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ORIGINAL
ESSENTIAL
UNBIASED
INFORMATION



The Art of Economic Forecasting & the US Economic Outlook



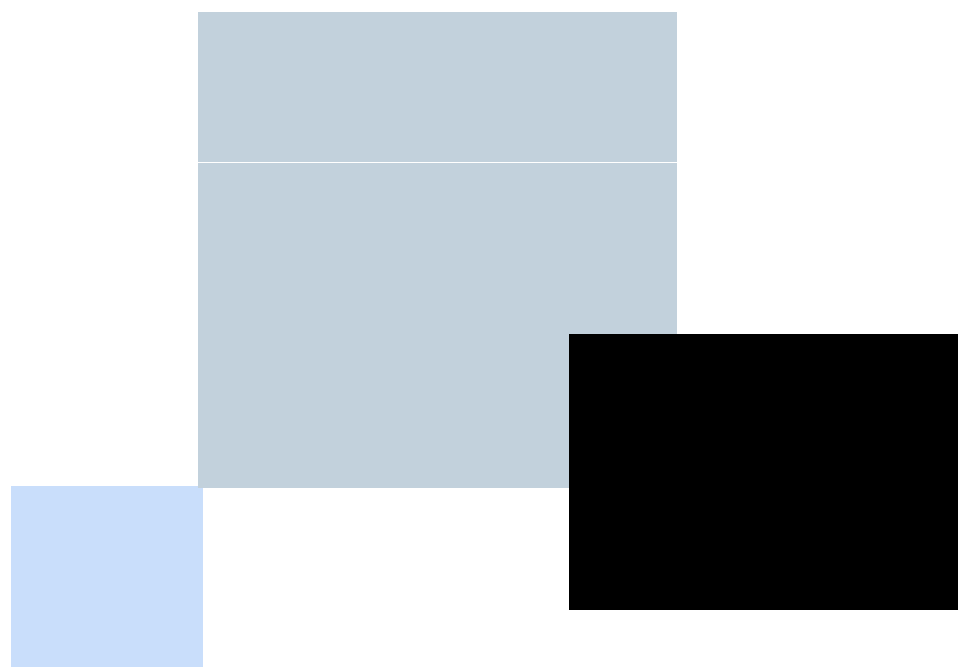
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The Art of Economic Forecasting

- I** The Problem: The Plight of the Fortune Tellers
- II** Types of Forecasting
- III** Our Model: The Narrative
- IV** The Output: GDP, Employment, Inflation, Interest Rates



I The Problem: The Plight of the Fortune Tellers

The Problem: How do we make decisions about the future in a world of uncertainty?



The Cardsharps, Cavaggio (1594)

Where is the economy headed?

What is the path of interest rates?

What are the inflation/deflation risks?

The Meteorologist or the Economist: Which is More Accurate?

Meteorology

Physical science- Measurable

Rain

Snow

Wind

Laboratory Experiments

Economics

Social science- Challenging

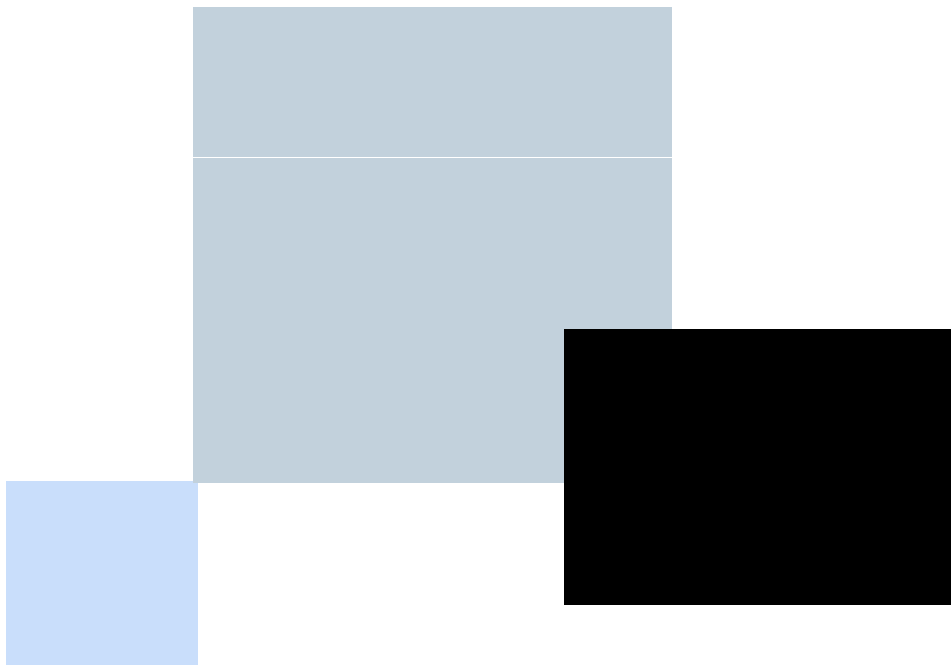
Human Beings

Human Choice

Data Availability

History, But Few Labs

*“Most fundamentally, and perhaps most challenging for researchers, the crisis should motivate **economists to think further about their modeling of human behavior.**”* – Ben Bernanke commenting on economics in the wake of the financial crisis



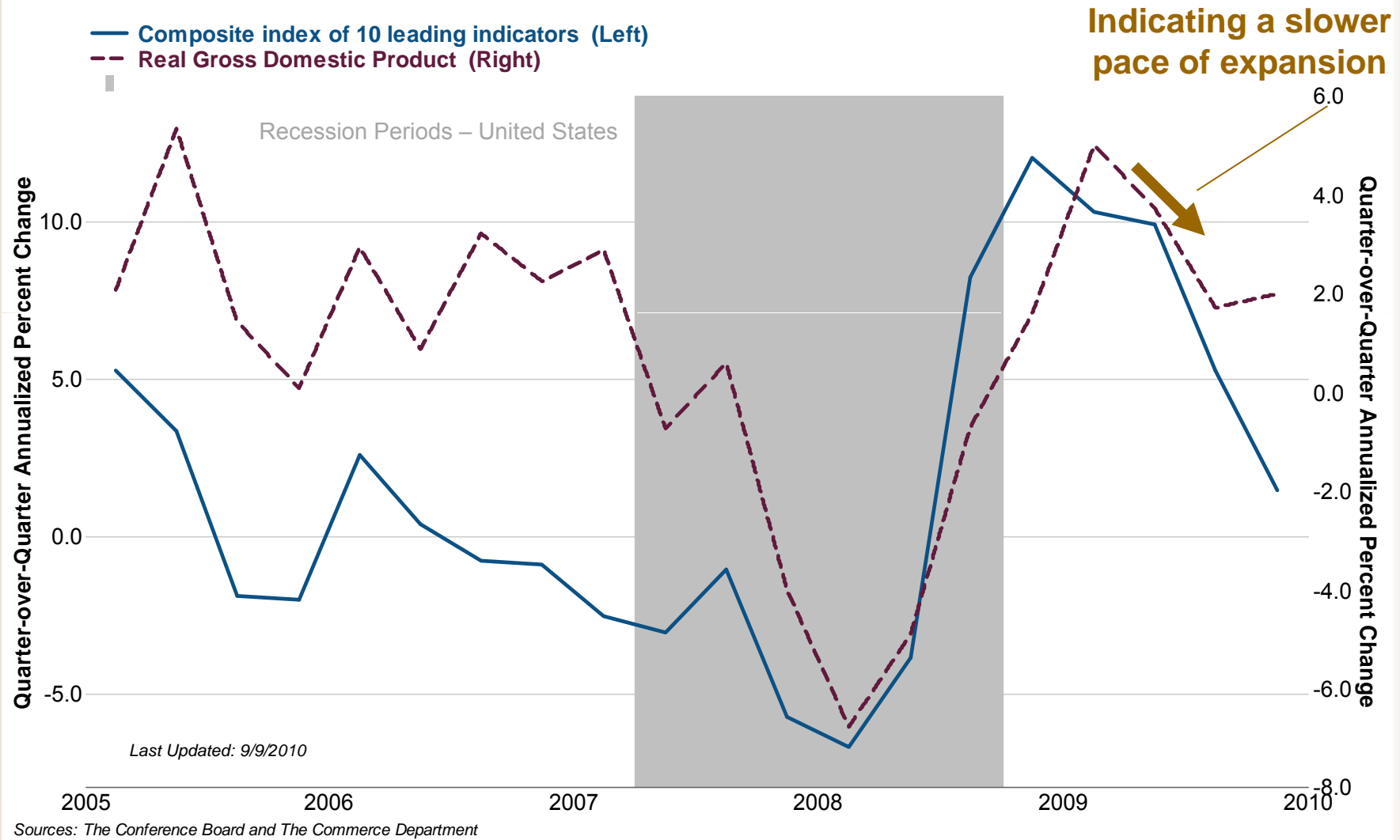
II Types of Forecasts

Types of Forecasts

Forecast Type	Example
“Theory-free” forecasts	Leading Indicators
Mathematical “models” of the economy	The Fed Model
Market-based models	The Yield Curve
“The Mental Model”	Combines narrative + economic indicators + market-based indicators

“Human behavior is simply too complex and nuanced to be fully represented mathematically, at least with the maths known to modern man. Maths can help us to gain insight into economic processes, but it is not the only way to gain such insight, nor even the most productive.” -- DeLisle Worrell, Governor of the Central Bank of Barbados

Theory-Free Example: The US Index of Leading Economic Indicators and GDP Growth



What Are The Leading Economic Indicators (LEI) Telling Us?

	Lead Time (months)	Reliability	Growth Momentum (3-Month Change)	Pointing to Double-Dip?
Financial Indicators				
Yield Curve	12 to 24	High	Slowing	X
M2	12 to 24	Low	Stable	X
Stock Prices	3 to 6	Medium	Slowing	X
Real Indicators				
Existing Home Sales	6 to 9	High	Negative	X
ISM Manufacturing Index	3 to 6	High	Slowing	X
Consumer Expectations	3 to 6	Low	Slowing	X
New Orders for Durable Goods	1 to 3	High	Negative	X
Unemployment Insurance Claims	1 to 3	Medium	Slowing	X
Average Weekly Hours	1 to 3	High	Stable	X

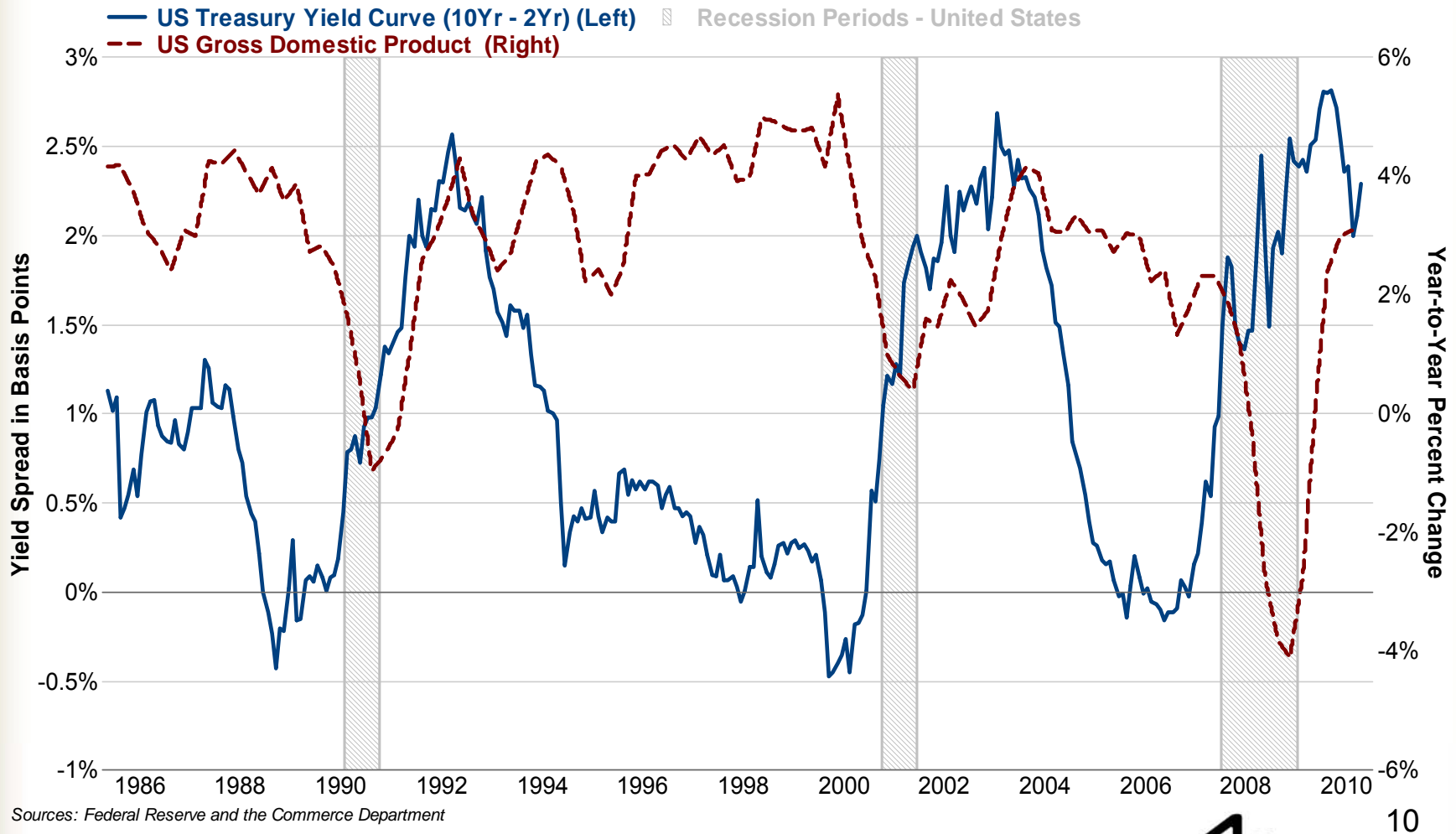
Last Updated: 9/30/2010

The Yield Curve Is Indicating Moderate Yet Positive Growth

LEI Component - Yield Curve

Reliability- High
Momentum- Slowing

Double Dip? – No
Lead time 1-2 years



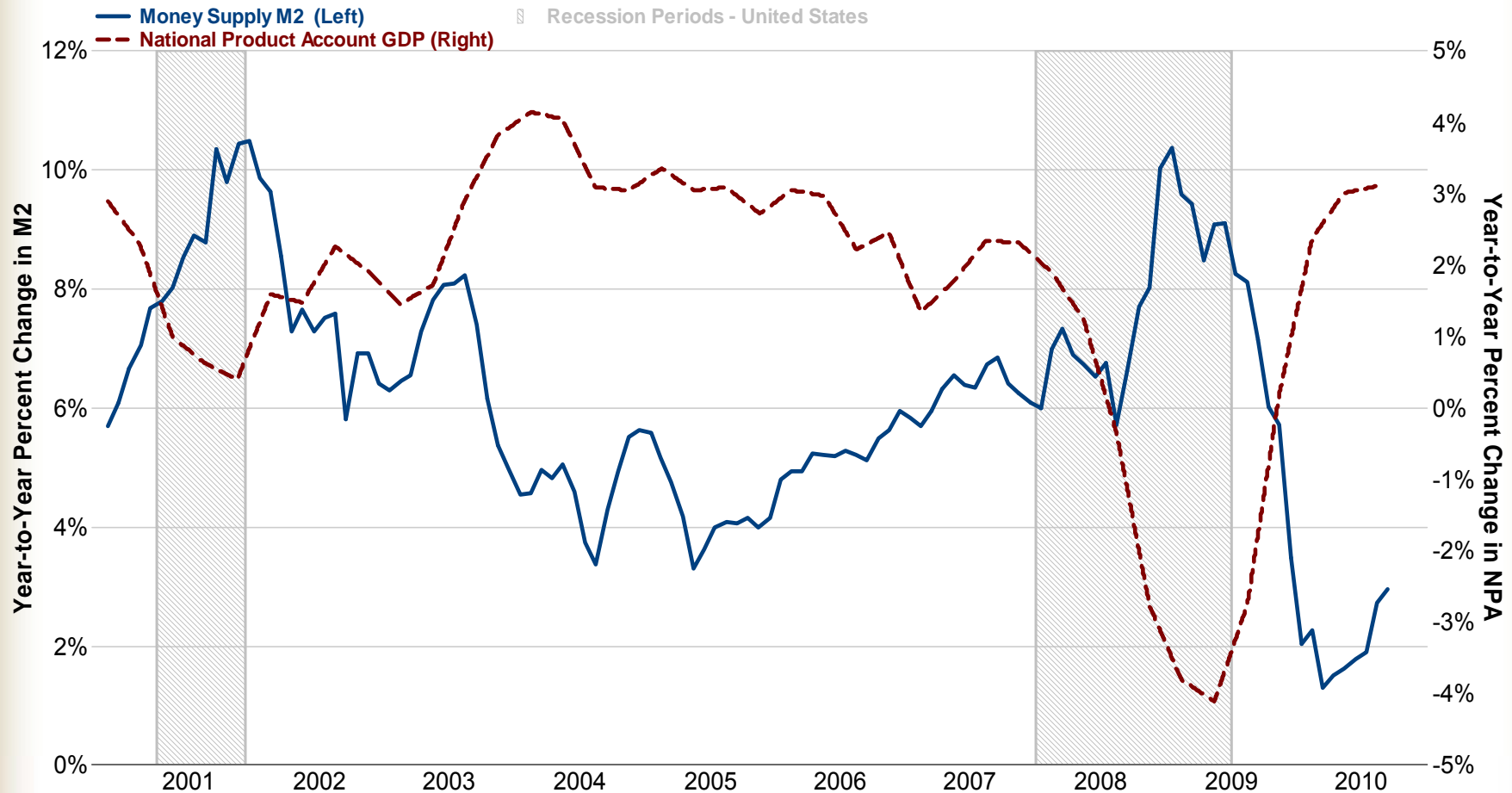
Sources: Federal Reserve and the Commerce Department

The Money Supply Is Expanding

LEI Component – M2

Reliability- Low
Momentum- Stable

Double Dip? – No
Lead time 1-2 years



Source: The Federal Reserve

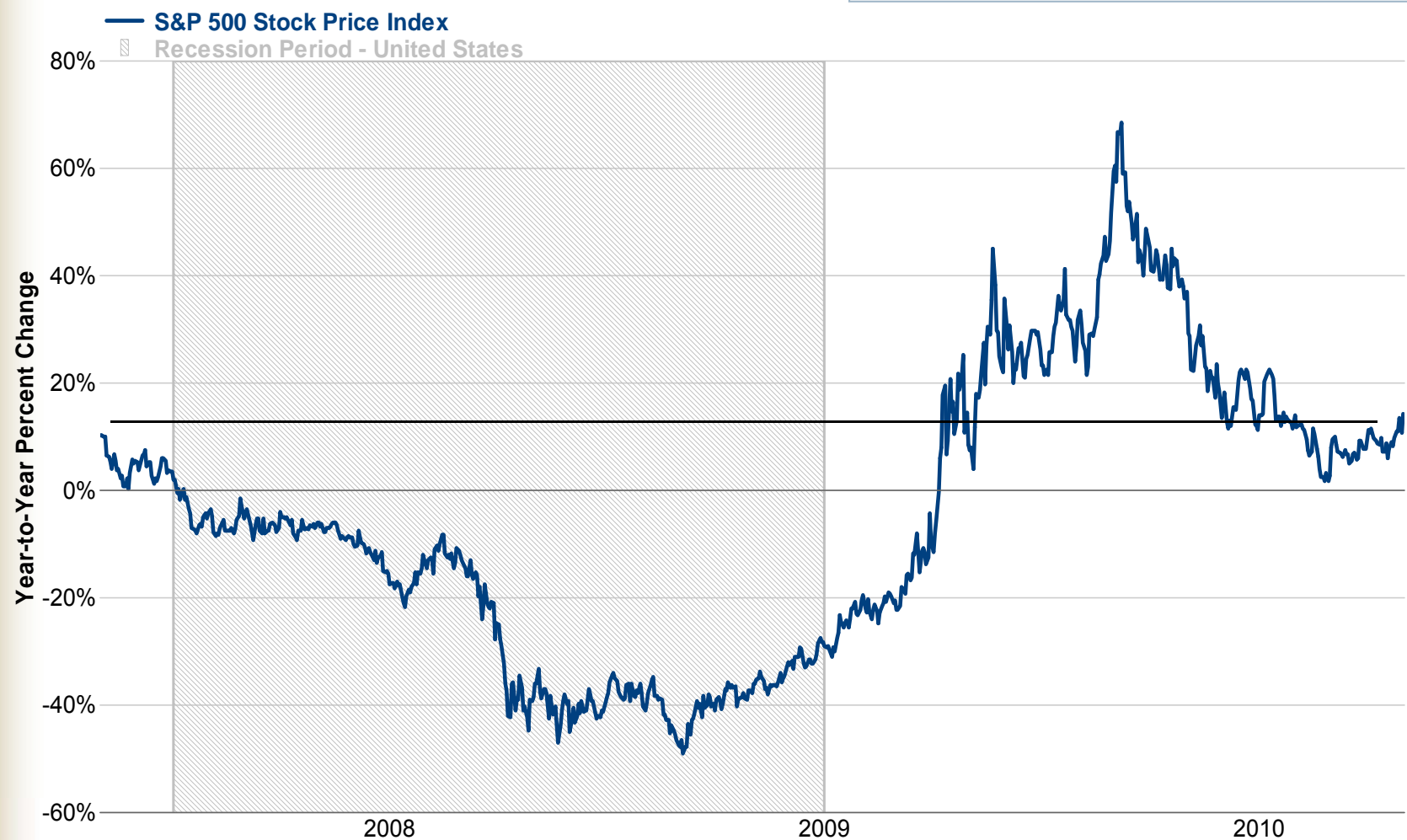
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Stocks Prices Are Lower But Still Above Year-Ago Levels

LEI Component – Stock Prices

Reliability- Medium
Momentum- Slowing

Double Dip? – No
Lead time 3-6 mos



Source: Standard & Poor's

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Post Tax-Credit, Home Sales Suffer

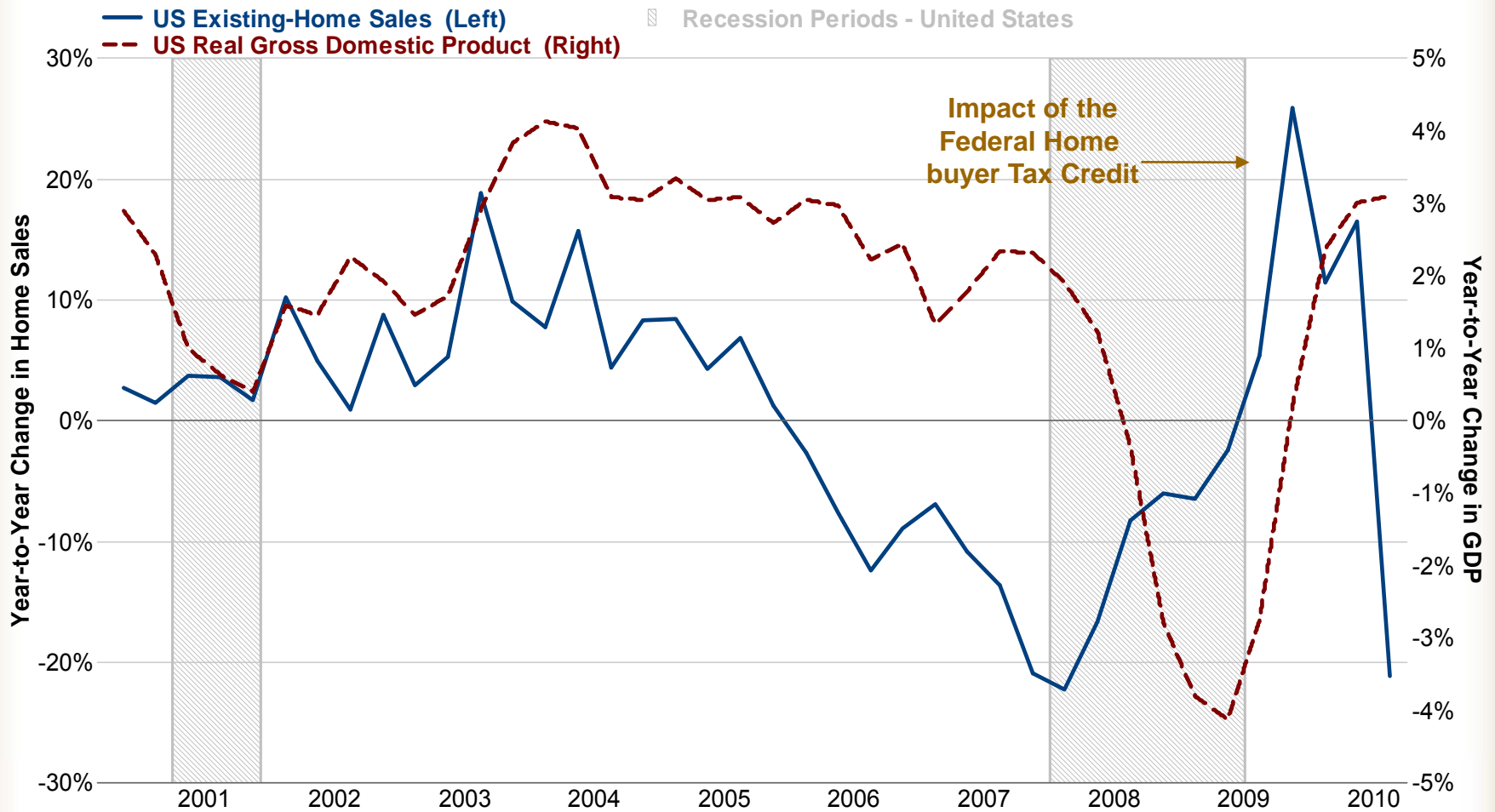
LEI Component – Home Sales

Reliability- High
Maybe

Momentum- Negative

Double Dip? –

Lead time 6-9 mos



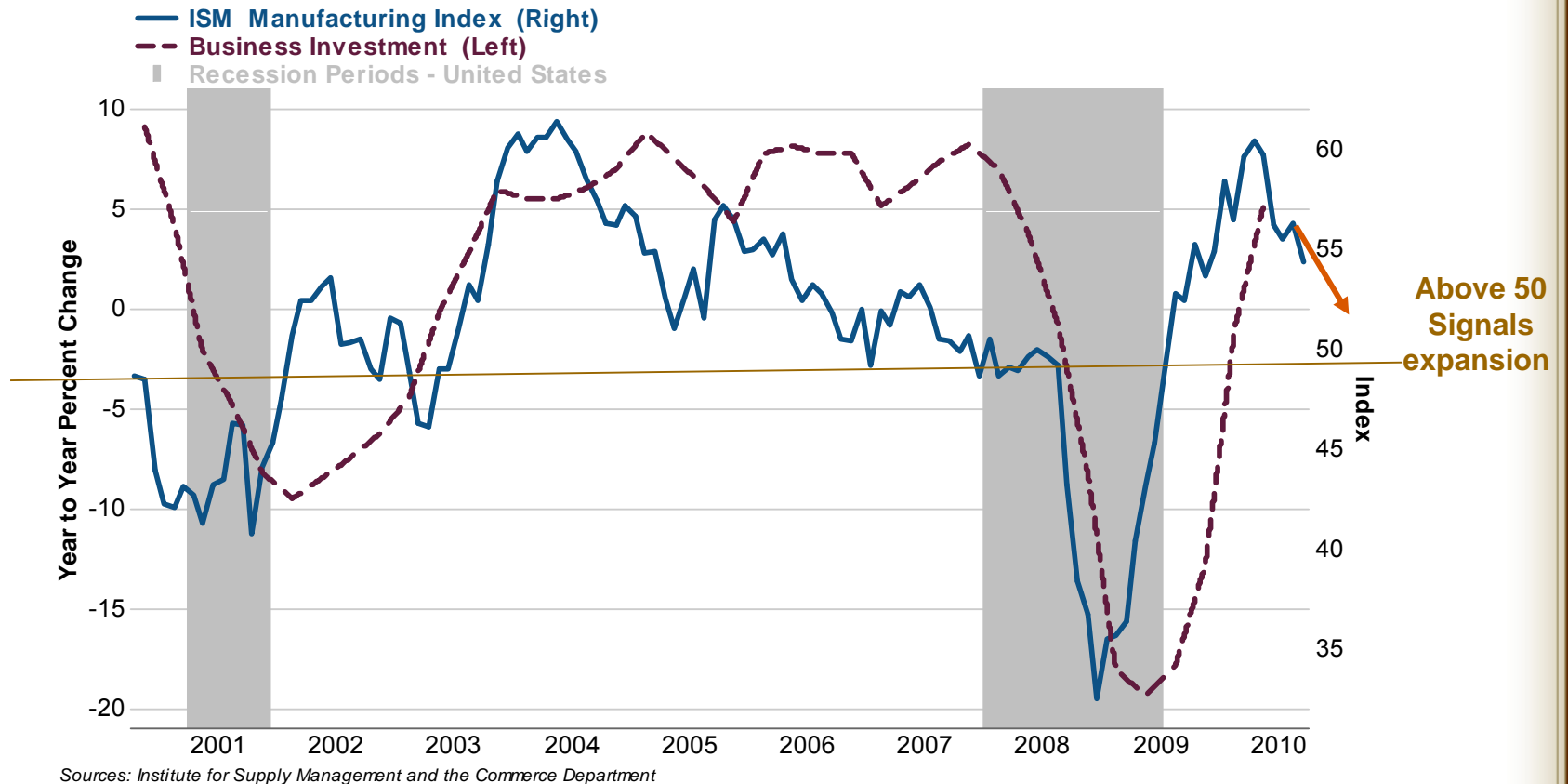
Sources: National Association of Realtors and Commerce Department

Business Investment is Likely to Moderate

LEI Component – ISM

Reliability- High
Momentum- Slowing

Double Dip? – No
Lead time 3-6 mos

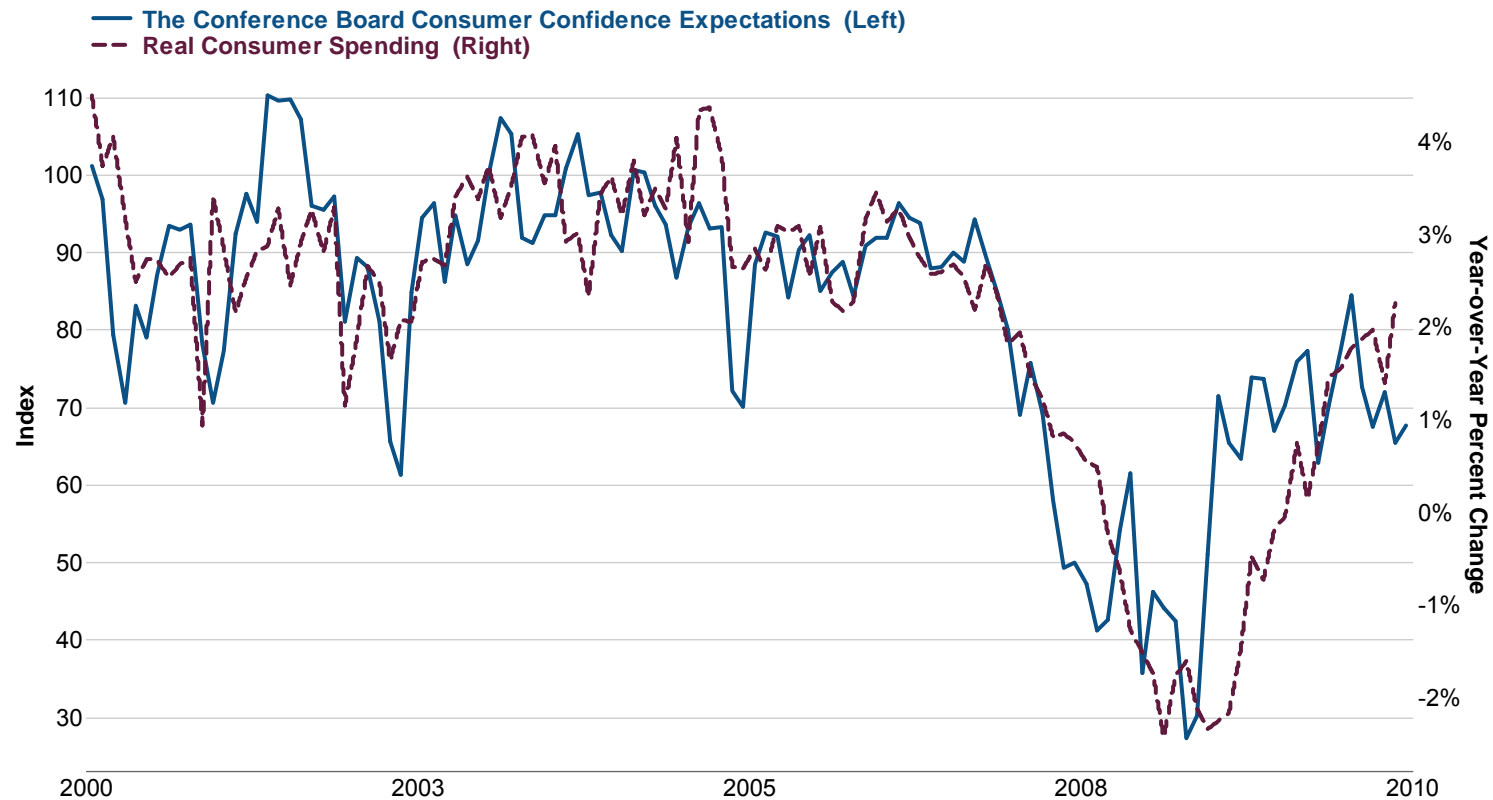


Consumer Spending May Also Moderate

LEI Component – Consumer Expectation

Reliability- Low
Momentum- Slowing

Double Dip? – No
Lead time 3-6 mos



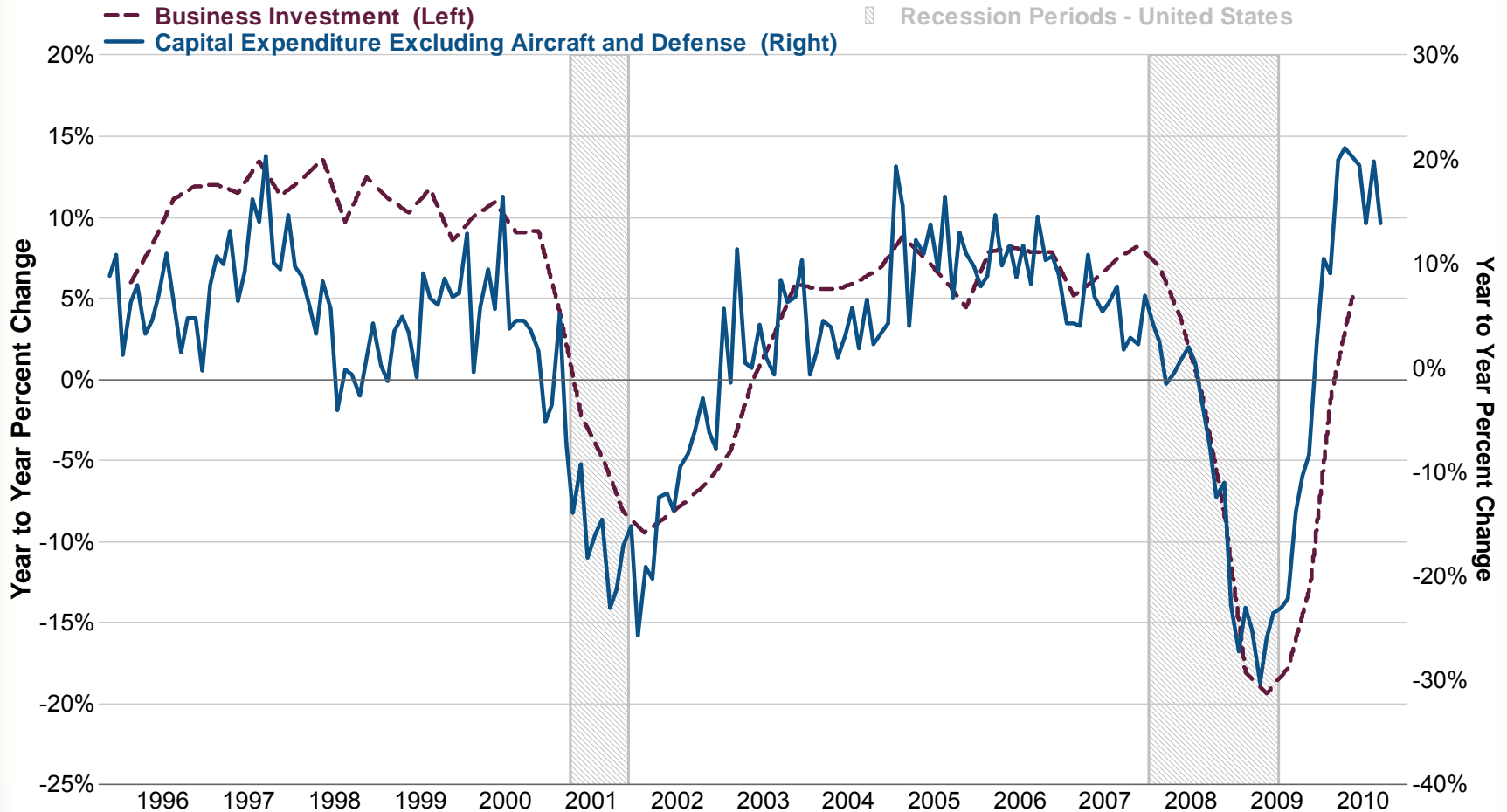
Sources: The Conference Board and The Commerce Department

Non-Defense Capital Expenditures Growth is Still Strong

LEI Component – Durable Goods/Unemployment

Reliability- High
Momentum- Negative

Double Dip? – No
Lead time 1-3 mos



Sources: Census Department and the Commerce Department

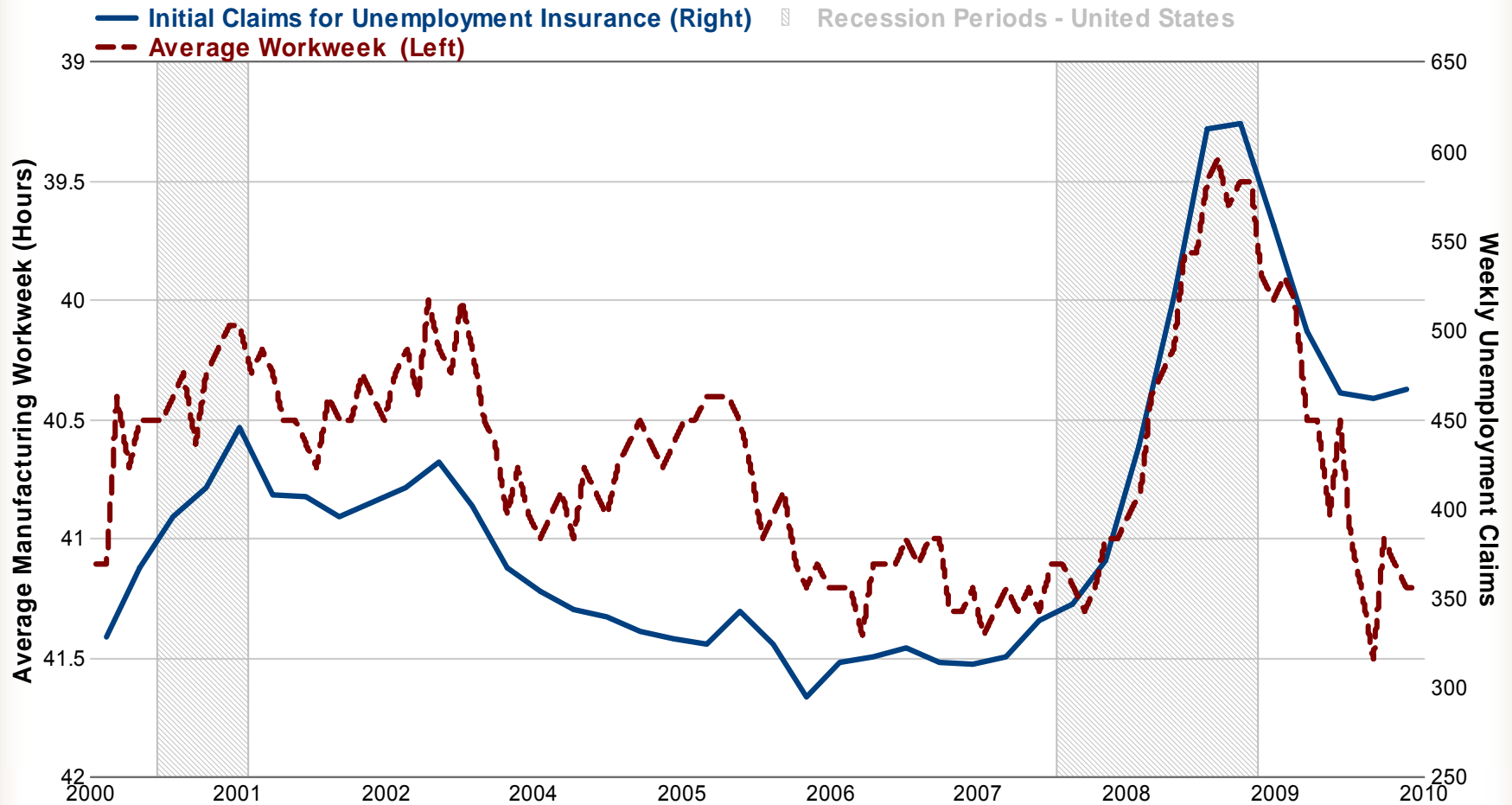
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Average Workweek and Jobless Claims Stabilizing

LEI Component

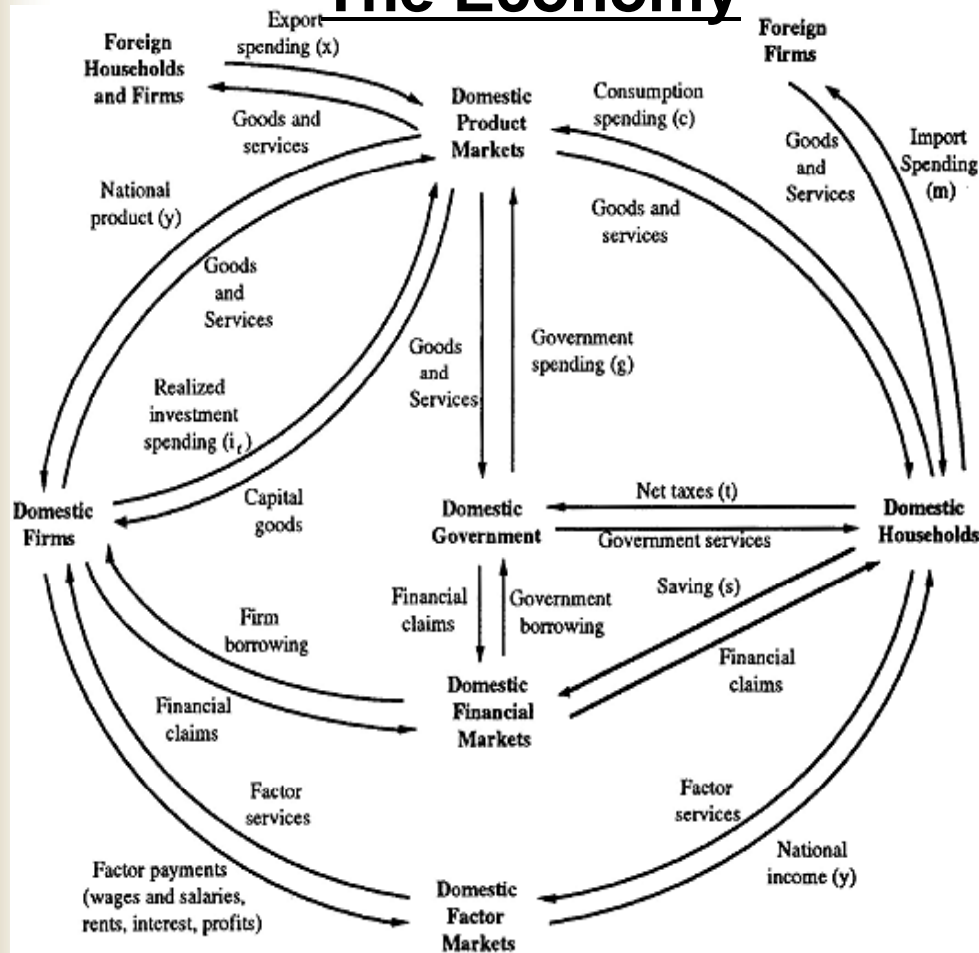
Reliability- High
Momentum- Stable

Double Dip? – No
Lead time 1-3 mos



Example: Mathematical Models of the Economy

The Economy



Abstracting Further...

Standard Regression Model:

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \varepsilon$$

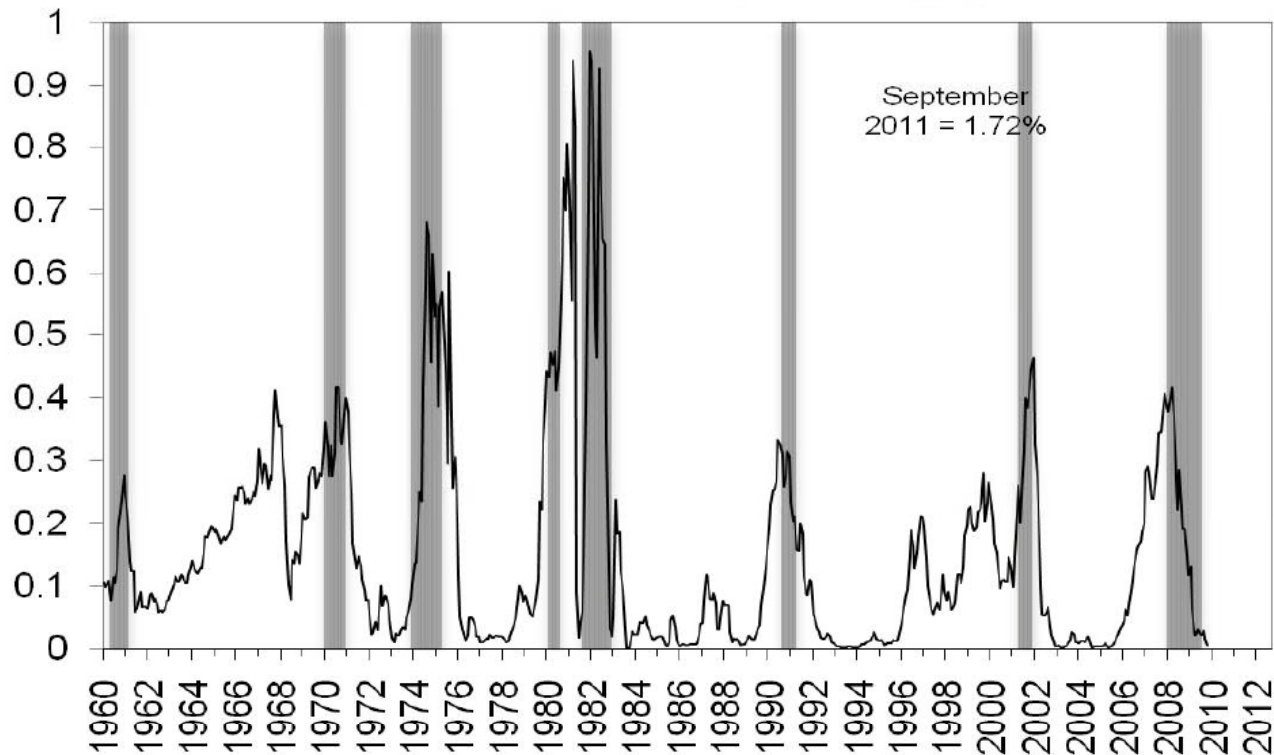
Example

IS (Investment-Savings) Equation of a National Economy

$$Y = C(Y - T(Y)) + I(i) + G + NX(Y)$$

Example: Market-Based Model

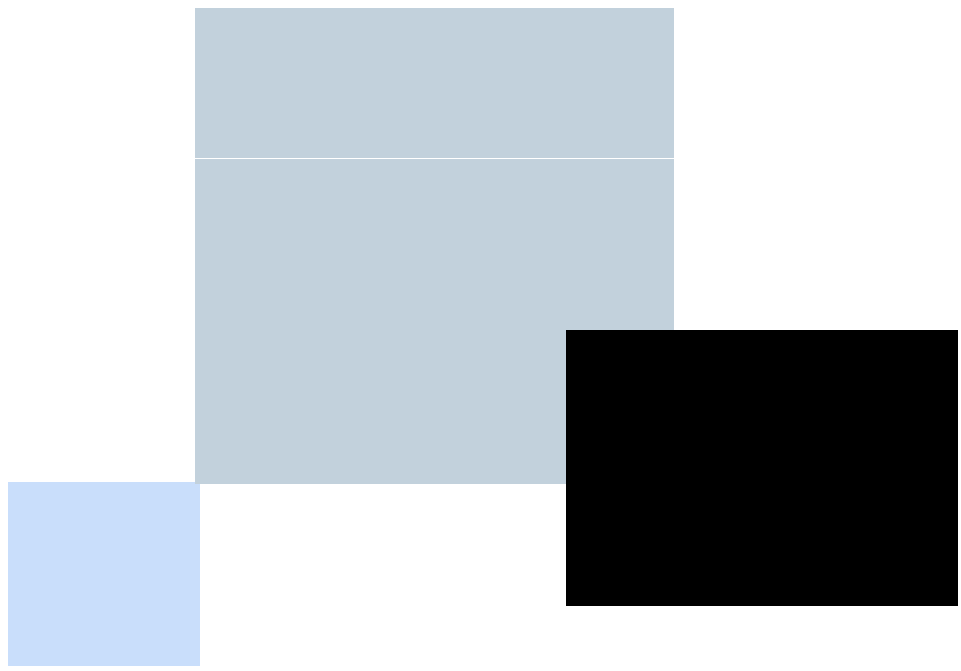
Probability of US Recession Predicted by Treasury Spread*
Twelve Months Ahead (month averages)



* Parameters estimated using data from January 1959 to December 2009, recession probabilities predicted using data through September 2010. The parameter estimates are $\alpha = -0.5333$, $\beta = -0.6330$.

Updated October 4, 2010

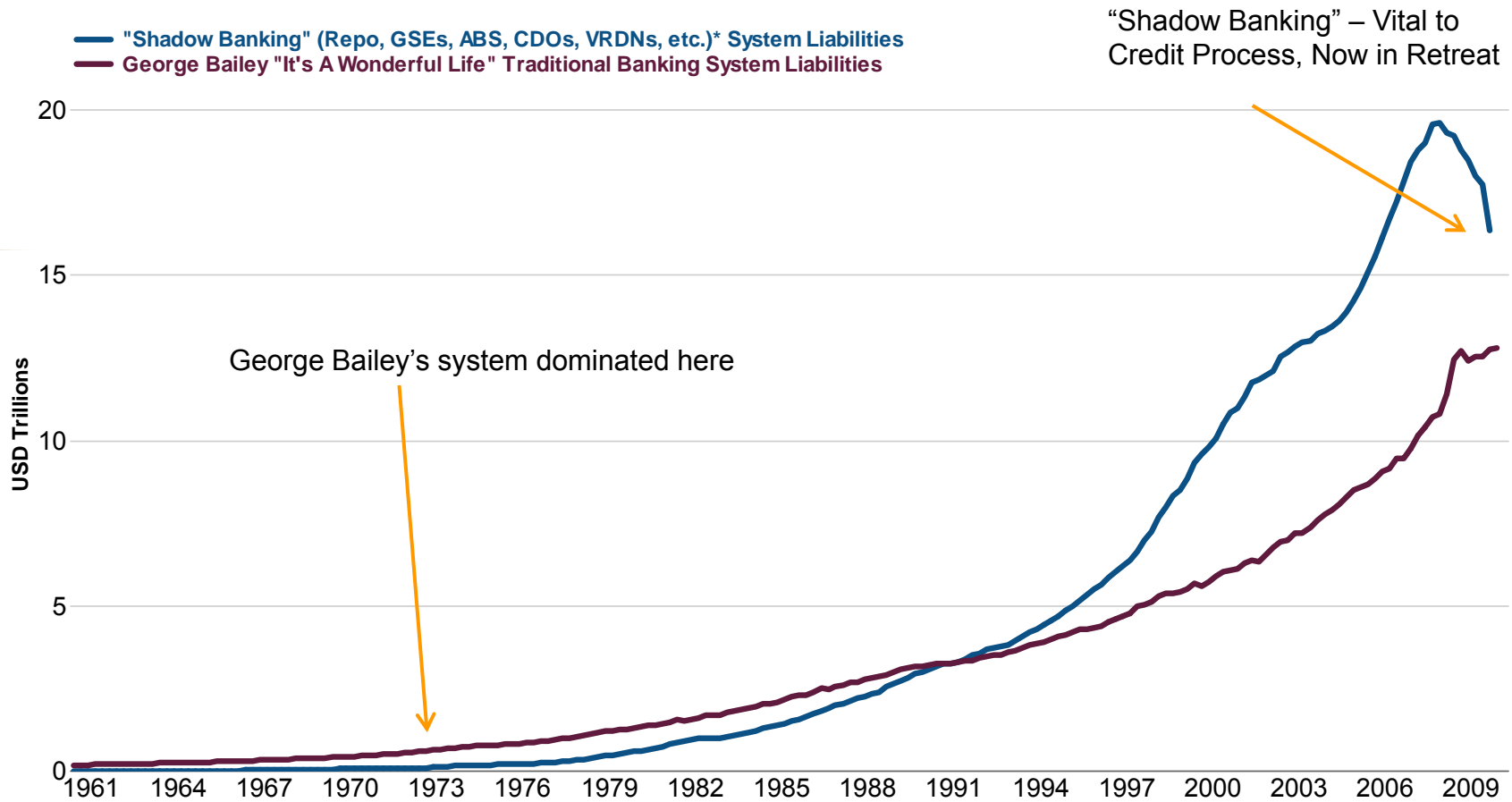
Source: New York Federal Reserve Bank



III Our Model: The Narrative

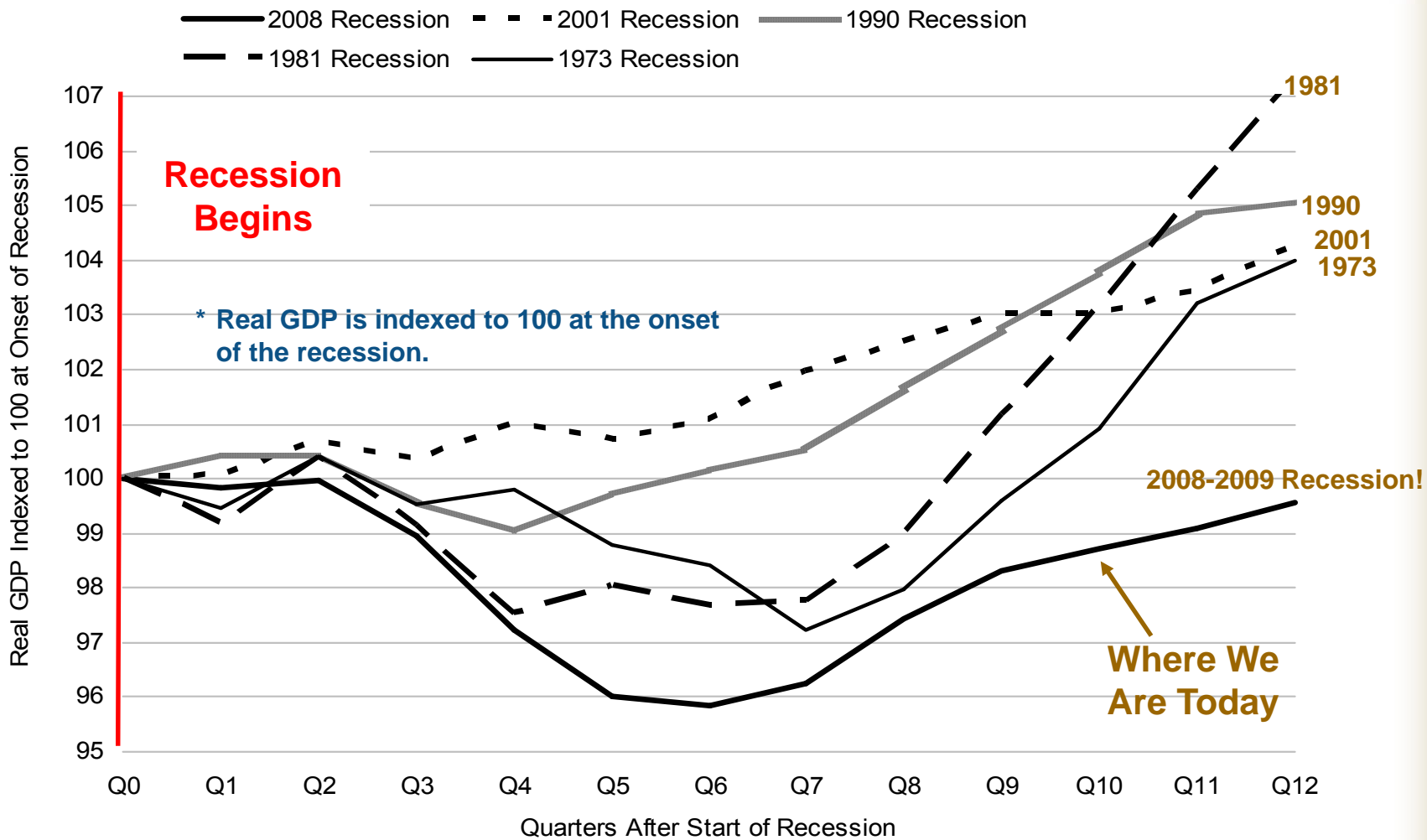
The Panic of 2007 in One Picture

"Shadow Banking" System vs. The Traditional Banking System



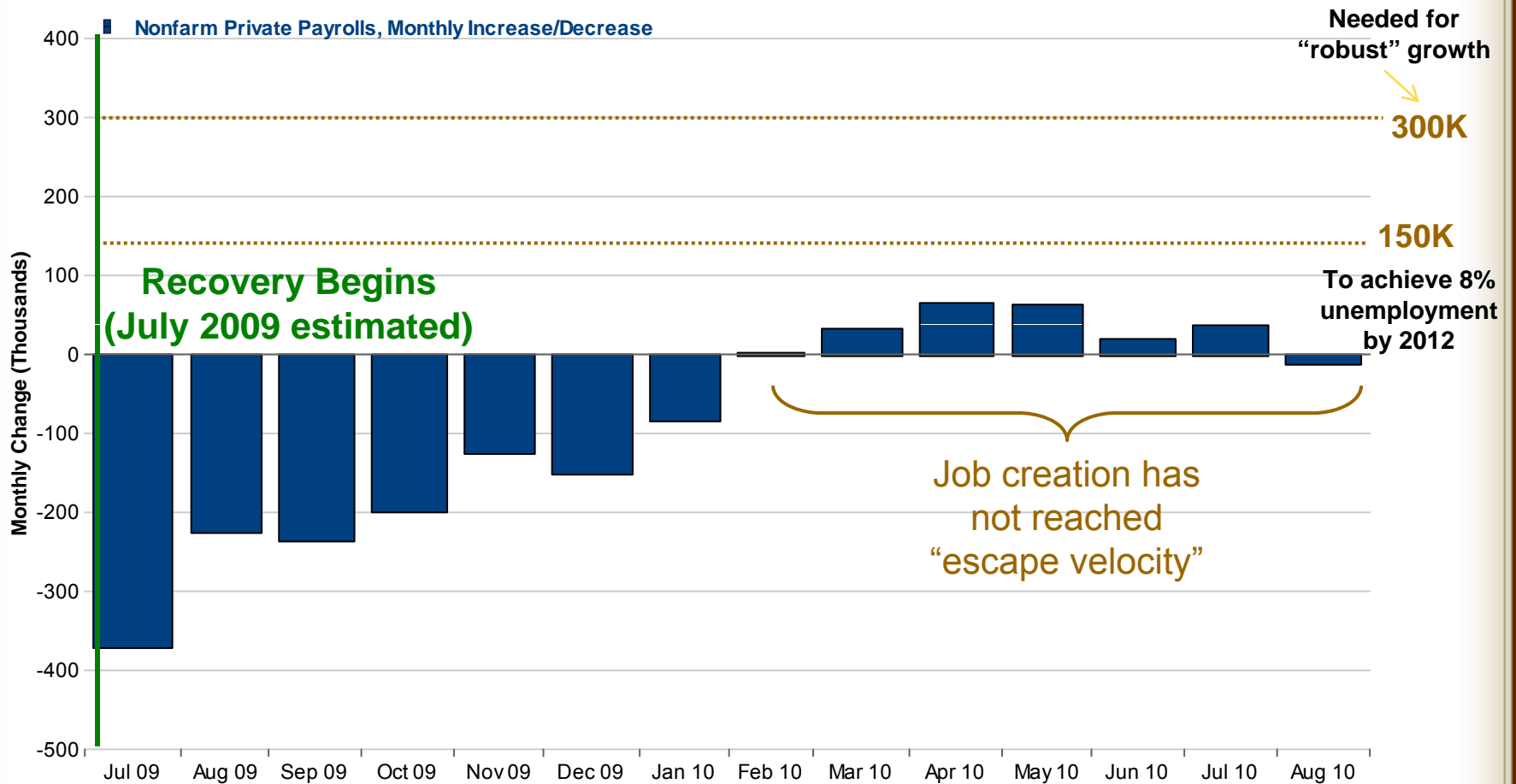
Source: Federal Reserve, *Shadow Banks are financial intermediaries without access to central bank liquidity or public sector guarantees (Pozar, Adrian, Ashcraft, Boesky, 2010)

Post-Credit Crisis Means Slower Growth



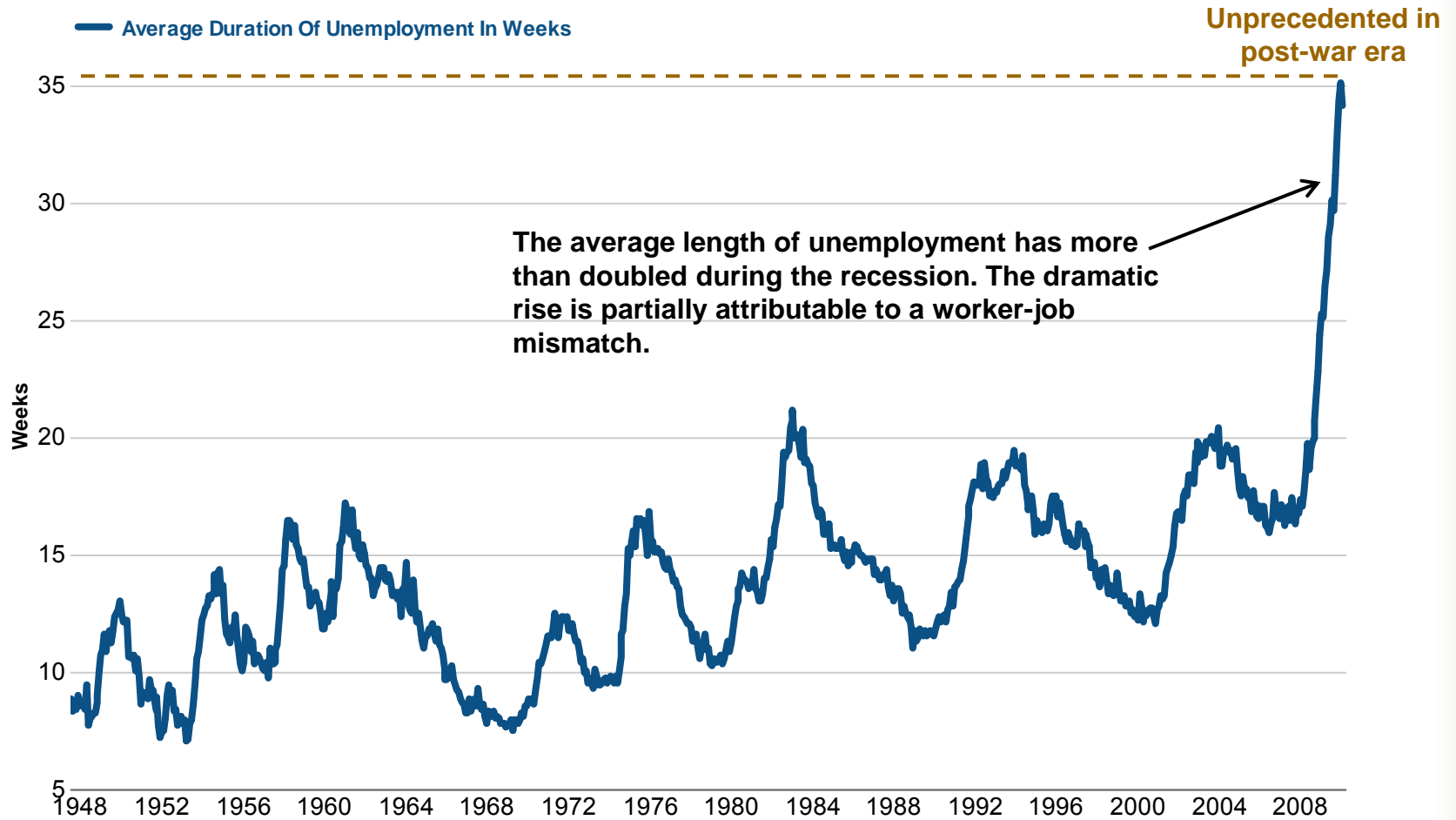
Sources: Commerce Department, Payden & Rygel Estimates

Slow Growth Won't Bring Down the Unemployment Rate



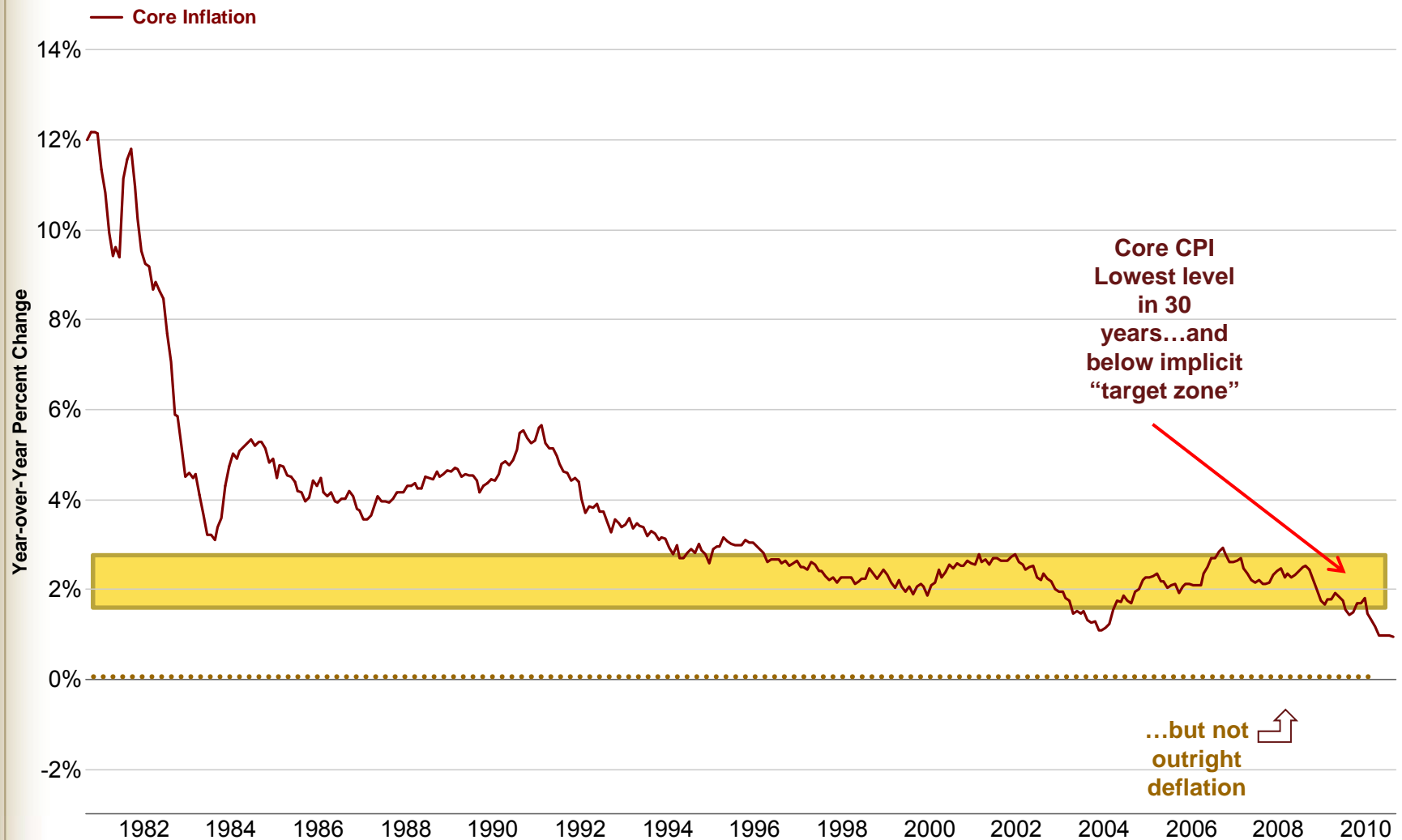
Source: BLS

It's Taking Workers Far Longer To Shift to New Jobs



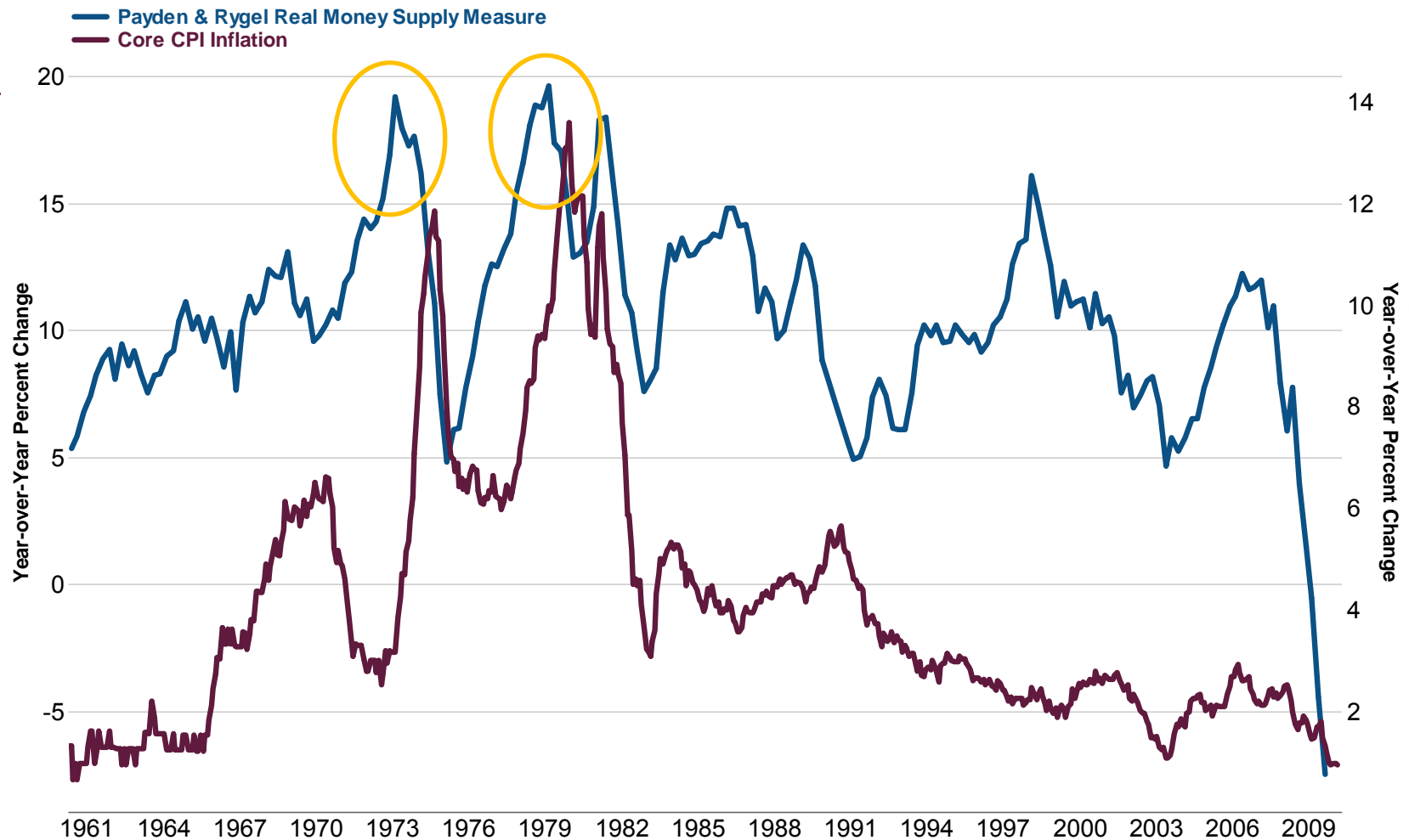
Source: BLS

Current Inflation Rates Are Lowest in 50 Years



Source: BLS

Consumer Price Inflation Always Preceded By Money and Credit Growth



Source: Federal Reserve, Labor Department

*Payden & Rygel Money Supply Measure is based on research on traditional bank liabilities + "shadow banking" liabilities

Understanding Monetary Policy Goals in One Picture

The Fed wants to increase aggregate demand (spending);
if people think prices are set to rise they will increase their spending



Monetary Policy Scorecard Makes “Quantitative Easing 2” Likely

The Federal Reserve's mandate is "to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates" (1977 Federal Reserve Act). Today this is referred to as the "dual mandate" since long-term interest rates can only remain moderate in a stable macroeconomic environment. In the wake of unprecedented monetary policy actions, how has the Fed fared?

Macroeconomic Category	Indicator	Policy Goal	Current Reading	Year Ago Reading	Meeting Goal?
Employment	Unemployment Rate	5-7%	9.6%	9.7%	No
Inflation	Core CPI (year-over-year)	1.5% - 2%	0.95%	1.6%	No
Payroll Growth	Non-Farm Payrolls (monthly change)	150,000-300,000	-39,000	-197,000	No

Further Ammunition: What Options Are Available?

I

**Long-Term Treasury Purchases
("Quantitative Easing" or "QE2")**

II

Communication Strategy

III

IV

Reduce Interest Paid on Reserves

Raise Inflation Target

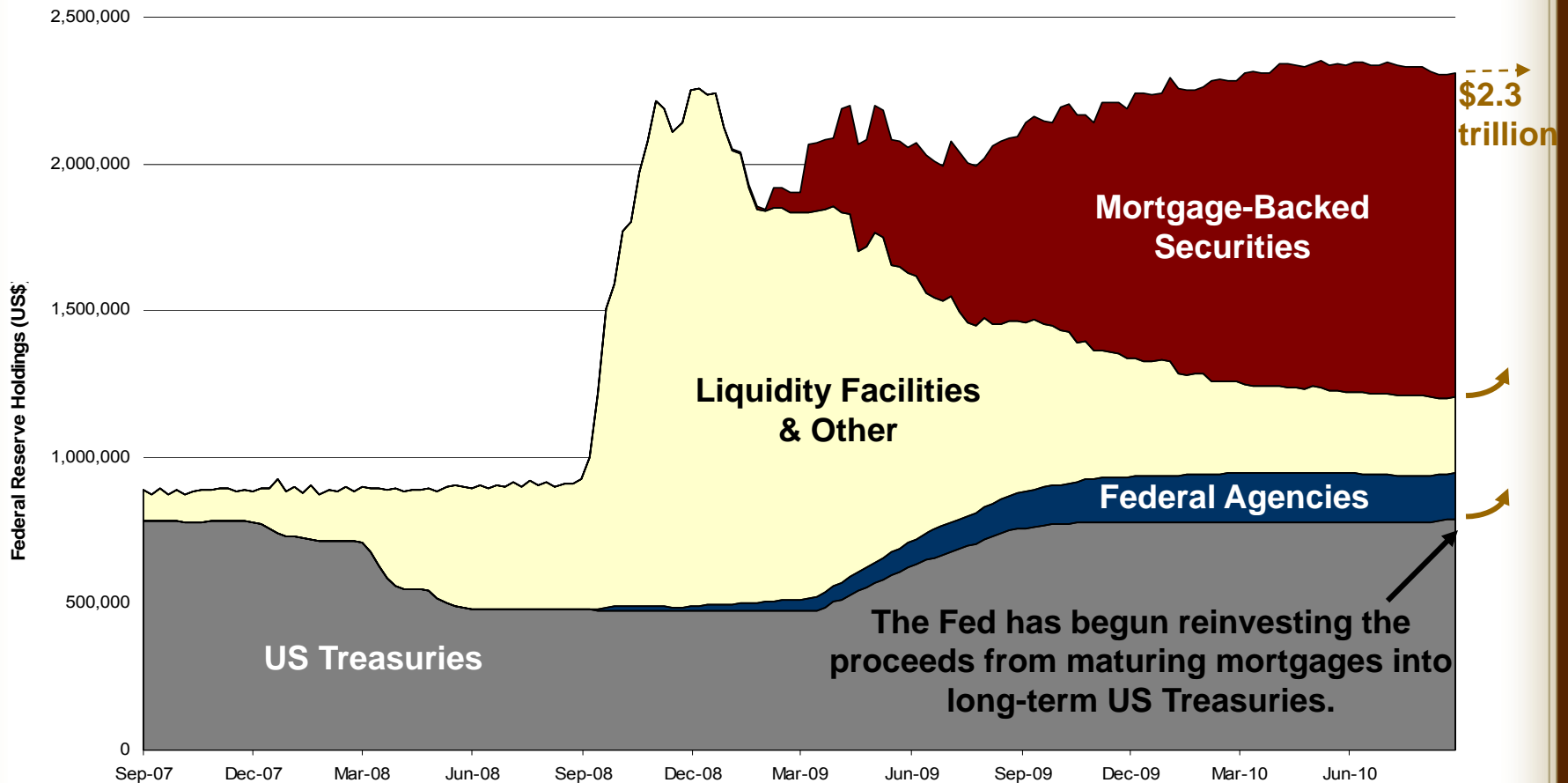
More Likely Before
Year-End



Less Likely

Source: Ben Bernanke, "The Economic Outlook and Monetary Policy," Jackson Hole, Wyoming, August 27, 2010.

The Fed's Balance Sheet Is An Instrument of Monetary Policy

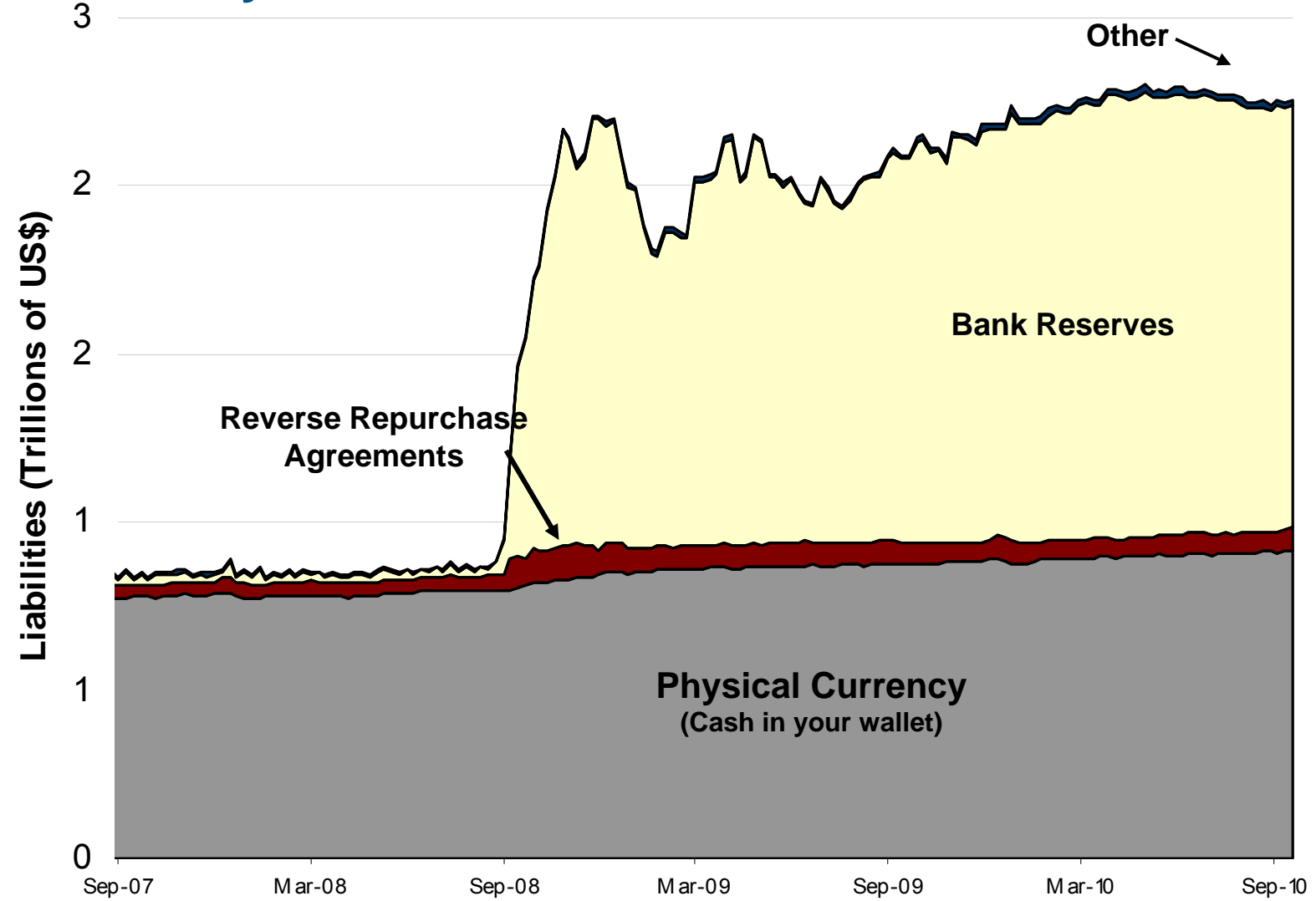


Source: Committee for a Responsible Federal Budget

“If action is taken by the Fed, a clear option is to grow the size of the balance sheet since the policy interest rate, for all practical purposes, cannot go any lower” – Dennis P. Lockhart, President, Federal Reserve Bank of Atlanta, 9/28/2010

30

...Paid for With “Bank Reserves” Created By the Fed on the Liability Side “Out of Thin Air”



Source: Federal Reserve

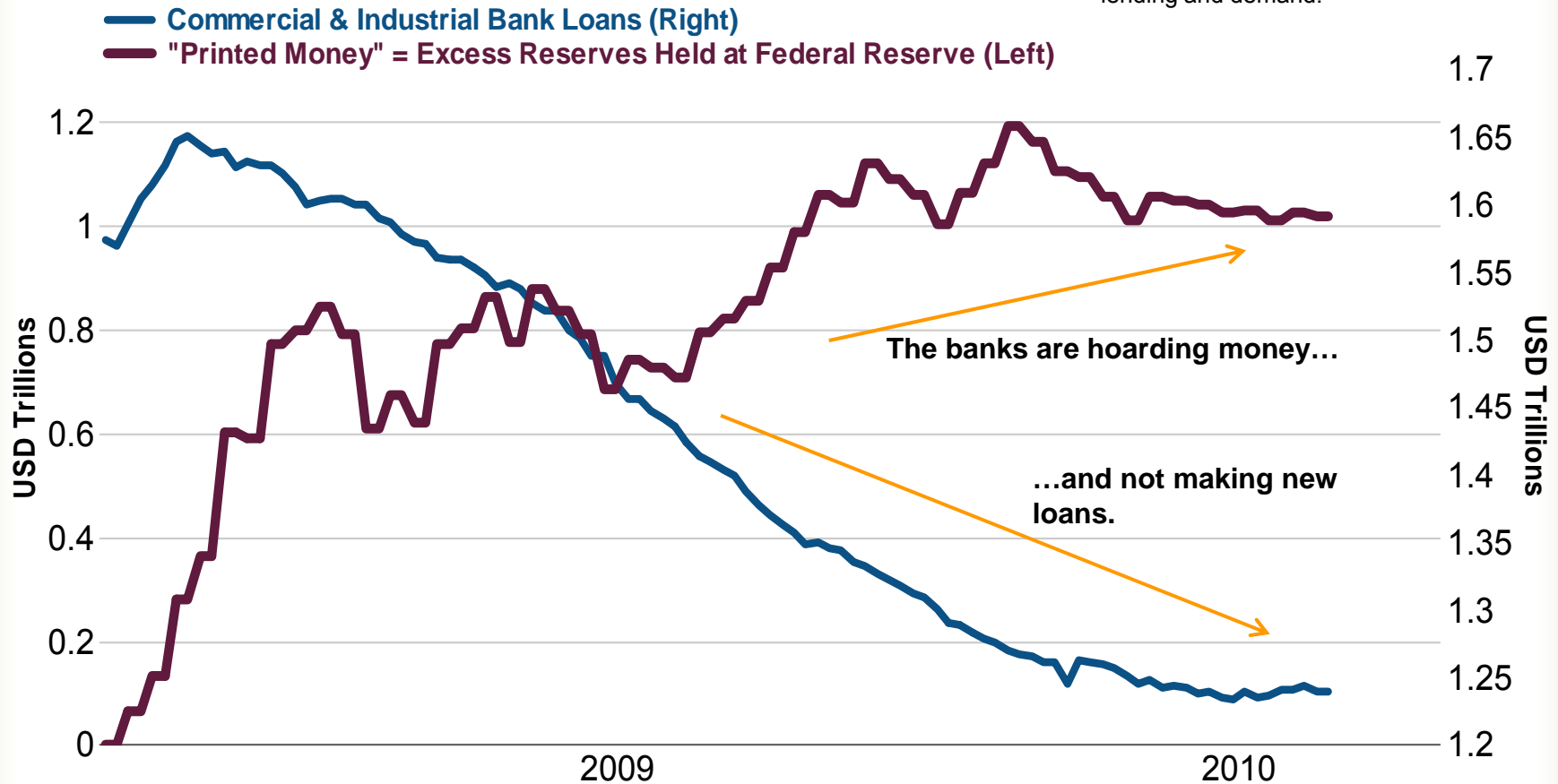
Would Further “QE” Have an Impact?

**On the Real
Economy?
Probably Not**

**On Capital Markets?
Yes**

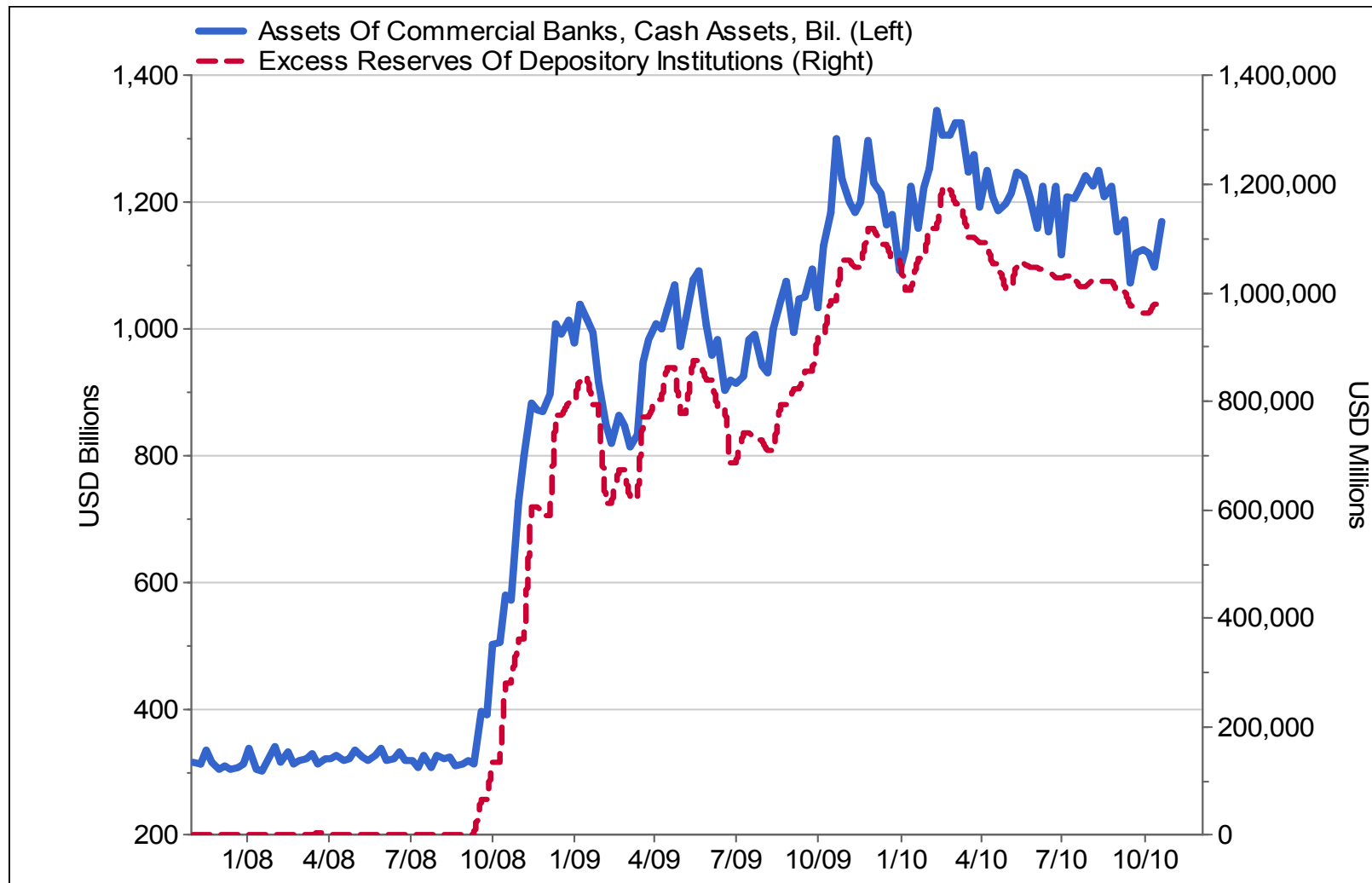
The Limits of QE: Banks Accumulate Excess Reserves, Not New Loans

In textbooks, reserves work through the "money multiplier" to increase aggregate lending and demand.

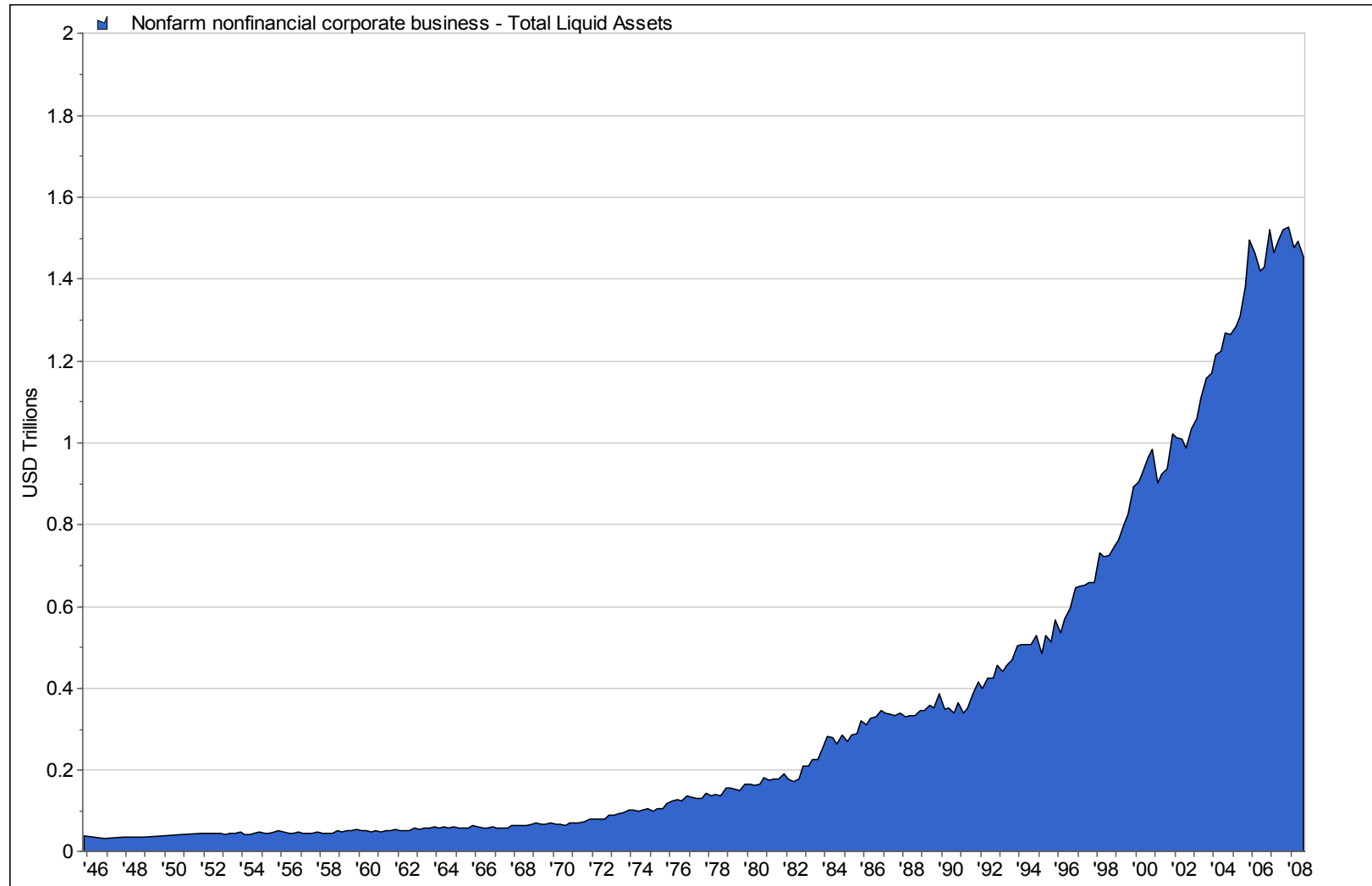


Source: Federal Reserve

Commercial Banks Appear to Be Hoarding Cash

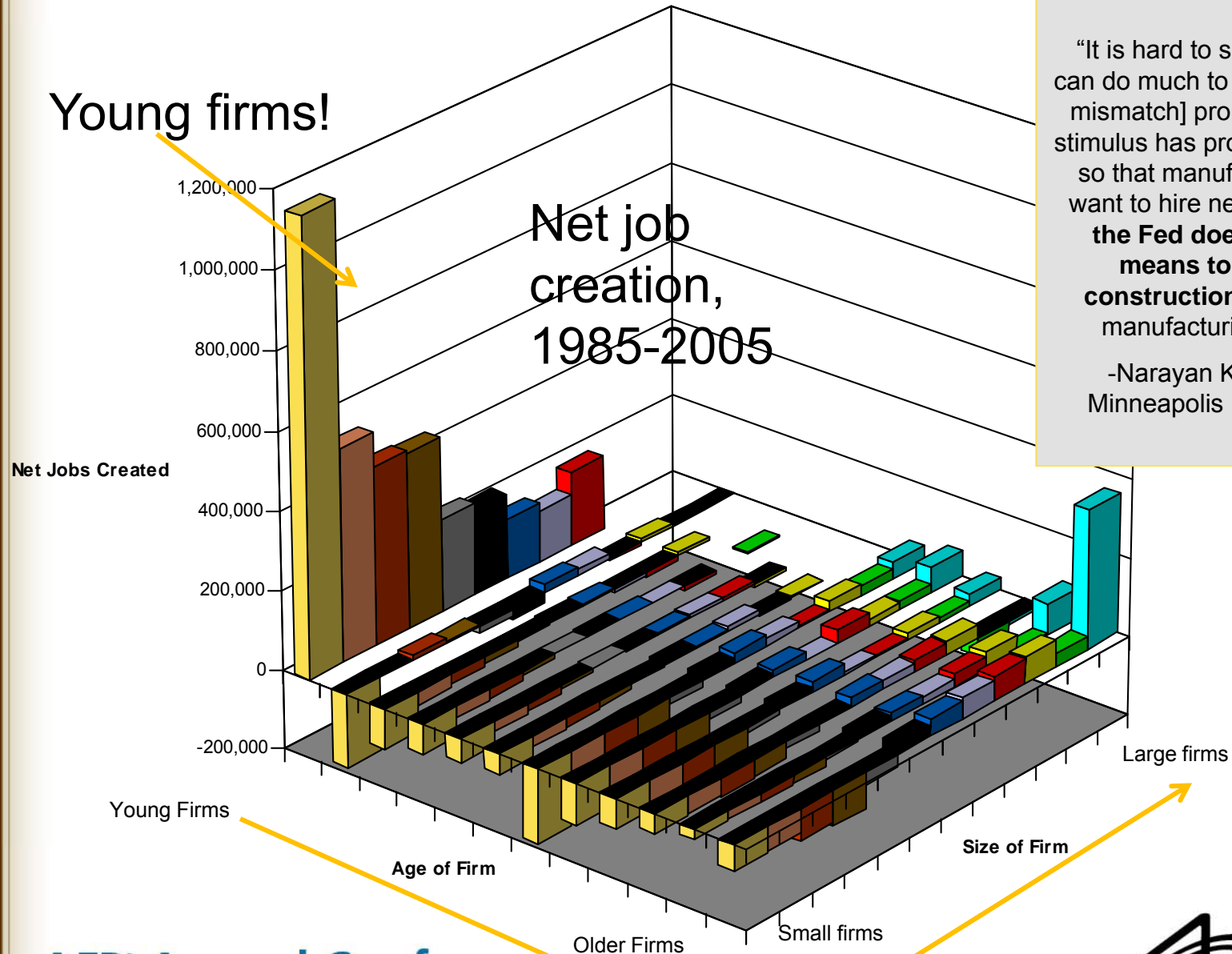


Non-Financial Corporations Also Appear to Be Hoarding Cash



The Limits of QE: We Need Innovation To Create Jobs

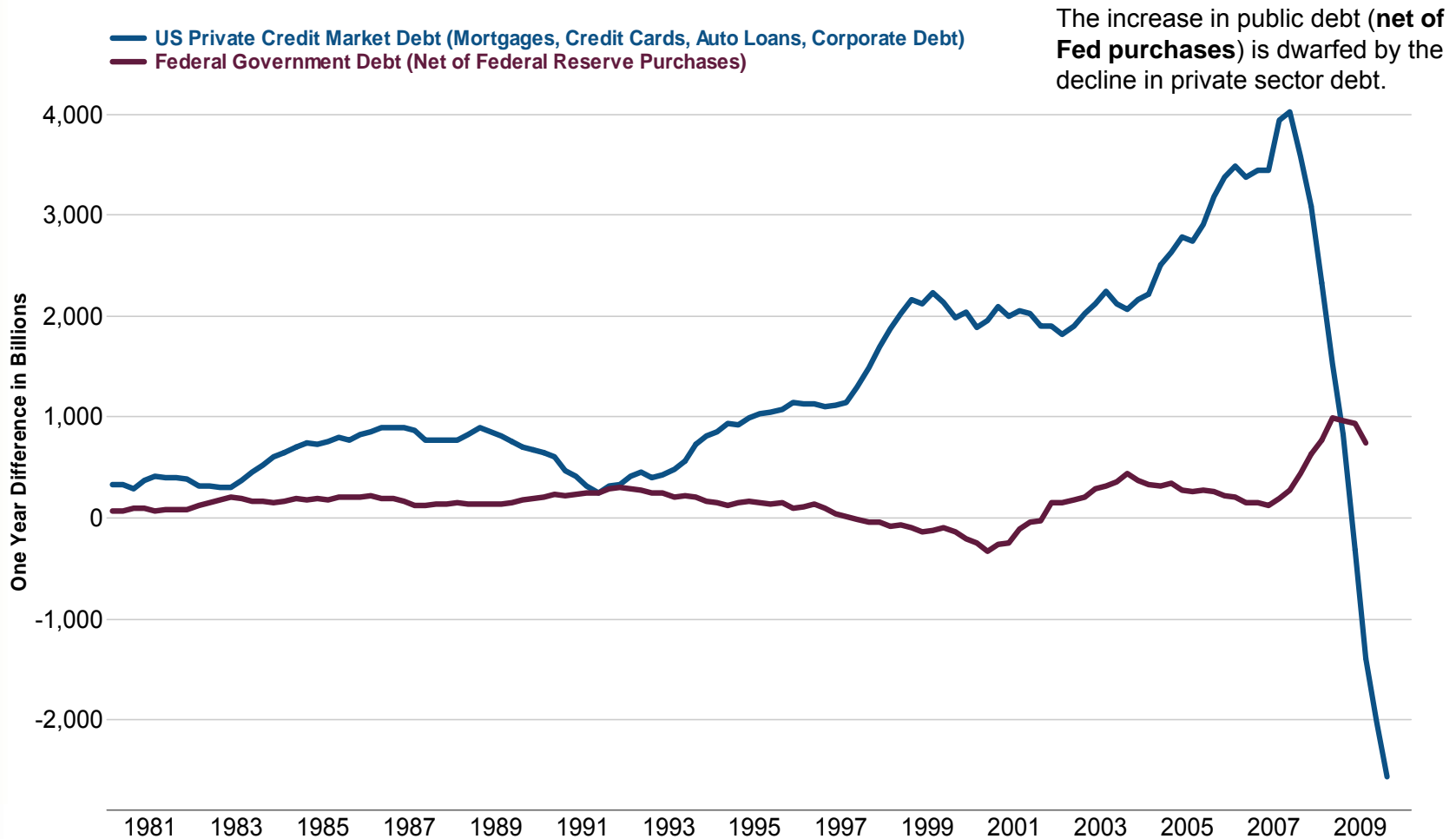
Young firms!



“It is hard to see how the Fed can do much to cure this [worker mismatch] problem. Monetary stimulus has provided conditions so that manufacturing plants want to hire new workers. **But the Fed does not have a means to transform construction workers into manufacturing workers.**”

-Narayan Kocherlakota, Minneapolis Fed President

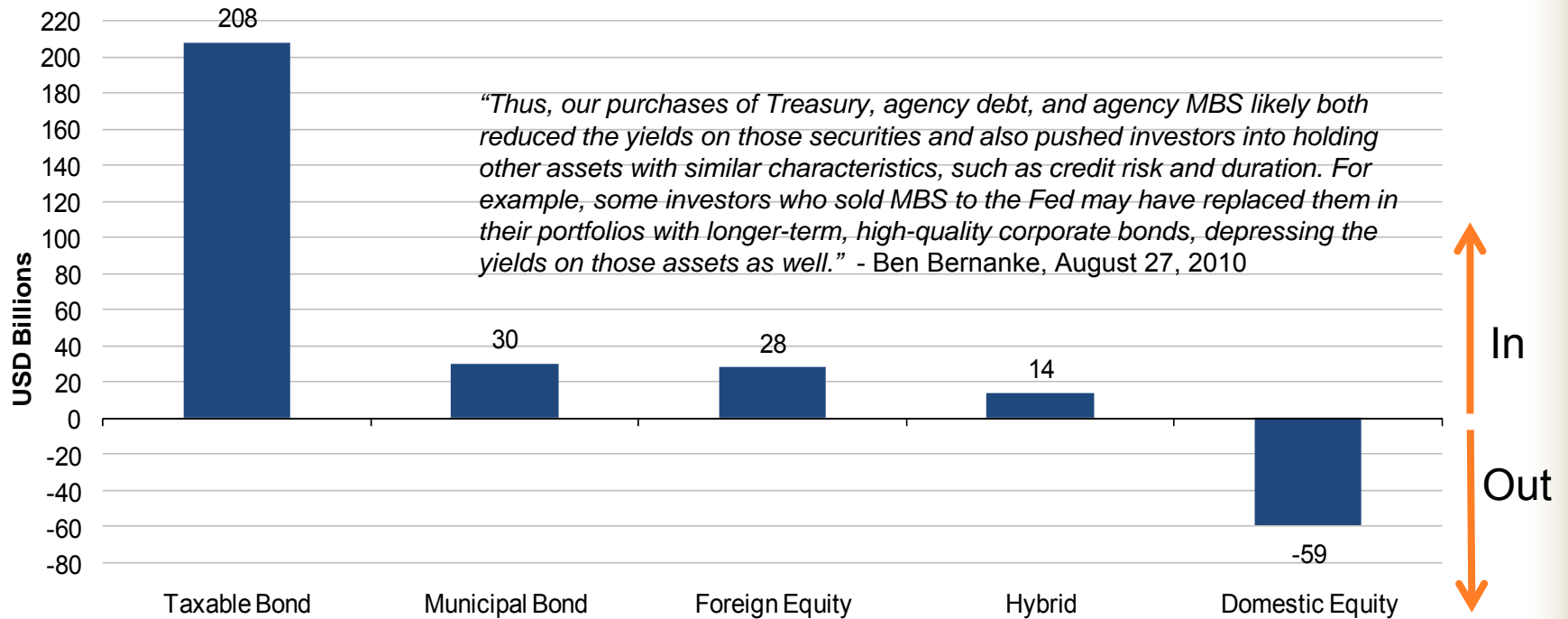
The Impact of QE on the Capital Markets: Reducing Total Debt Outstanding Exerts Downward Pressure on Interest Rates



Source: Federal Reserve

Meanwhile, Investor Demand for Bonds Has Surged

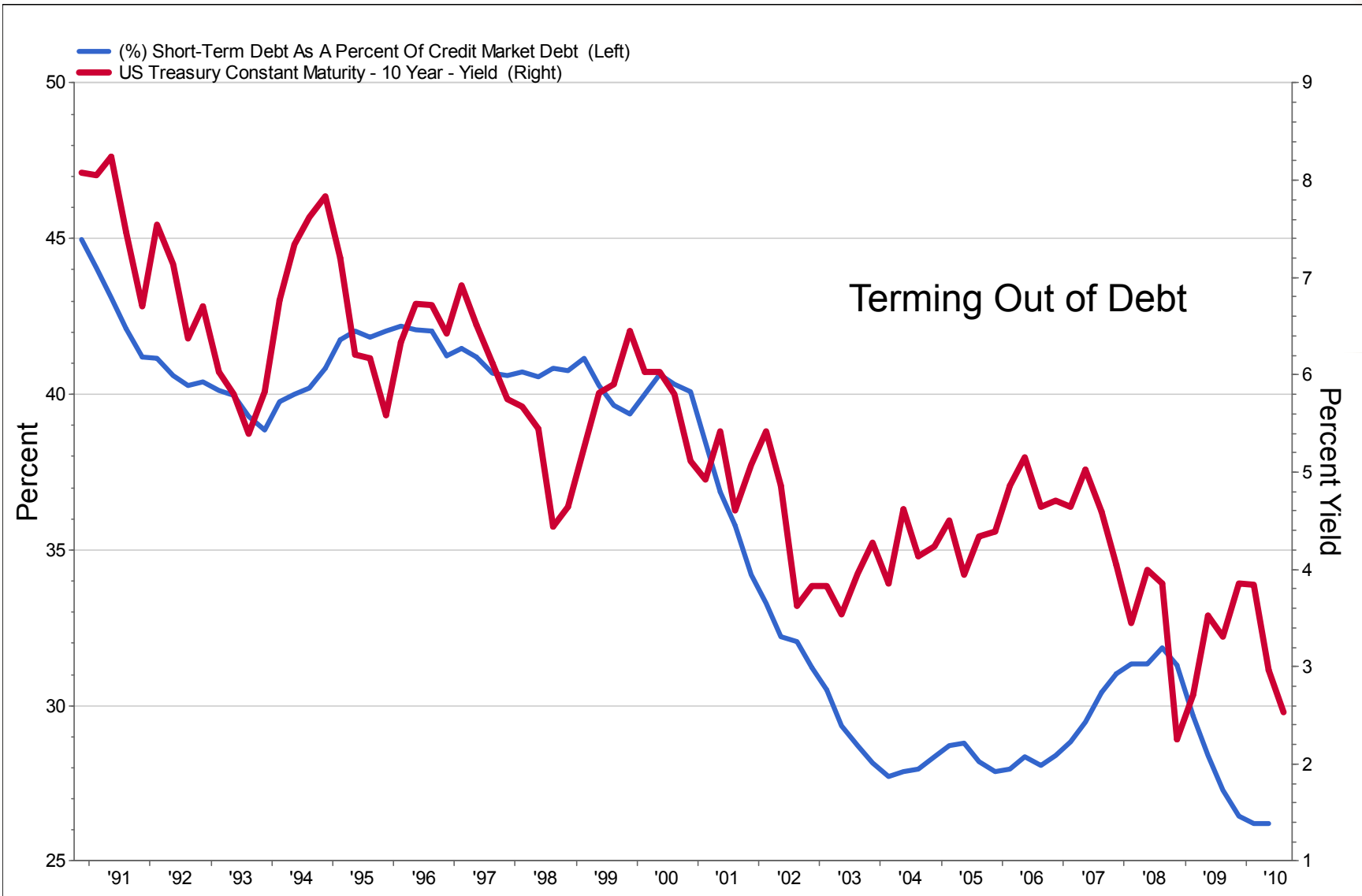
Year-to-Date Flows By Fund Type, USD Billions



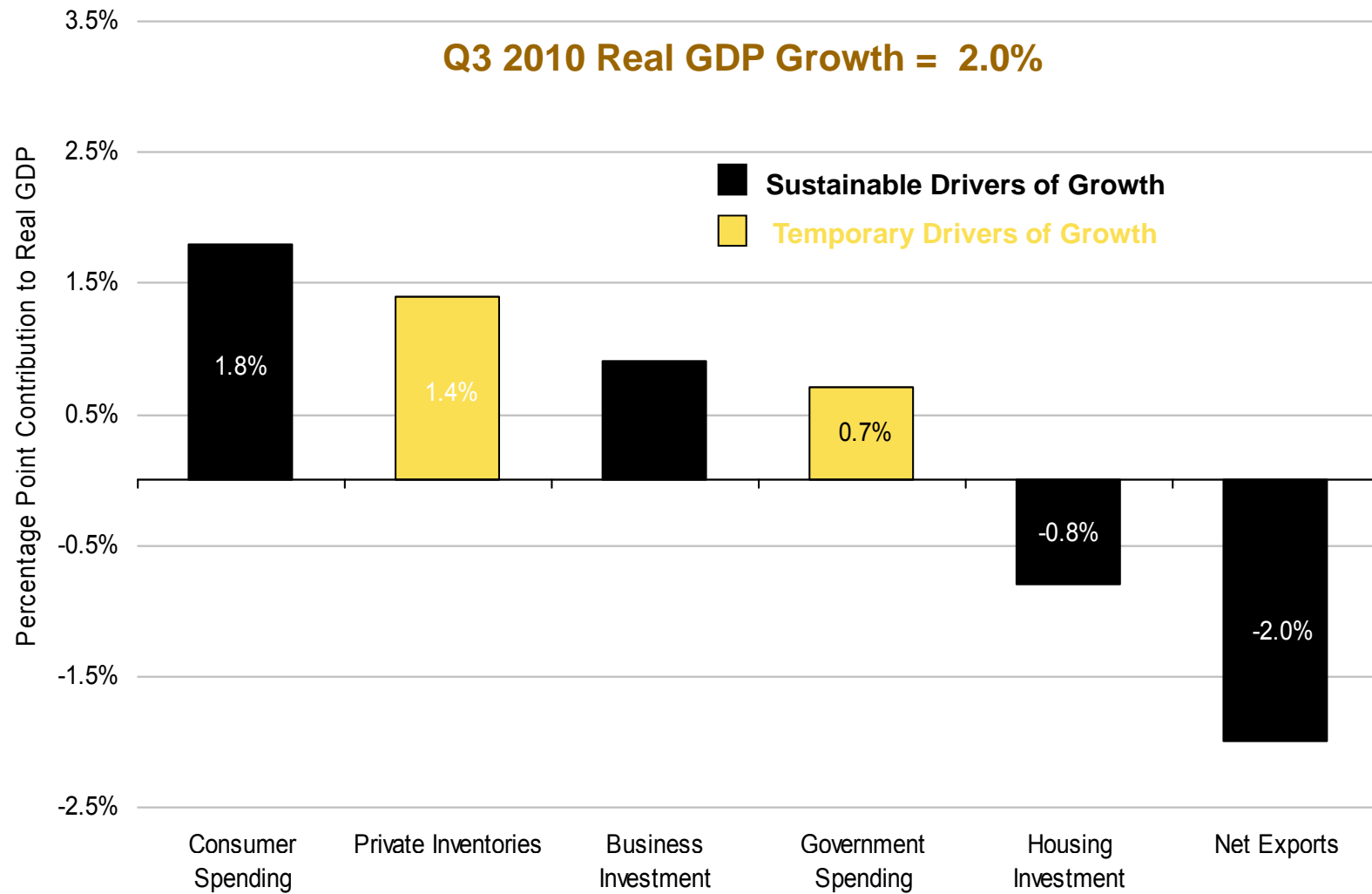
The Portfolio Balance Effect

Source: ICI

The Implication of Low Rates for Corporations

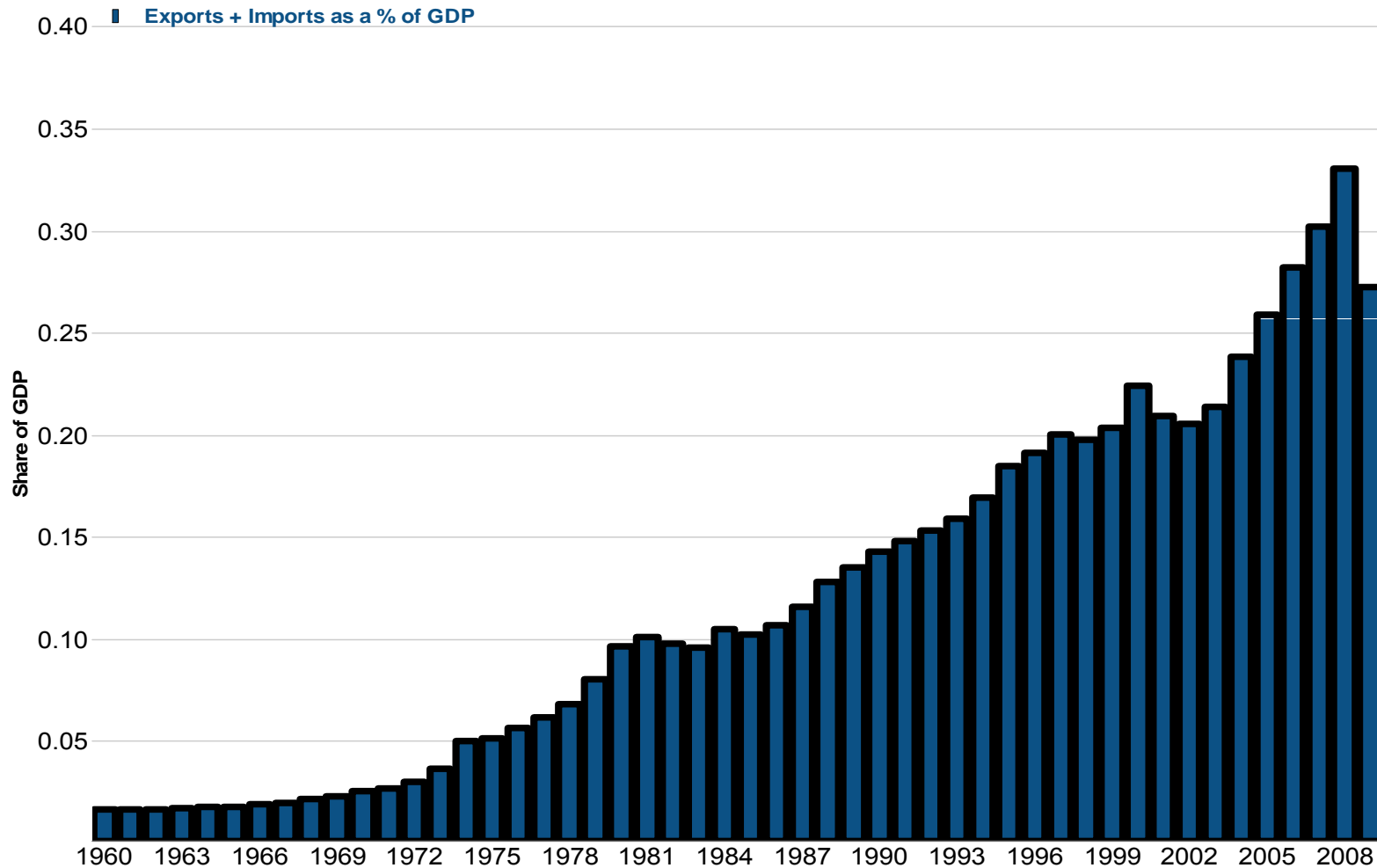


The Contributions to Growth By Major Sector



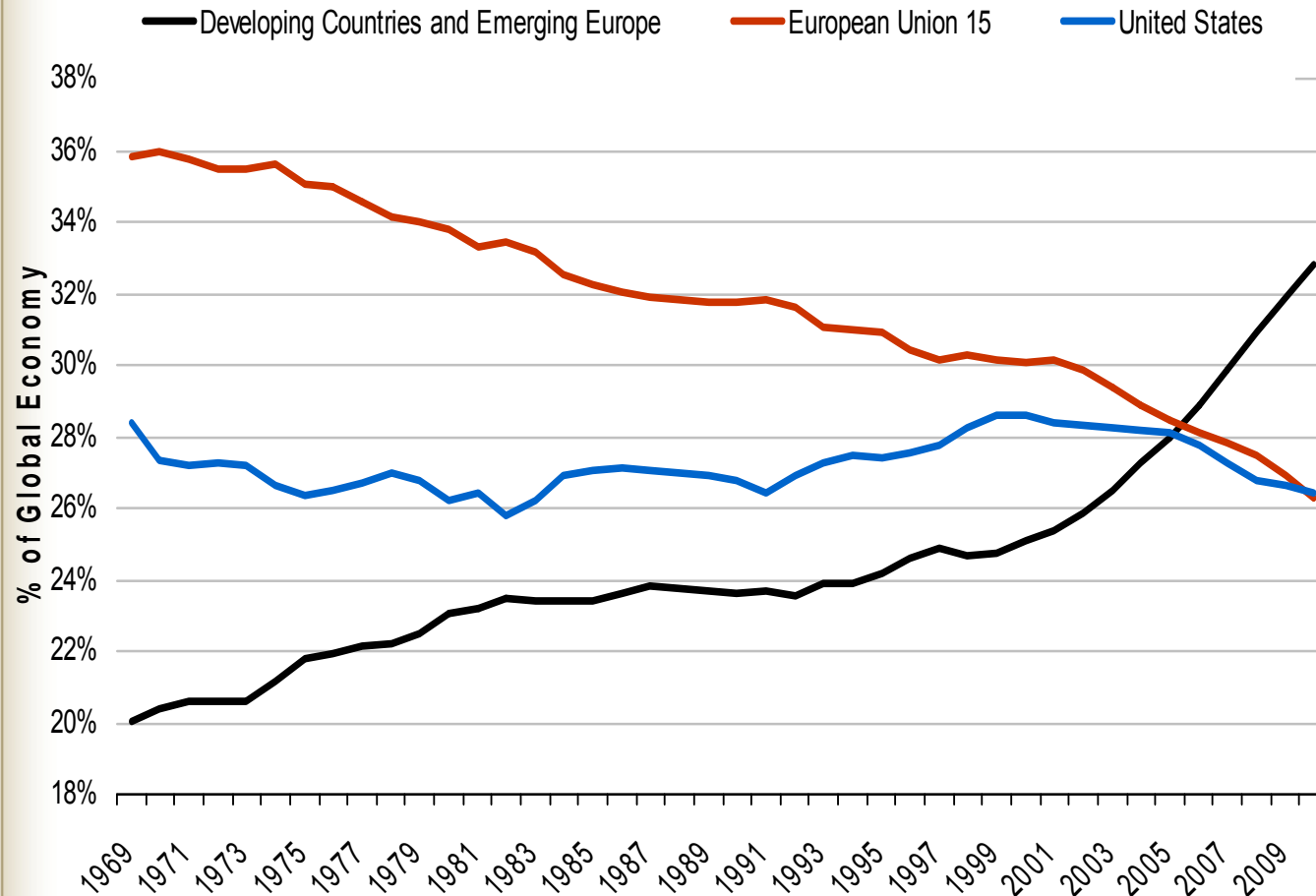
Source: The Commerce Department

Trade Is A Growing, Important Part of the Economy



Source: Census Bureau

Most of the World's Economic Activity Is Outside the US



“The world's economic centre of gravity is again shifting. With the integration of one-third of humanity into the global economy, **the world is rapidly becoming multi-polar.**”

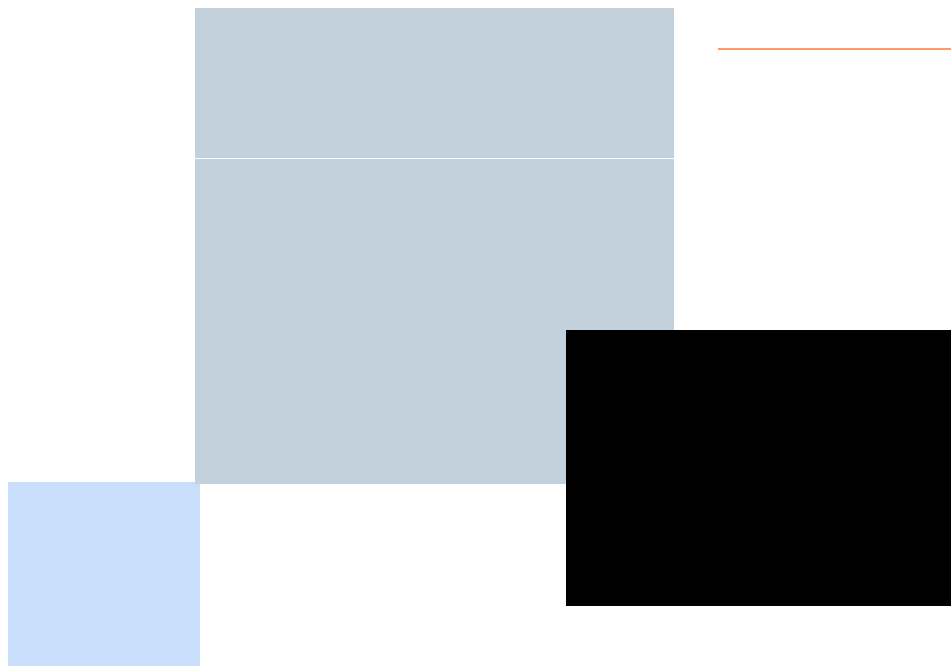
- Mark Carney, Bank of Canada Governor

Source: ERS International Macroeconomic Dataset
 Developing: Latin America, Asia less Japan, Middle East, Oceania, Africa, Eastern Europe, Russia

Updated through: June 2010

Average global life expectancy in 1800: 30 years

Average global life expectancy in 2010: 67 years



**The Output: GDP,
Employment,
Inflation, Interest
Rates**

The Output: GDP, Employment, Inflation, Interest Rates

"I can calculate the motions of heavenly bodies, but not the madness of people." – Sir Isaac Newton

	Actual		Forecast			
	2010				2011	
	Q1	Q2	Q3	Q4	Q1	Q2
Real GDP (quarter-to-quarter annualized percent change)	3.7	1.6	1.5	2.0	2.5	2.7
Unemployment Rate (percent)	9.7	9.7	9.6	9.5	9.5	9.5
Headline CPI Inflation (year-over-year percent change)	2.4	1.8	1.8	1.8	1.6	1.4
Core CPI Inflation (year-over-year percent change)	1.3	1.0	0.9	0.8	1.0	1.2
Federal Funds Rate (percent)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Year Treasury (percent)	1.05	0.60	0.42	0.30	0.25	0.25
10-Year Treasury	3.71	3.49	2.80	2.50	2.50	2.50

*Data represent quarterly averages

The Risks to the Forecast

"I can calculate the motions of heavenly bodies, but not the madness of people." – Sir Isaac Newton

State & Local Government Fiscal/Debt

Deflation

Fiscal/Regulatory Uncertainty

Housing Market Supply Overhang

International Currency War