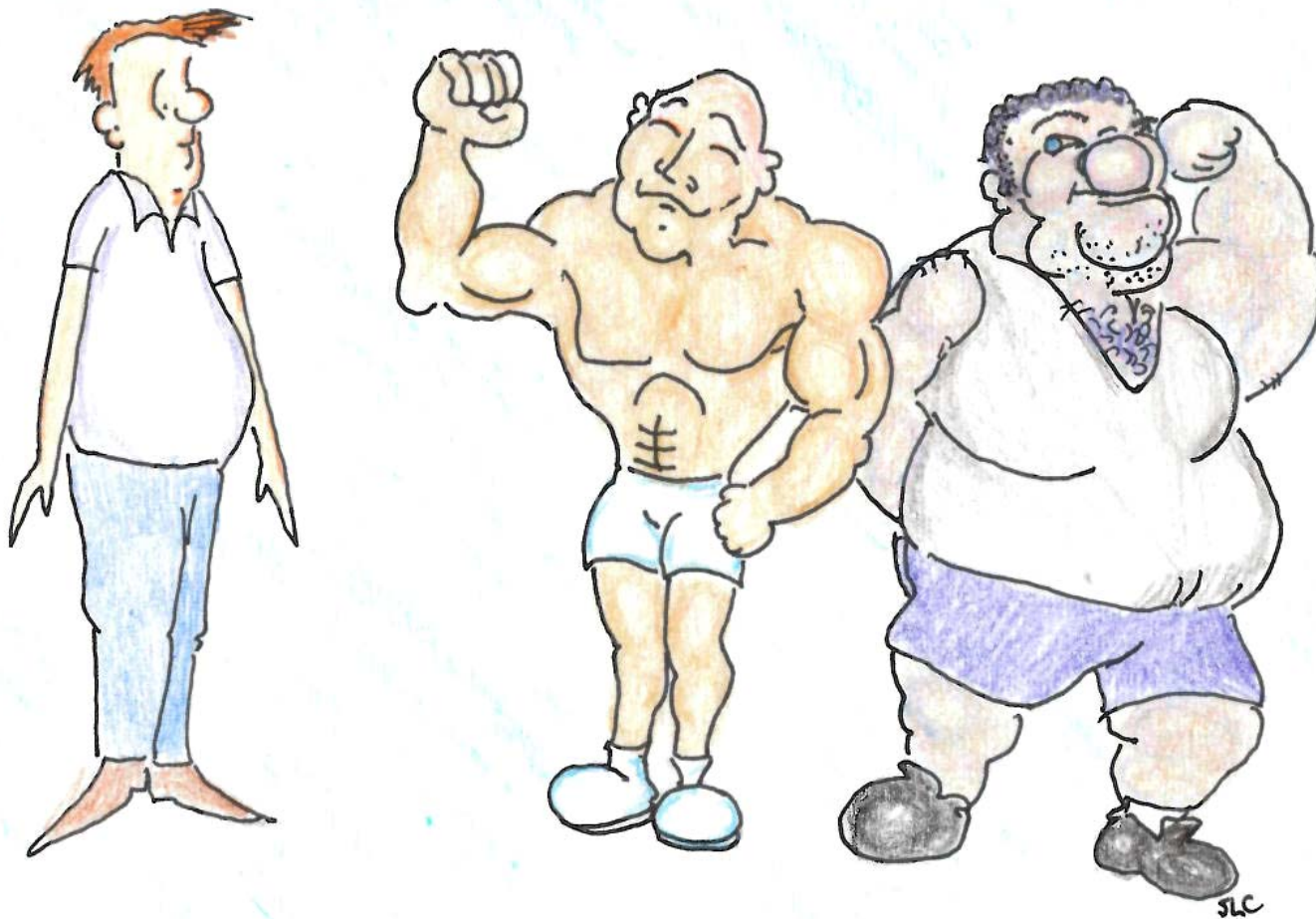
Historical performance during inflation – 1976-1990

Industry Automobile Liability Results
1976-1990



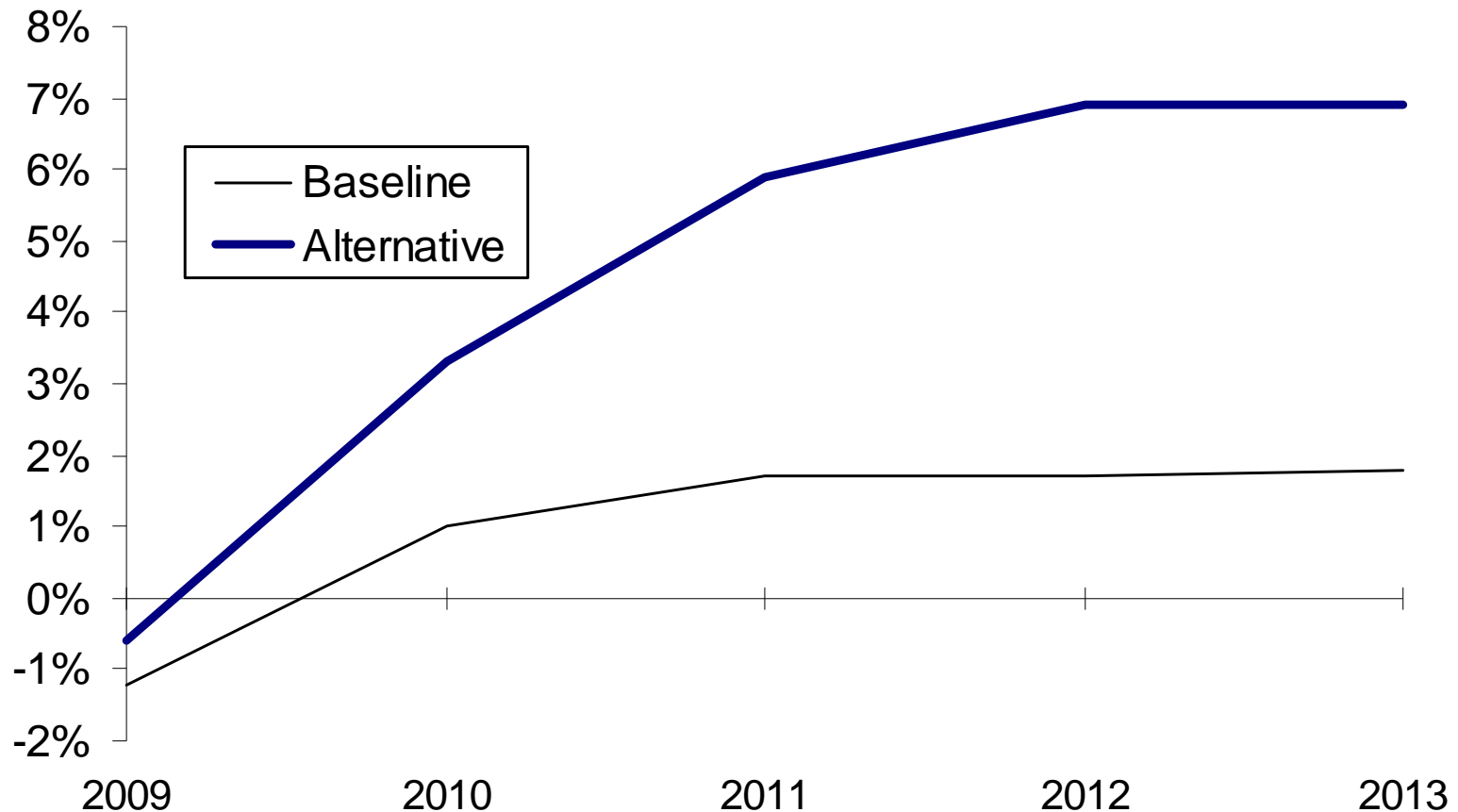
Source: Company filings, Conning analysis

Using models to gain insight



Modeling current expectations vs. continuous inflation

Inflation Scenarios, Measured by Change in CPI



Source: Bureau of Labor Statistics, Conning model and analysis

◀ Inflation Affects Performance Metrics in Different Ways ▶

Primary Insurer Model Results for Sample Company

Measurement	Scenario	2009	2010	2011	2012	2013	2014
Premium Change	Base		(4.7%)	1.0%	5.5%	5.5%	5.5%
	Alternative		(4.7%)	1.5%	7.0%	8.0%	8.6%
Incurred Loss Ratio (CY)	Base	64.4%	62.1%	65.4%	65.8%	62.4%	59.1%
	Alternative		64.6%	71.9%	74.7%	72.0%	67.5%
Operating Ratio	Base	79.4%	80.8%	84.4%	84.3%	79.4%	74.7%
	Alternative		83.4%	91.2%	93.4%	89.0%	82.7%
Net Investment Income to Premiums Earned	Base	3.3%	5.5%	5.0%	5.0%	5.0%	4.9%
	Alternative		5.5%	4.9%	5.0%	5.4%	5.7%
Surplus Change	Base	6.0%	10.1%	7.0%	6.4%	8.2%	9.6%
	Alternative		8.9%	3.9%	2.3%	4.3%	7.1%
GAAP ROE	Base	10.4%	8.3%	6.5%	6.4%	8.2%	9.6%
	Alternative		7.5%	4.2%	3.3%	5.6%	8.7%
NPW/Surplus	Base	0.68	0.59	0.56	0.55	0.54	0.52
	Alternative		0.60	0.58	0.61	0.63	0.64
Loss Reserve/ Surplus	Base	1.18	0.98	0.85	.77	.69	.61
	Alternative		1.00	.93	.91	.88	.84

Source: Conning model and analysis

◀ Inflation Affects Performance Metrics in Different Ways ▶

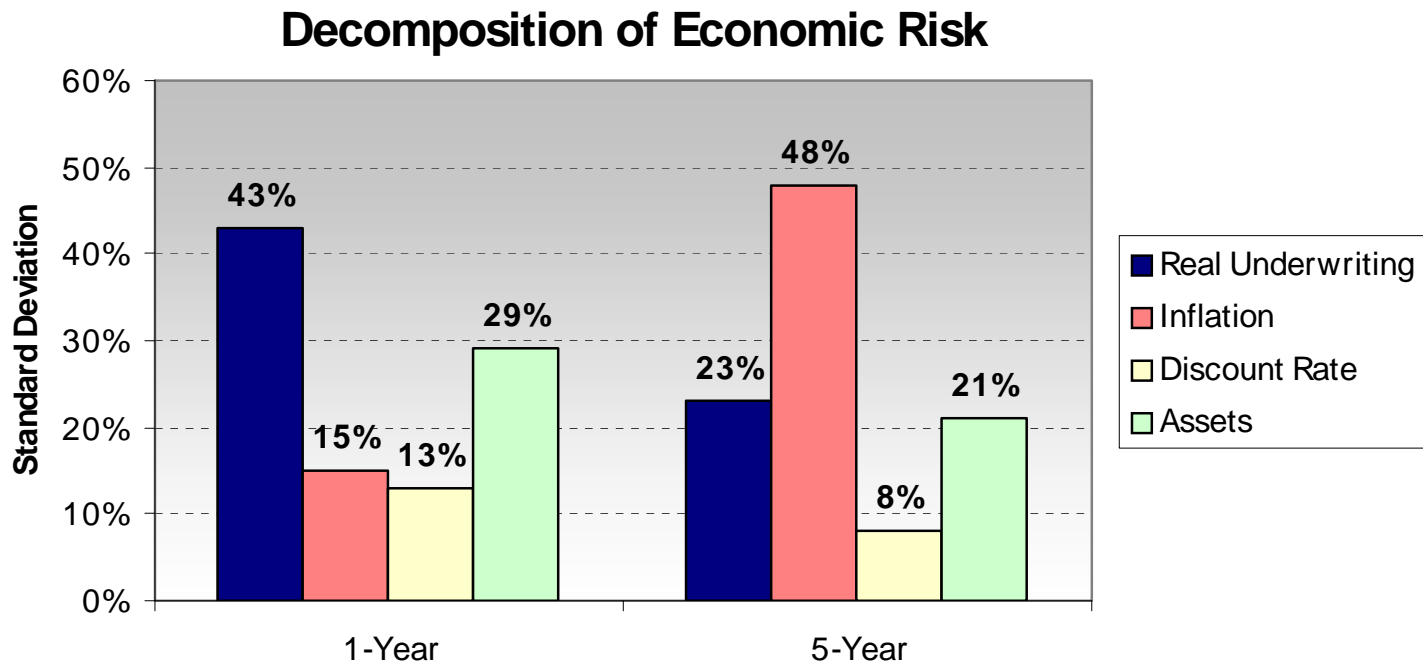
Reinsurer Model Results for Sample Company

Measurement	Scenario	2009	2010	2011	2012	2013	2014
Premium Change	Base		(7.8%)	1.9%	4.9%	4.9%	5.0%
	Alternative		(7.5%)	3.5%	7.8%	8.7%	9.0%
Incurred Loss Ratio (CY)	Base	79.4%	76.1%	83.8%	83.6%	79.7%	75.9%
	Alternative		81.4%	101.8%	110.9%	111.9%	105.2%
Operating Ratio	Base	92.0%	93.8%	99.7%	98.6%	91.3%	84.6%
	Alternative		99.7%	117.7%	124.9%	121.3%	110.5%
Net Investment Income to Premiums Earned	Base	5.9%	4.7%	4.1%	4.1%	4.2%	4.2%
	Alternative		4.7%	4.2%	4.6%	5.3%	5.9%
Surplus Change	Base	(5.5%)	2.0%	(0.3%)	(0.2%)	1.9%	3.9%
	Alternative		0.3%	(6.0%)	(10.0%)	(10.4%)	(6.8%)
GAAP ROE	Base	7.3%	2.0%	0.3%	0.4%	2.1%	3.6%
	Alternative		0.7%	(3.9%)	(7.3%)	(7.3%)	(4.1%)
NPW/Surplus	Base	0.35	0.32	0.34	0.35	0.35	0.35
	Alternative		0.32	0.35	0.42	0.52	0.60
Loss Reserve/ Surplus	Base	0.87	0.91	0.96	1.02	1.05	1.04
	Alternative		0.94	1.12	1.41	1.79	2.12

Source: Conning model and analysis

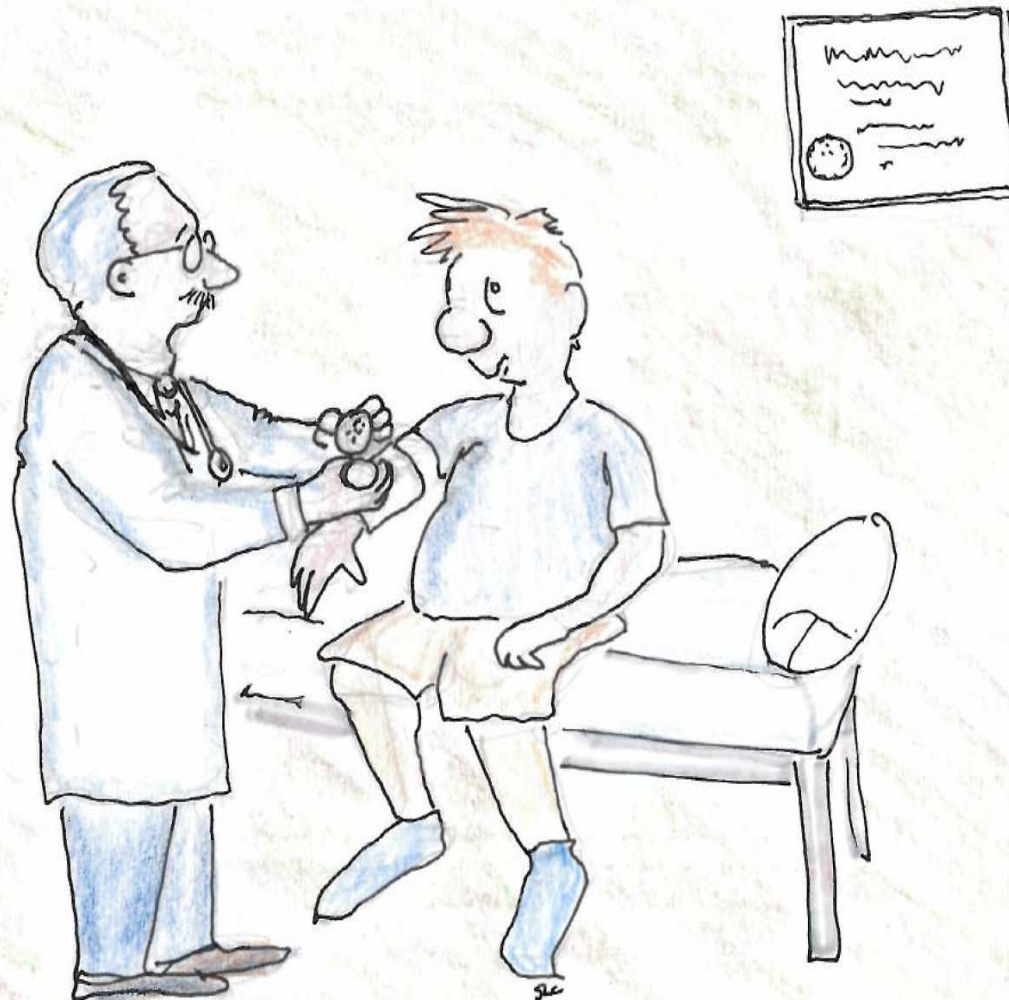


Over Multiple Years, Inflation Compounds in Effect



- ◆ Economic risk can be thought of as the volatility around the expected results. The higher the economic risk, the larger the chance of being significantly different than expected.
- ◆ Catastrophes and annual asset fluctuations contribute a smaller proportion to an insurance company's overall economic risk.
- ◆ Inflation risk, on the other hand, compounds over time. With a 5-year horizon, inflation can be the largest factor in regards to economic risk.

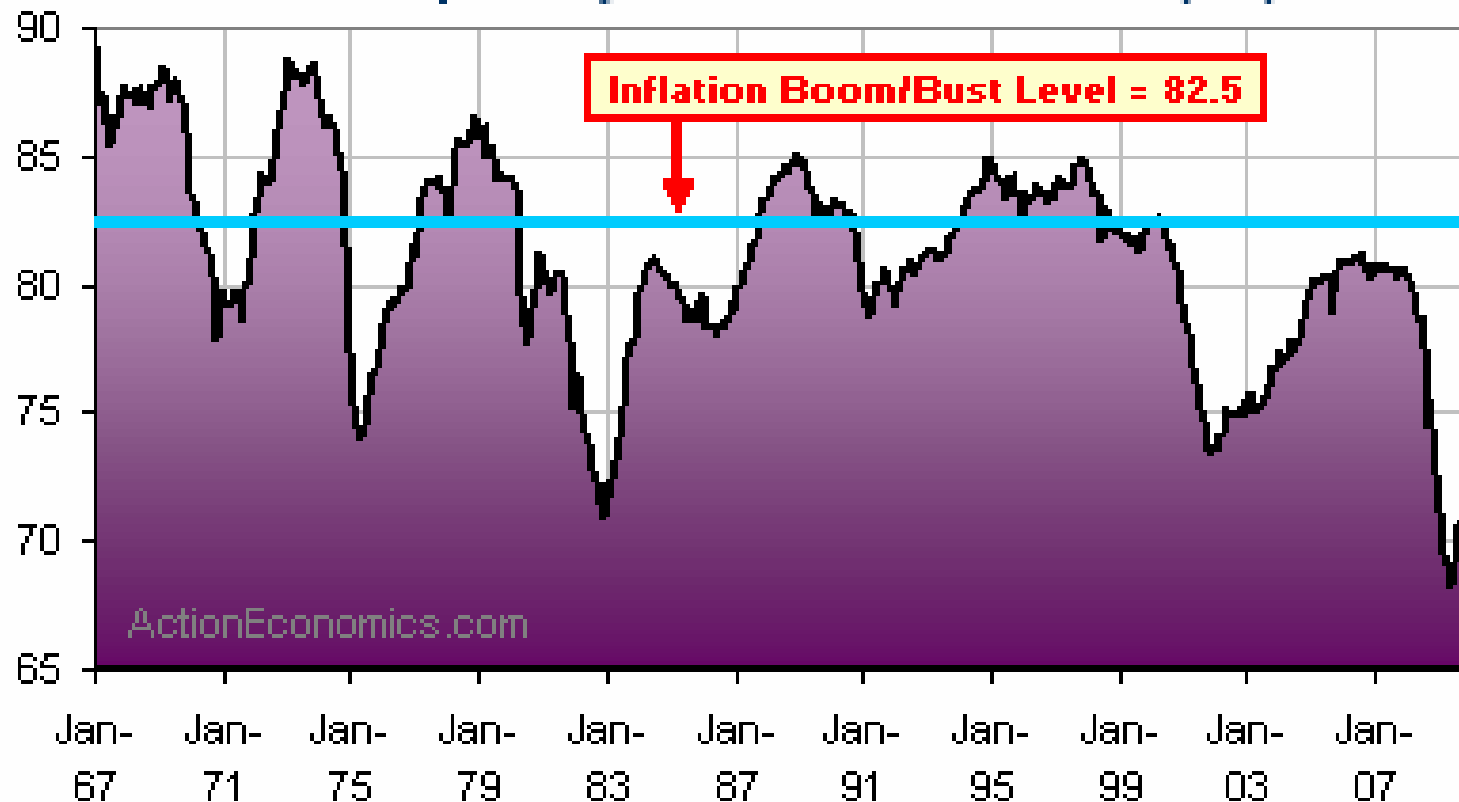
Observations: Looking for Signals



◀ Economic Drivers Form a Baseline for Our Outlooks ▶

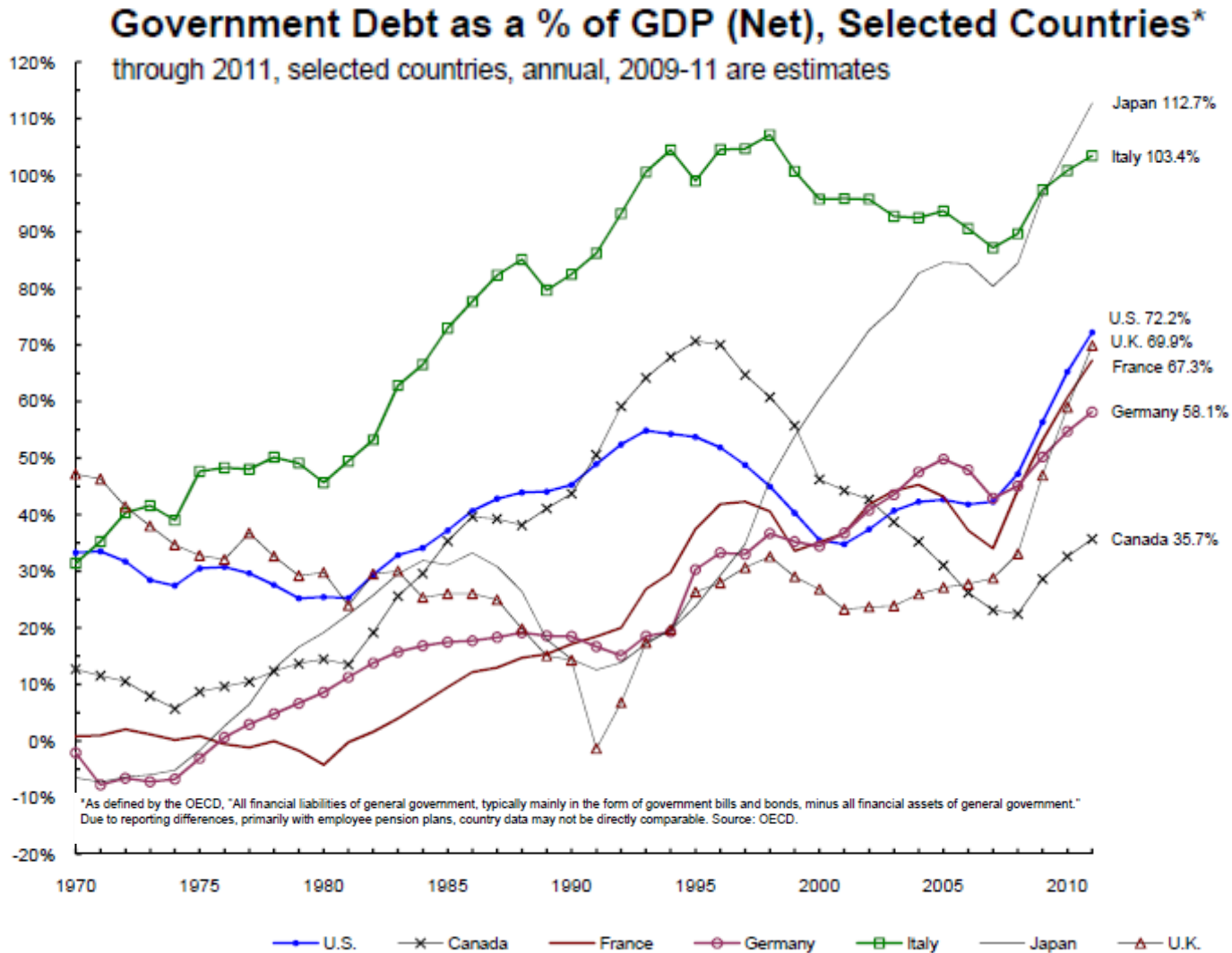
- ◆ Economists update trends and investment implications

Capacity Utilization Rate (%)



Source: Federal Reserve Board, Action Economics

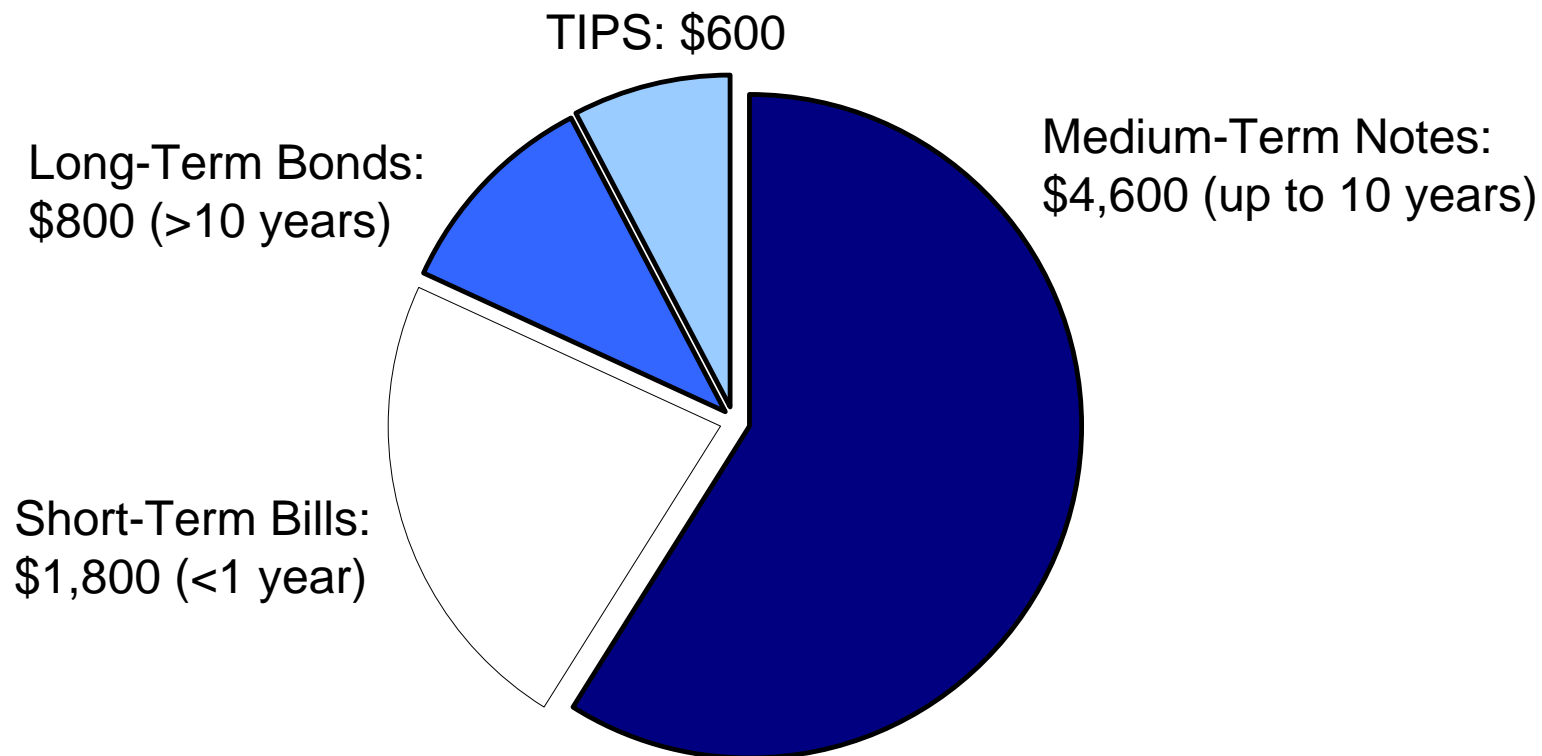
Government Debt is Exploding



Source: OECD, Laffer Associates

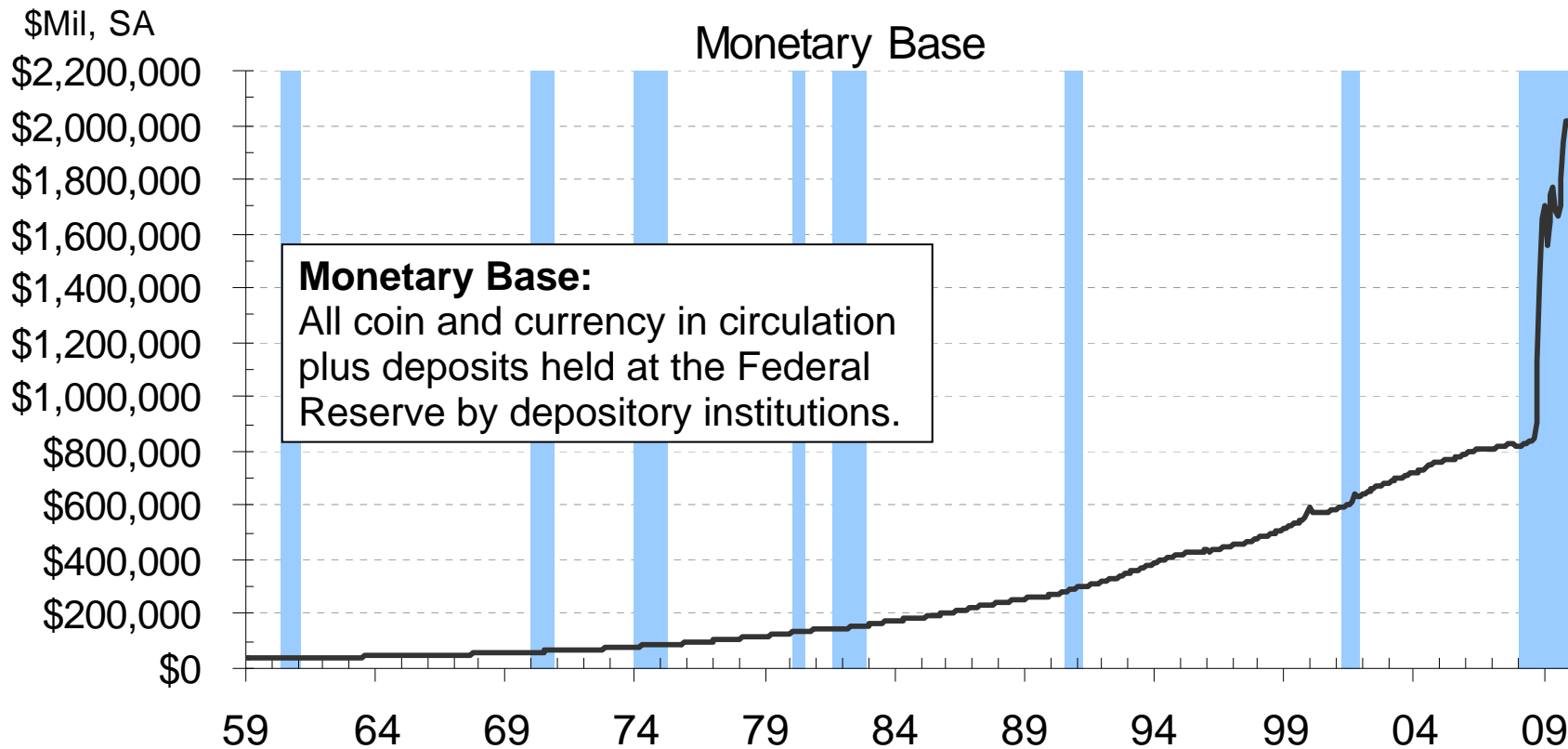
◀ ...and the Refinancing Burden is Immense

Federal Debt Securities Outstanding as of March 31, 2010
(*\$ in billions*)



Source: Office of Management and the Budget

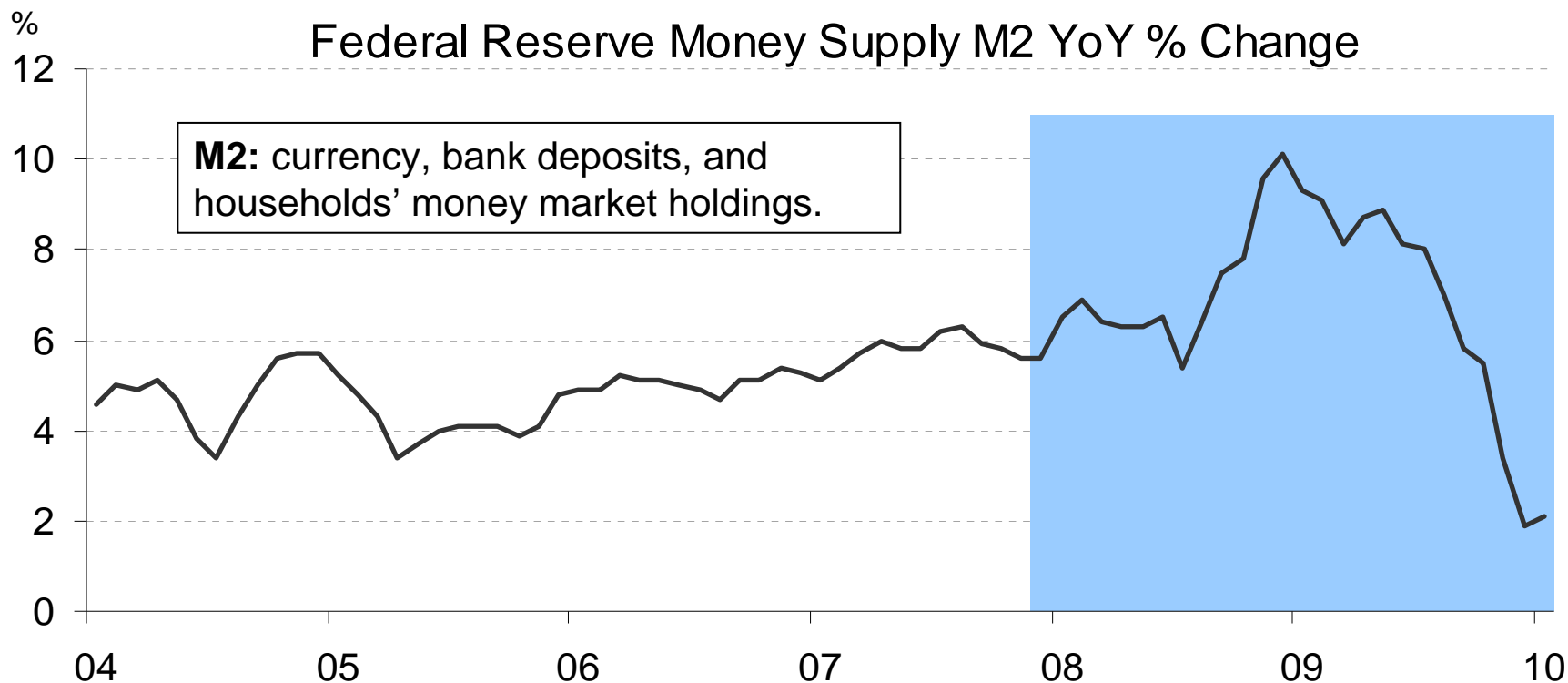
Quantitative Easing – The Monetary Base



Source: Bloomberg, NBER, Conning Analytics

- ◆ Rise in Federal Reserve Bank credit, from \$800B to \$2.2T in a year
- ◆ Unsterilized growth since Sept '08
- ◆ M2 response should be a rapid, highly inflationary increase

Quantitative Easing - A Surprise in M2

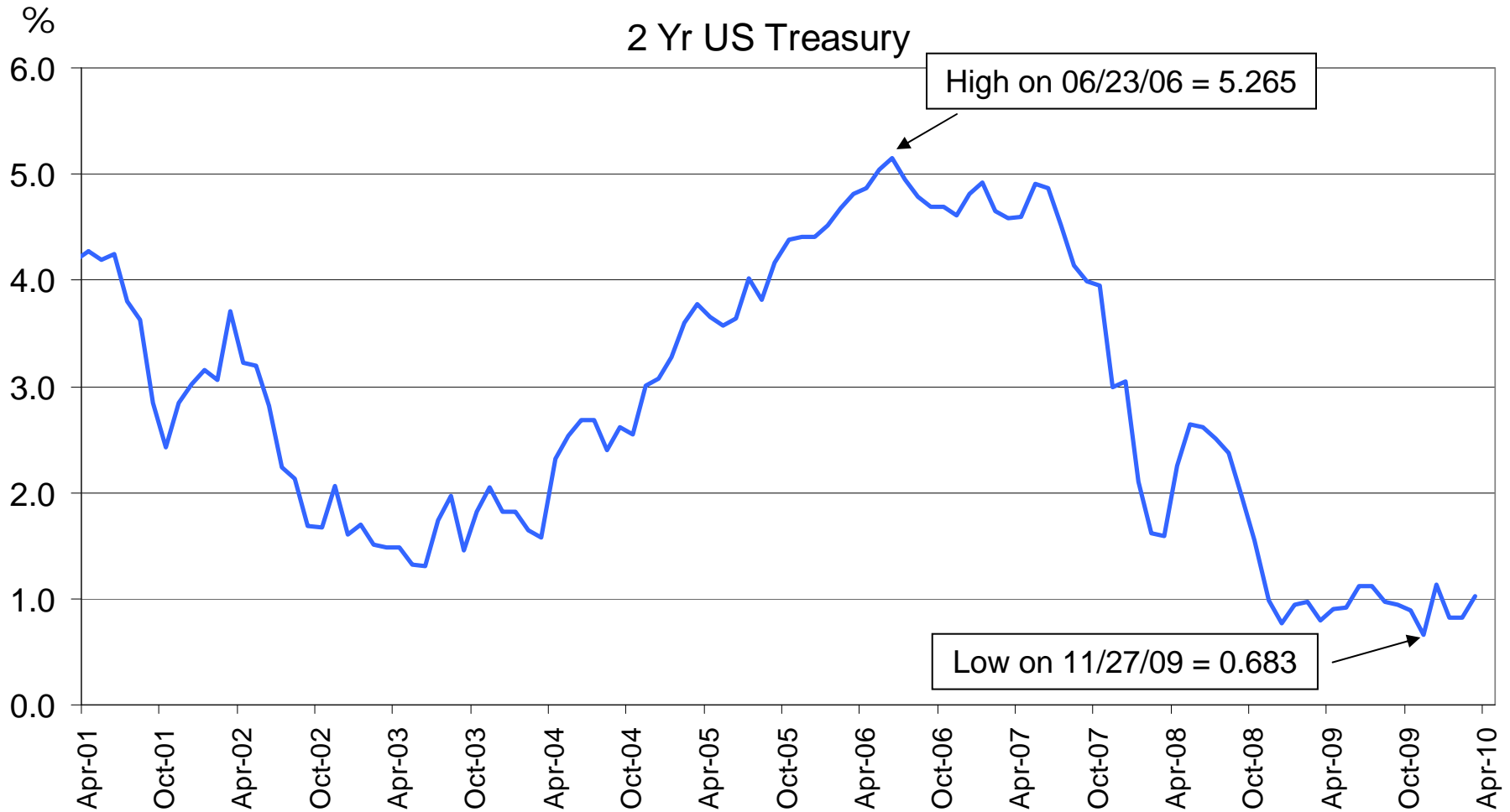


Source: Bloomberg, NBER, Conning Analytics

- ◆ Natural M2 response - a rapid, highly inflationary increase
- ◆ Yet up only 3% YOY, < half 50yr average
- ◆ Rise in M2 will require the successful reversal of policy actions **or** the increase in the monetary base will fuel a large acceleration in credit, and in turn, inflation

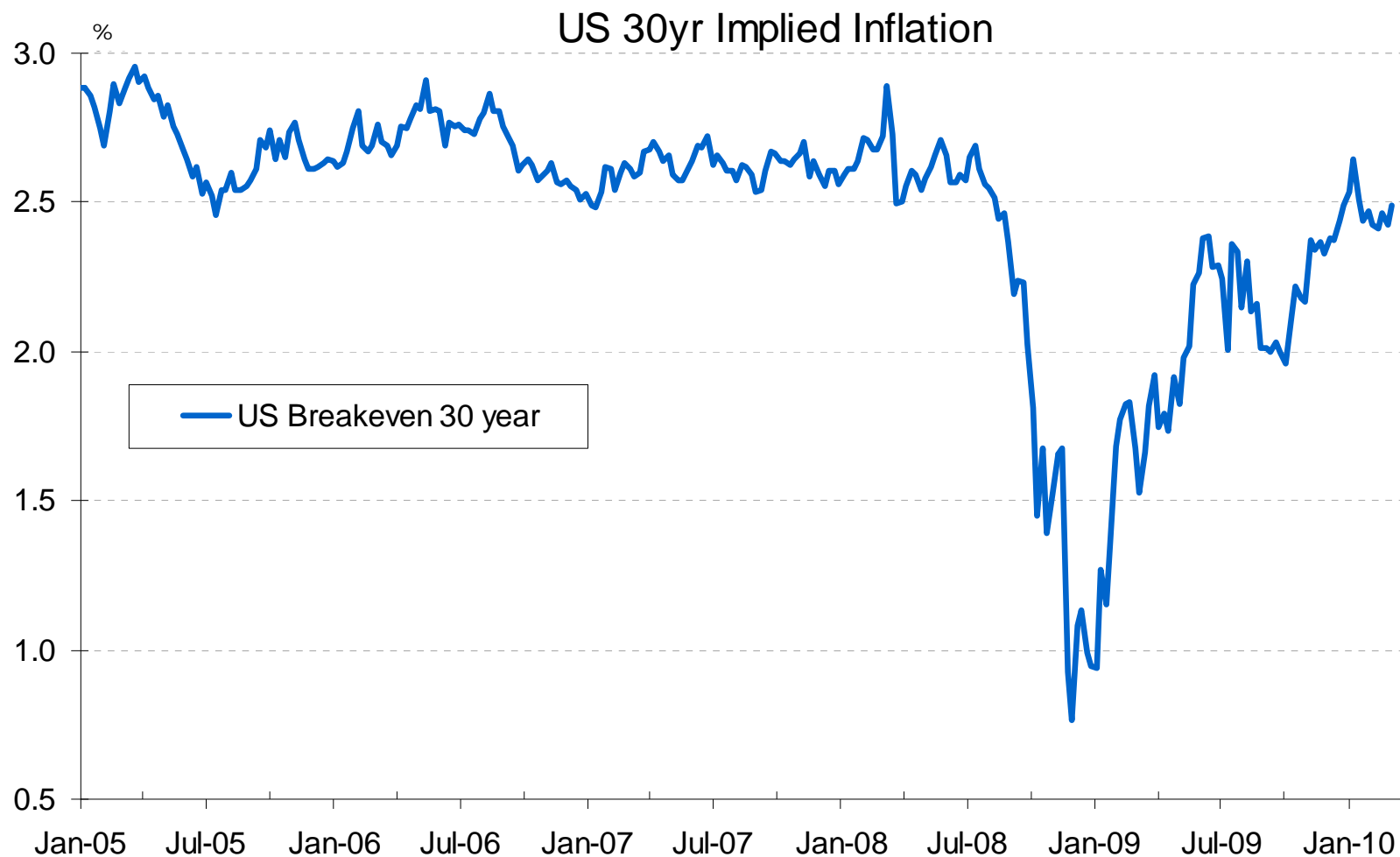


How to Blow Up a Bubble



Source: Bloomberg

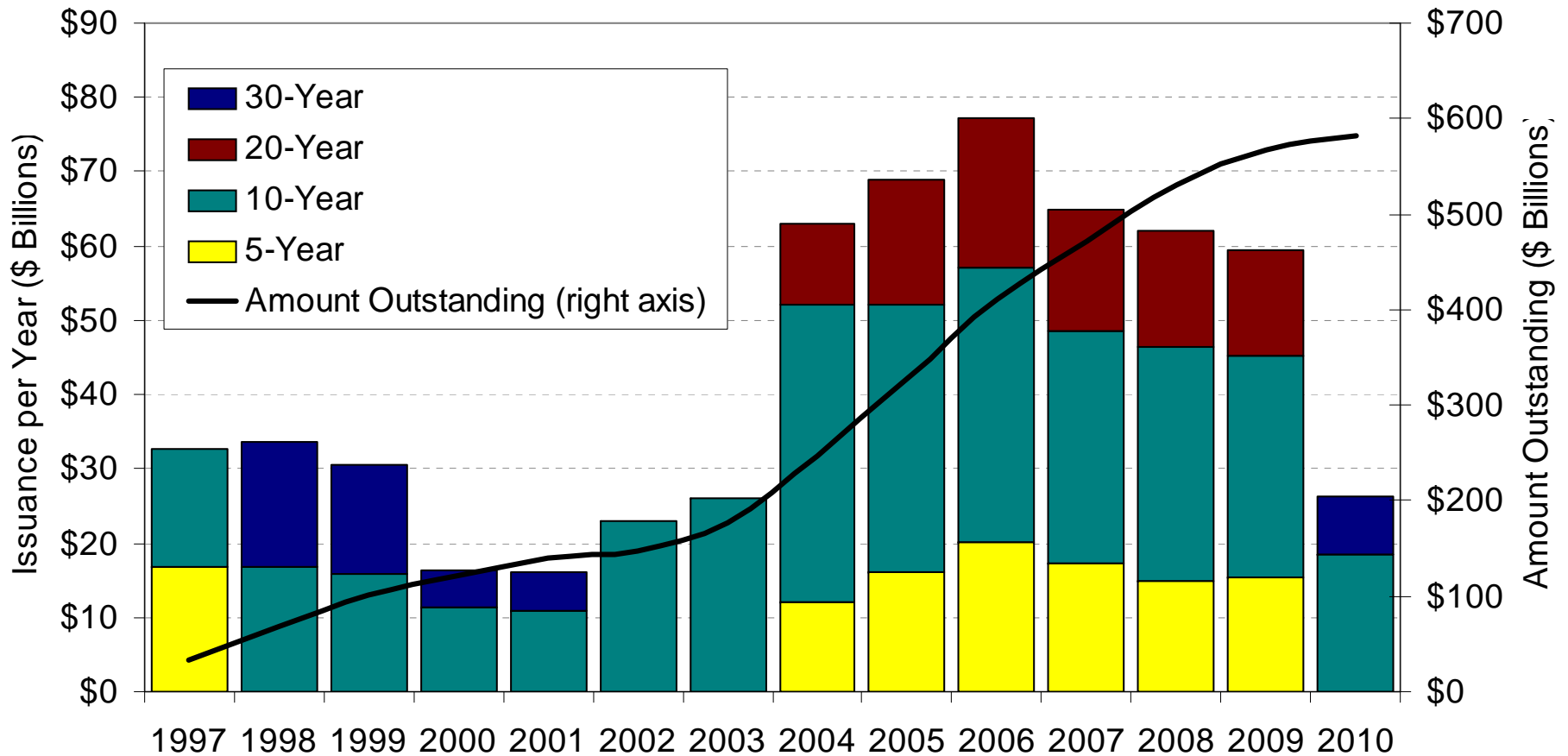
Today's Inflation Expectations – Limited Concern



Source: Bloomberg, Conning Analytics



TIPS--The 3 Maturity Program



Source: Office of Debt Management, U.S. Treasury – April 1, 2010

The Value Proposition

- ◆ Break-Even Rate of Inflation (BEI)
Rate of indifference between owning nominal Treasurys or TIPS
= nominal yield – real yield (approximately)

Example: 5-year nominal Treasury yield = 2.50%

5-year TIPS yield = 0.75%

Break-even rate of inflation = 1.75%

Investor expects average annual inflation > 1.75%

BUY

Investor expects average annual inflation < 1.75%

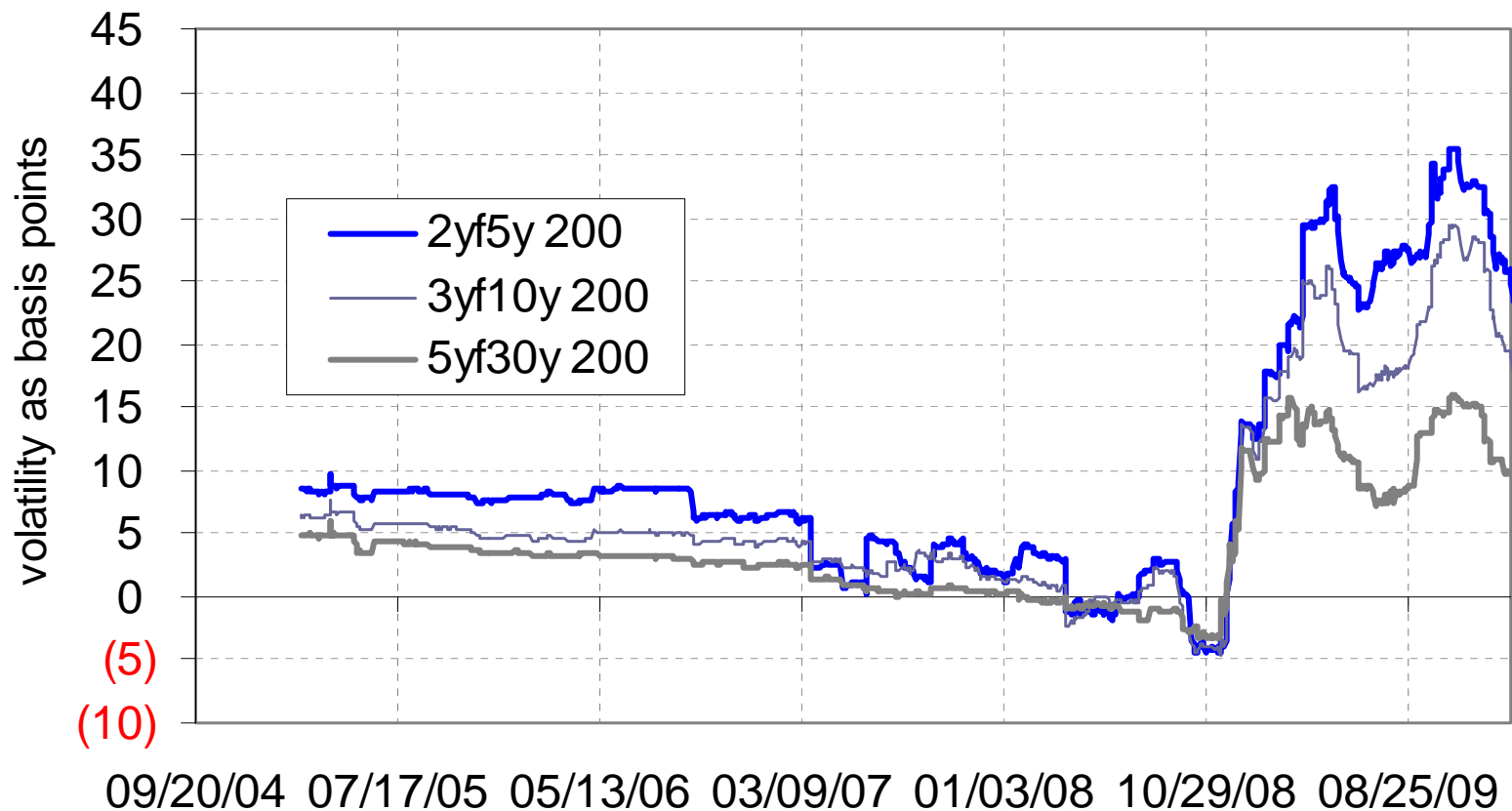
SELL / DO NOT BUY

- ◆ Value determined by investor's view of future inflation relative to BEI

Measures of Uncertainty– Inflation Example

Swaption Volatility Skew

Annualized Difference: 200 bps Out-of-the-Money versus At-the-Money



Source: Barclays, Conning analysis

◀ ERM says to plan, monitor and mitigate



Enterprise risk view to assess inflation tolerance

- ◆ Investment considerations including hedging.
- ◆ Underwriting and operational strategies:
 - ❖ Consider **inflation risk charge** against economic capital.
 - ❖ Direct inflation measures such as **Masterson indexes**.
 - ❖ **Monitor** exposed underwriting terms, conditions.
 - ❖ Excess limits reinsurance.
 - ❖ Business portfolio and international diversification.

◀ Masterson indexes – providing quick inflation read ▶

Indexes Affecting Workers' Compensation						
				Law Amendment Factors		
Year	Physician Fees	Hospital Charges	Wage Rates	Excluded	Amendments	CPI
1935	39.2	11.9	18.3			41.1
1939	39.6	12.6	21.5	1.000	1.000	41.6
1945	46.0	16.2	37.6	.756	1.070	53.9
1964	85.2	71.9	88.2	.596	1.713	92.9
1973	138.2	182.1	145.6	.570	2.434	133.1
1977	206.0	299.5	189.0	.748	3.016	181.5
1978	223.1	332.4	206.3	.802	3.131	195.4
1979	243.6	370.3	232.0	.836	3.197	217.4
1980E	271.0	418.0	236.5			247.6

Source: Casualty Actuary Society, *Property-Casualty Insurance Inflation Indexes: Communicating with the Public*

- ◆ **Inflation can surprise:** more troublesome than gradual change.
- ◆ **Historical performance** illuminates the impact of inflation—particular problems arise in loss reserves and interest rate lags.
- ◆ **Model analysis** is useful to understand the integrated effect.
- ◆ **Enterprise Risk Management** encourages inflation planning and mitigation steps.
- ◆ **Financial Markets Instruments** can be a source of information and also of mitigation



Thank You ! Questions?

ABOUT CONNING

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