

What Has – and Has Not - Been Learned about Monetary Policy in a Low Inflation Environment? A Review of the 2000s.

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Plan of Talk

- Assignment: Review/Assess Monetary Policy in 2000s
Not an "I Told You So" paper

- Inflation Targeting Consensus and Great Moderation
Yes But Also: Great Leveraging and Shadow Banking System

Pre ZLB: Interpret Fed via Forward Looking Taylor Rule
Was 2003-2005 a Fed Mistake? How important?

Post ZLB: Forward Guidance and LSAP

Is forward guidance enough? Can LSAP programs work?

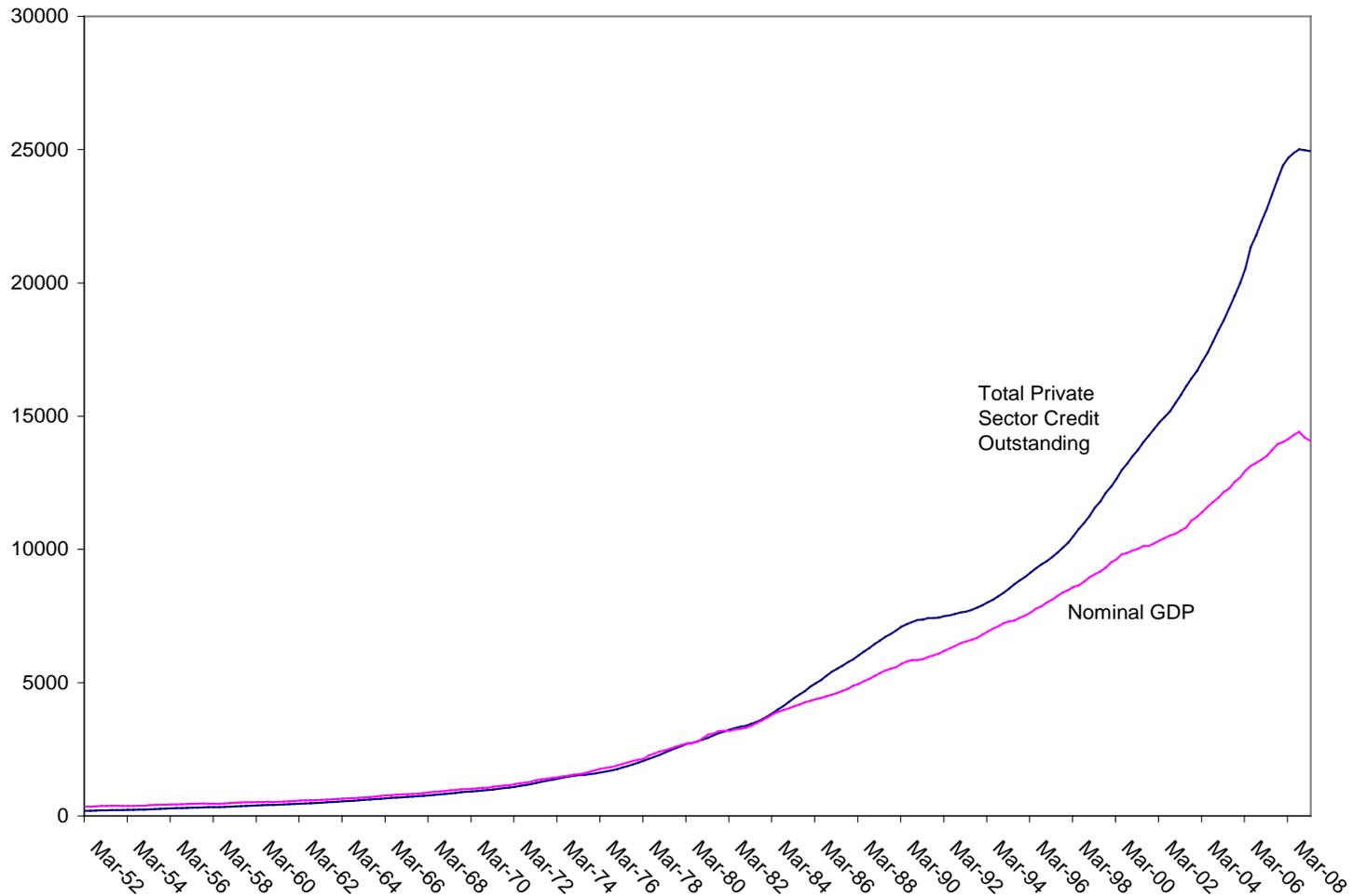
Lots of Questions

Not Enough Answers

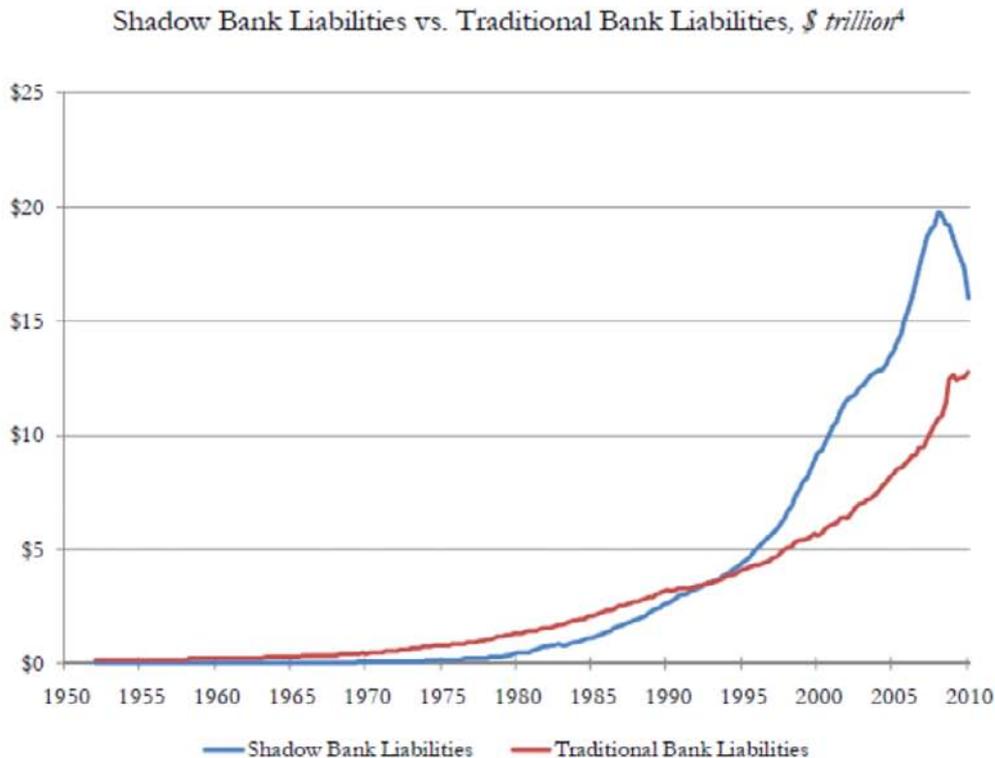
Pre Crisis Consensus (Bean (2010))

1. Discretionary fiscal policy was seen as generally an unreliable tool for macroeconomic stabilization.
2. Monetary policy, conducted via setting a path for the expected short term interest rate, was therefore to be assigned the primary role for macroeconomic stabilization.
3. Because the transmission mechanism for monetary policy was presumed to operate mainly through longer-term interest rates, expectations of future policy rates were central and credibility of policy was essential to anchor these expectations.
4. Central bank instrument – if not goal - independence of the political process was important to supporting central bank credibility.
5. Under flexible inflation targeting, monetary policy would be focused on anchoring expected inflation by keeping realized inflation at or close to target over an appropriate time horizon
6. The efficient markets paradigm was seen as a working approximation to the functioning of real world equity and especially credit markets. The growing role of securitization in credit markets, especially in the US, was seen as a stabilizing innovation that reduced systemic risk by distributing and dispersing credit risk away from bank balance sheets and toward a global pool of sophisticated investors.
7. Price stability and financial stability were seen as complementary and not in general at risk of conflict. Financial markets were presumed to be well regulated, sometimes – as in the case of the Fed with bank holding companies - by the very central banks that were conducted monetary policy. Other central banks, such as the Bank of England, made virtue of the fact that they were not involved in supervision and regulation of financial markets.

A Great Moderation Yes, but also A Great Leveraging

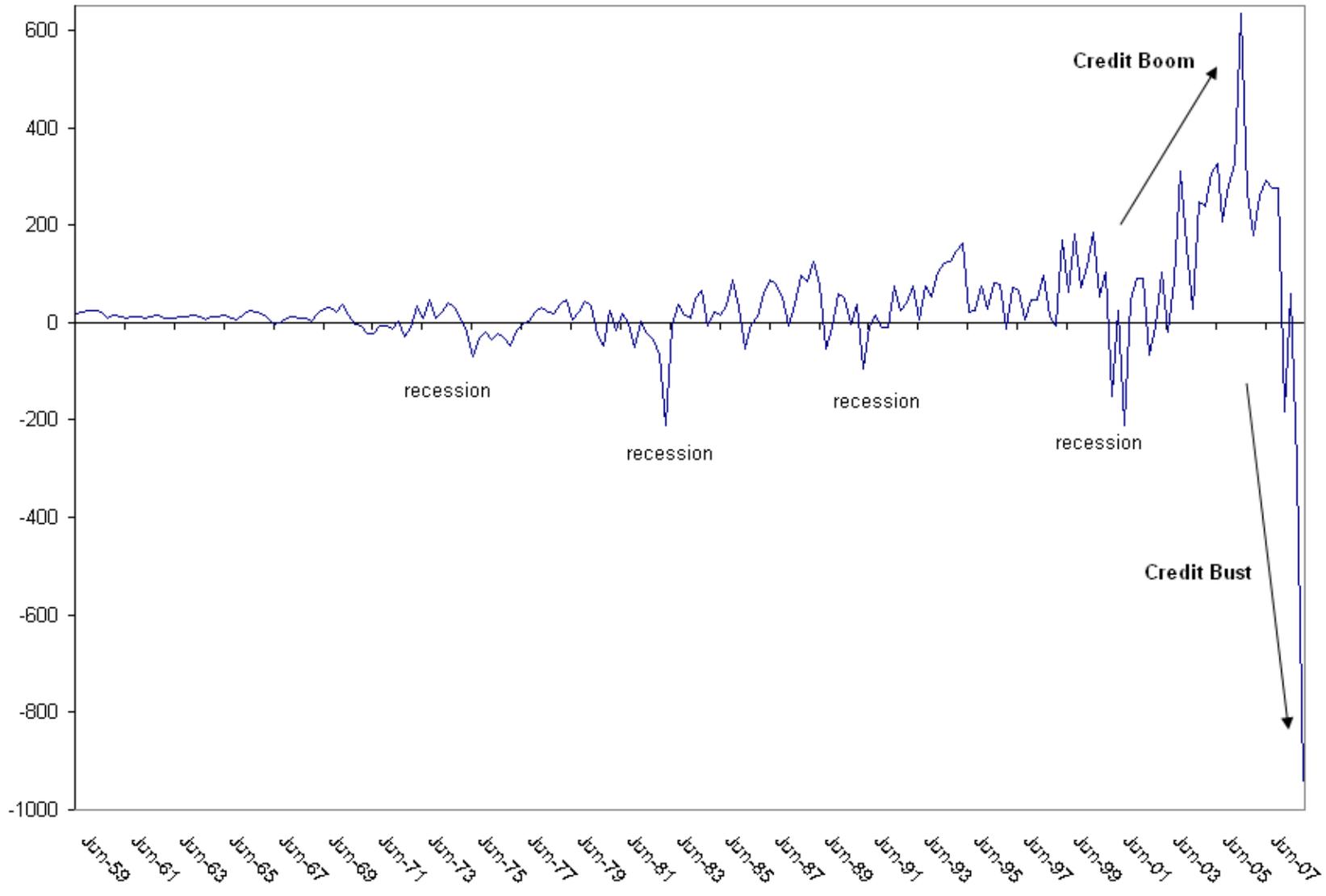


A Great Leveraging funded Through Shadow Banking System



Source: Flow of Funds Accounts of the United States as of 2010:Q1 (FRB) and FRBNY.

Residual from Regression of Change in Private Credit on Change in M2



“Shadow Banking” FRB New York Staff Report No. 458 , July 2010

The rapid growth of the market-based financial system changed the nature of financial intermediation in the United States profoundly, growing to rival the traditional banking system in the intermediation of credit.

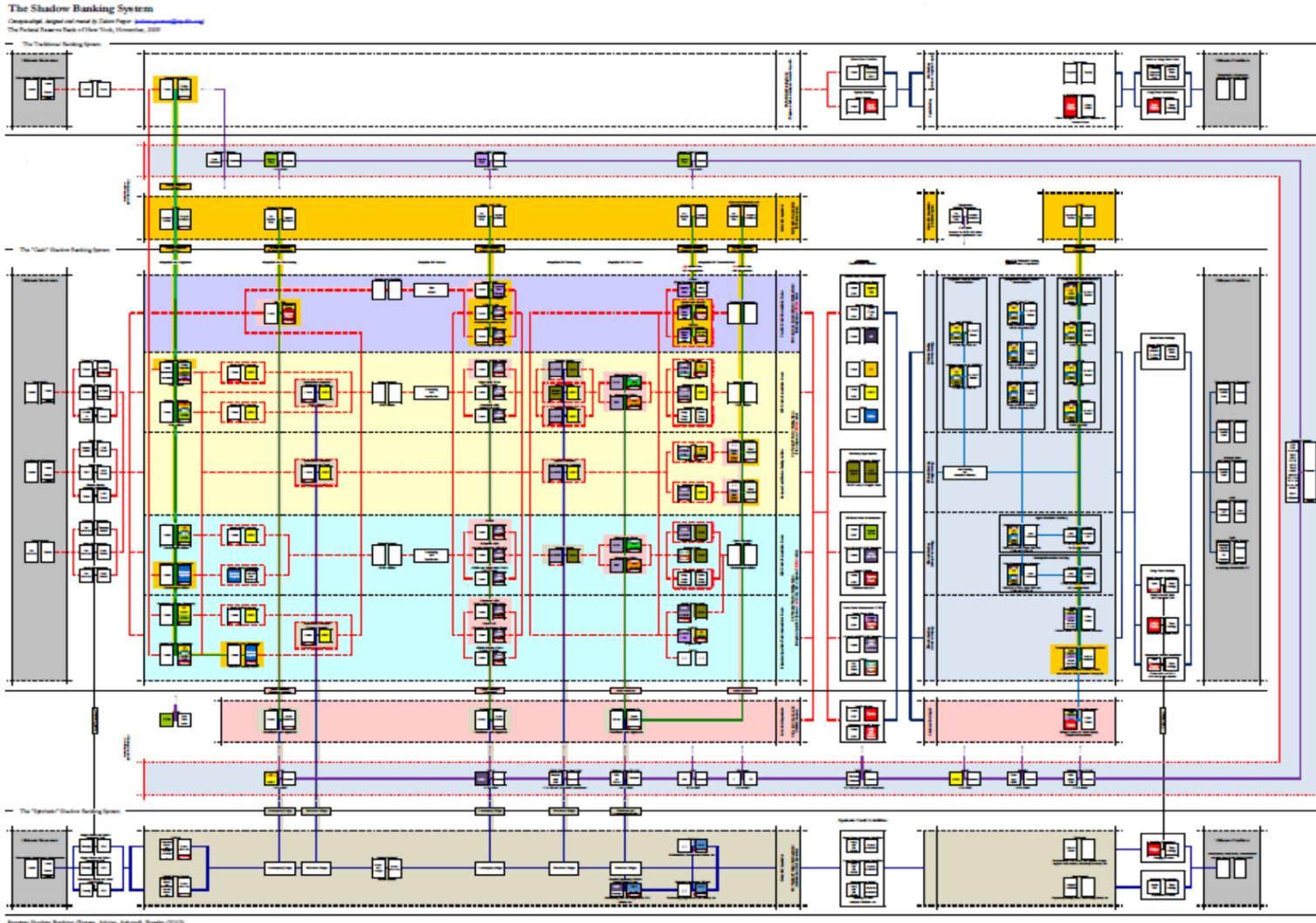
The shadow banking system provided sources of inexpensive funding for credit by converting opaque, risky, long-term assets into money-like and seemingly riskless short-term liabilities.

Maturity and credit transformation in the shadow banking system thus contributed significantly to asset bubbles in residential and commercial real estate markets prior to the financial crisis.

The shadow banking system became severely strained during the financial crisis because, like traditional banks, shadow banks conduct credit, maturity, and liquidity transformation, but unlike traditional financial intermediaries, they [lacked] access to public sources of liquidity, such as the Federal Reserve’s discount window

The liquidity facilities of the Federal Reserve and other government agencies’ guarantee schemes were a direct response to the liquidity and capital shortfalls of shadow banks and, effectively, provided either a backstop to credit intermediation by the shadow banking system or to traditional banks for the exposure to shadow banks.

Shadow Banking System Circa October 2006



Crisis was the Result of Market Failure and a Failure of Supervision and Regulation. Not Fundamentally a Failure of the Fed to Set the Correct Path for the Fed Funds Rate

With the benefit of hindsight , it seems clear that the financial crisis and the credit and securitization bubble that preceded it resulted from

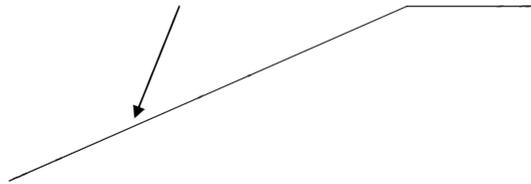
Spectacular failures in securities markets - to allocate capital and price default risk - but also

Serious failures also as well by policymakers to adequately understand, regulate, and supervise these markets.

Policymakers, academics, and market participants simply *didn't know what they didn't know*. They assumed that either it couldn't happen , or if it did, it would not be systemically unimportant.

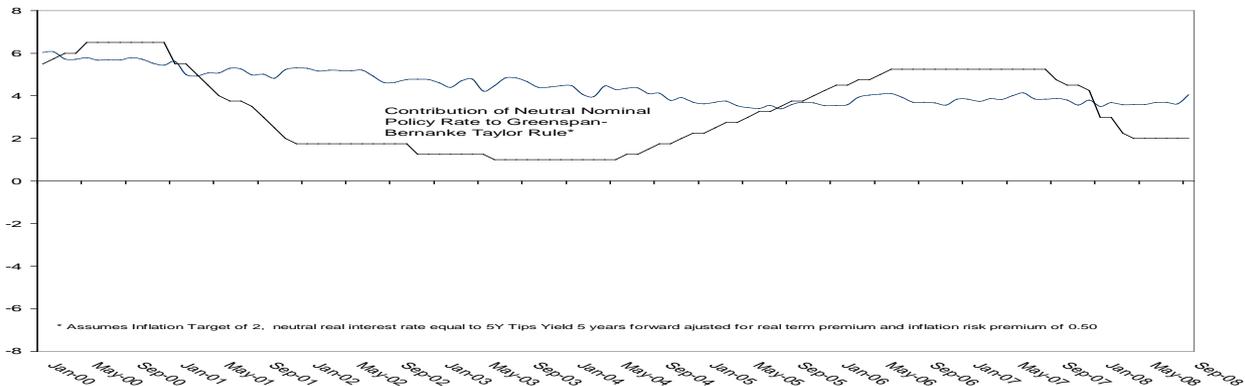
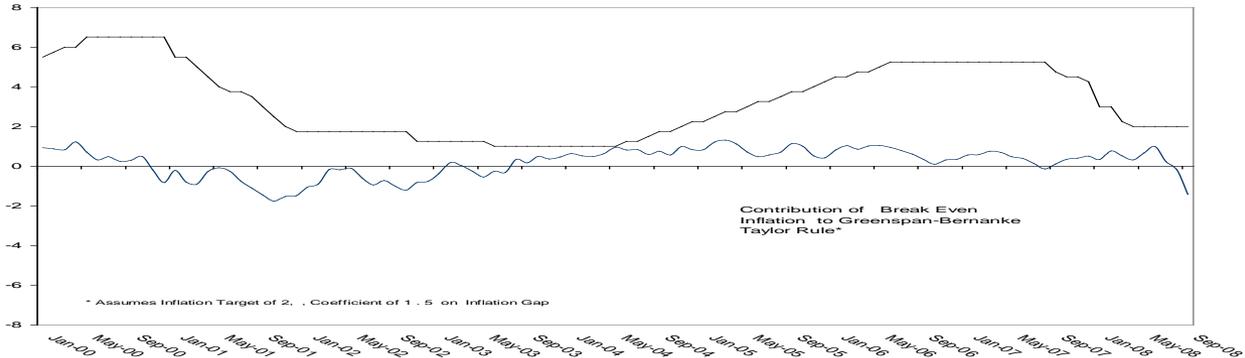
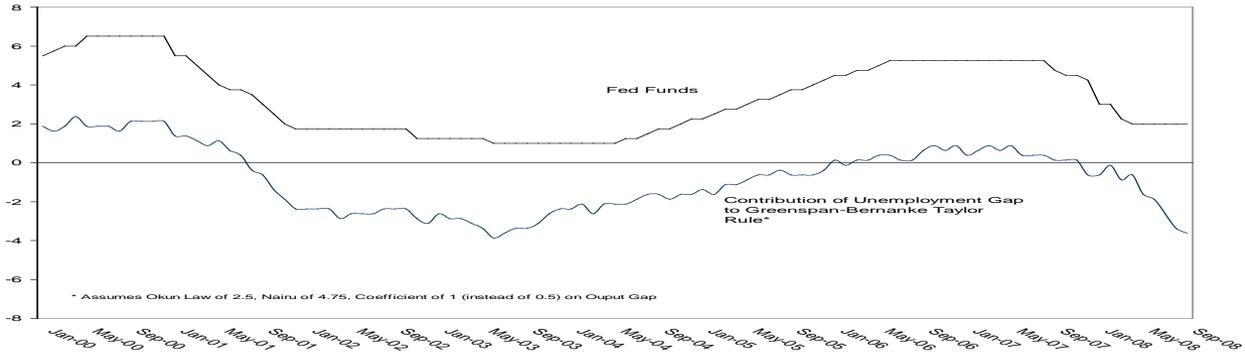
Interpreting Fed via Forward Looking Taylor Rule

$$r_t = \overline{r}_t + \pi^* + 1.5 E_t \{ \pi_{t+n} - \pi^* \} + 1 E_t \{ \tilde{y}_{t+m} \}$$



Fed Funds Decomposition

Correlation equal 0.92!



Interpreting Fed via Backward Looking Taylor Rule

$$r_t = 2 + 2 + 1.5\{\pi_t - 2\} + 1E_t\{\tilde{y}_{t+m}\}$$



Was 2003-2005 a Fed Mistake? How important?

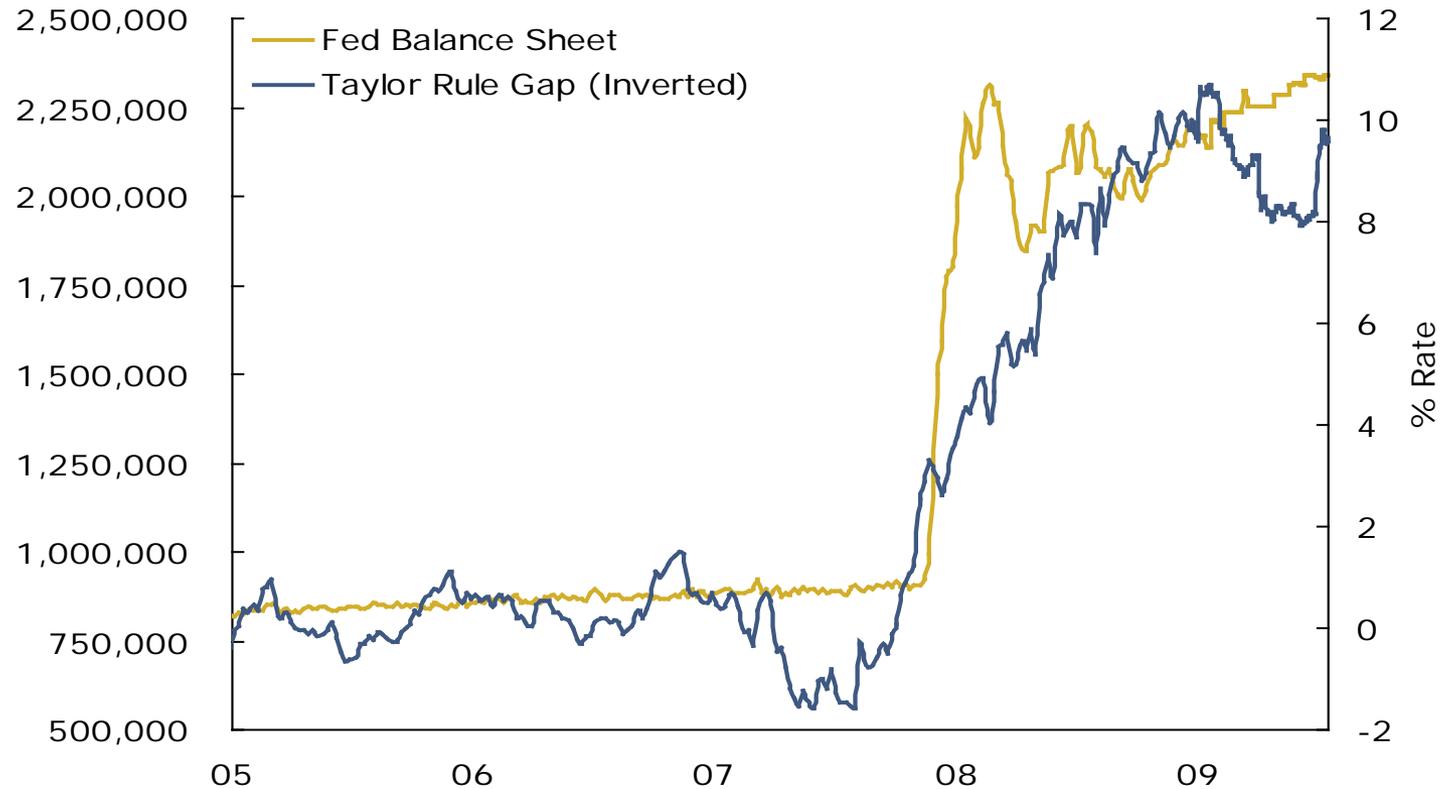
No doubt, the low short term interest rates that prevailed in 2003-2005 contributed, via the then - popular adjustable rate mortgages that many sub prime borrowers took on, at least to some extent to the housing bubble.

But in light of factors discussed above – the explosive growth in the shadow banking system and the excess of saving relative to domestic investment opportunities in many emerging markets that held down long term bond yields...

I doubt whether or not any plausible alternative path for the Federal Funds rate in 2003-2005, including that implied by John Taylor's original rule, would have prevented the credit bubble which extended to all corners of the securitization markets and the shadow banking system: credit cards, auto loans, students loans, home equity loans, 'leveraged' loans.

The Zero Lower Bound and Quantitative Easing

Taylor Rule Gap and The Fed's Balance Sheet



Policy Options at the Zero Lower Bound

Forward Guidance

In the context of the benchmark DSGE models not only can forward guidance be effective in stabilizing the economy in the face of a contractionary demand shocks, the literature actually leaves little if any scope for any further improvements in stabilization performance via quantitative easing.

Quantitative Easing and Credit Easing (LSAP)

A central bank can everywhere and always put a floor on any nominal asset price (or set of nominal asset prices) for as long as it wants regardless of 1) how 'credible' it's commitment is 2) how expectations are formed or 3) how term or default premia are determined.

But Forward Guidance is NOT Enough

Although under certain conditions forward guidance alone can be sufficient to prevent an economy from falling into deflation and a liquidity trap, these conditions are unlikely to prevail in practice.

Simply put, forward guidance *is not time consistent* : once the economy is lucky enough to emerge from disinflation and recession, the central bank will have every incentive to renege on its prior promises (perhaps by a predecessor) and instead, to prevent inflation from rising above target as it (or its predecessor) previously promised.

The advocates of forward guidance acknowledge this problem, but their theoretical models just assume it away.

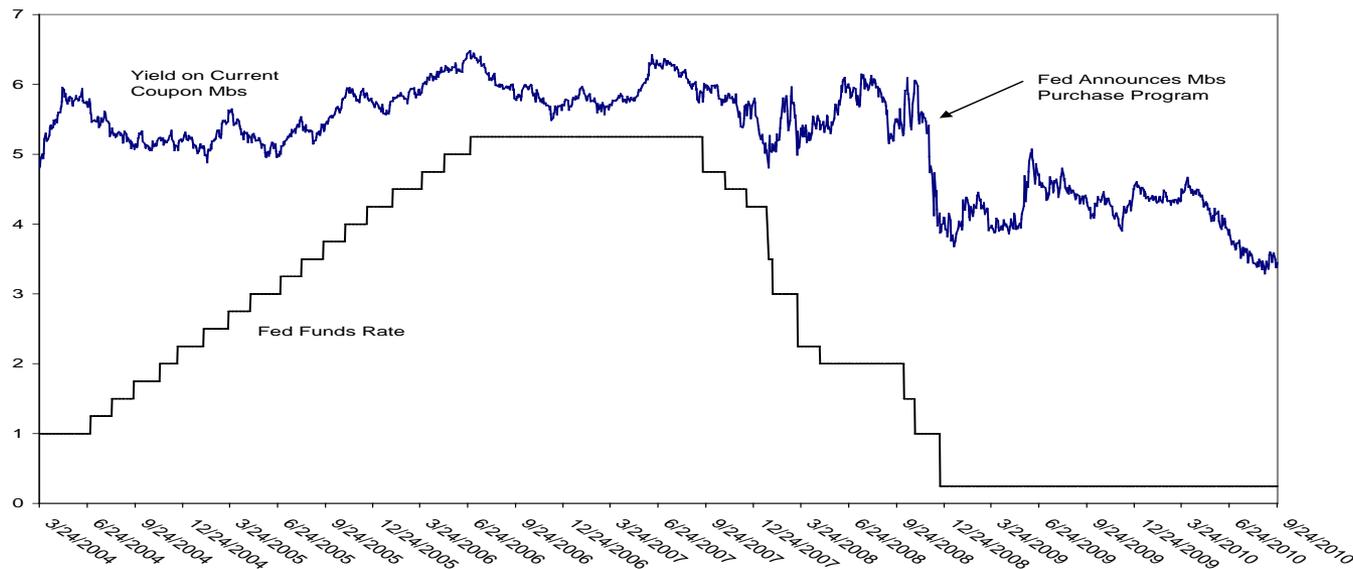
Although forward guidance is sometimes called a ‘just do it’ strategy, the problem is that, absent a commitment technology, public and the markets know it won’t get done!

Impact of LSAP Programs

Gagnon et. al. (2010) estimate Fed's LSAP programs has been successful in reducing the term premium somewhere between 30 and 100 basis points.

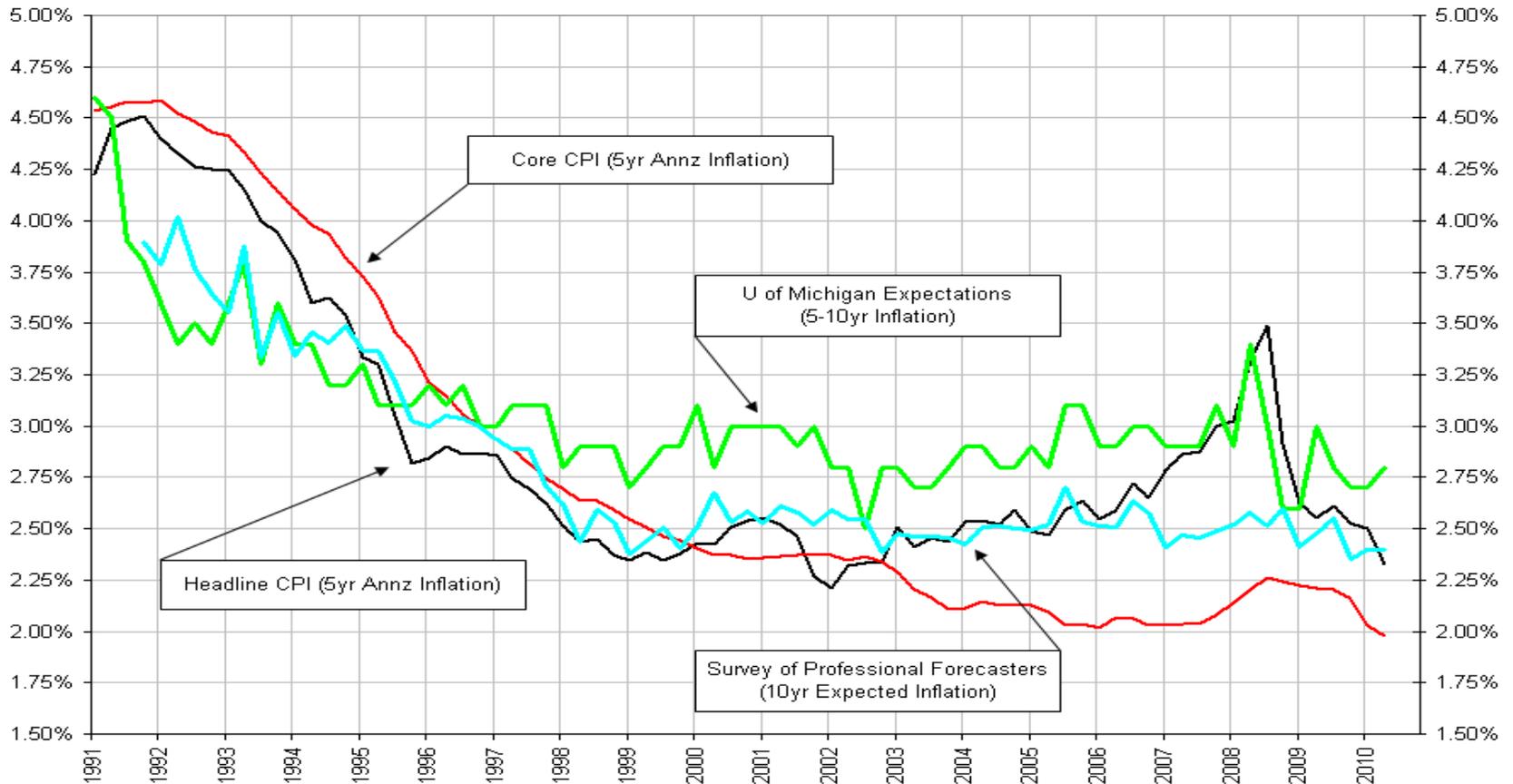
To me, these results make sense and appear , if anything, to understate the impact these programs had on Mbs yields.

The program was seen by many market participants as implicitly targeting a ceiling on mortgage rates, specifically the 'par' coupon that applies to recently issued mortgages. As can be seen, those who had that expectation were not disappointed.



Some Answers, But Not Enough of Them!

Inflation Expectations are Stable (so far)



But Do We Know that Inflation Expectations are
Well Anchored?

NO!

All we know is that measures of inflation expectations are adjusting sluggishly to a serious recession and a material decline in core inflation.

According to the ‘optimistic’ view, expectations of inflation are largely if not entirely forward looking. Thus the fact that expected inflation has adjusted only modestly lower during this cycle is the result of the Fed’s credibility in being able to promise that inflation in future years will return to 2 percent or above even though at present it falls well short of that goal.

According to the ‘nervous’ view, expectations of inflation appear to have a significant inertial component (Furher – Moore (1995), Mankiw – Reiss (2002)). Thus, the fact that expected inflation has *thus far* adjusted only modestly lower during this cycle may be the result not of Fed credibility to generate inflation *in the future* but rather instead may be result of the fact that the Fed *in the past has delivered 2 percent inflation*.

Under this view, if inflation were to fall much below current levels, and certainly were it to turn and stay negative for some time, expectations of dis-inflation or even deflation could become entrenched as they did in Japan and be very difficult, given inflation inertia to reverse.

Because I judge the Fed to be sufficiently ‘nervous’ about the cost of this low probability outcome, I am cautiously optimistic the US will avoid it. But it is a closer call than I would have imagined several years ago.

Monetary Policy: Lean or Clean?

Although the attention for much of the pre crisis discussion was on appropriate the role that information that *asset prices* should play in informing monetary policy, the recent research emphasizes that it is really *leverage* and the adequacy of capital at banks *as well as shadow banks* that central banks should and likely will be focusing on going forward.

Mechanically appending credit supply variables to a Taylor rule is not likely to produce a robustly better policy in the face of a wide range of shocks. There is no substitute for understanding the source and persistence of shocks hitting the economy as well as the way in the financial institutions - including the shadow banks that survive - intermediate credit, allocate or mis-allocate risk and accumulate explicit or implicit put options against systemically important institutions and/or the Fed or Treasury.

It was not the failure *to include* rudimentary financial frictions in DSGE models that was the problem with the pre - crisis consensus for the *conduct of* inflation targeting *monetary policy* ,

Rather it was instead the failure *to understand* the systemic implications of the financial frictions presented by the shadow banking system that was the problem with the pre – crisis consensus for the *supervision and regulation* of financial markets by the Fed , yes, but also by the SEC, FDIC, Comptroller of the Currency, FHFA.

It Depends on the Shock!

Kannan, P., A. Scott, P. Rabanal (2009), "Monetary and Macroprudential Policy Rules in a Model with House Price Booms," IMF Working Paper (Washington: International Monetary Fund) No. 251.

Parameters and Performance of Policy Regimes in Reaction to Financial Shocks

	Weights under Each Regime				
	Lagged interest rates in monetary policy rule	Inflation in monetary policy rule	Output gap in monetary policy rule	Nominal credit in monetary policy rule	Nominal credit in macroprudential rule
Taylor	0.7	1.5	0.5
Augmented Taylor	0.7	1.5	0.5	0.5	...
Augmented Taylor + macroprudential	0.7	1.5	0.5	0.5	0.5
Optimized augmented Taylor + macroprudential	0.0	13.2	3.2	0.0	0.8

	Performance			
	Standard deviation of inflation	Standard deviation of output gap	Loss ¹	Ranking
Taylor	0.512	0.624	0.652	4
Augmented Taylor	0.110	0.076	0.018	3
Augmented Taylor + macroprudential	0.092	0.061	0.012	2
Optimized augmented Taylor + macroprudential	0.018	0.040	0.002	1

Source: IMF staff calculations.

¹Loss equals the sum of the variances of output gap and consumer price index inflation.

Parameters and Performance of Policy Regimes in Reaction to Productivity Shocks

	Weights under Each Regime				
	Lagged interest rates in monetary policy rule	Inflation in monetary policy rule	Output gap in monetary policy rule	Nominal credit in monetary policy rule	Nominal credit in macroprudential rule
Taylor	0.7	1.5	0.5
Augmented Taylor	0.7	1.5	0.5	0.5	...
Augmented Taylor + macroprudential	0.7	1.5	0.5	0.5	0.5
Optimized augmented Taylor + macroprudential	0.0	3.5	12	0.3	0.0

	Performance			
	Standard deviation of inflation	Standard deviation of output gap	Loss ¹	Ranking
Taylor	0.199	0.162	0.066	2
Augmented Taylor	0.184	0.220	0.082	3
Augmented Taylor + macroprudential	0.233	0.276	0.130	4
Optimized augmented Taylor + macroprudential	0.072	0.080	0.011	1

Source: IMF staff calculations.

¹Loss equals the sum of the variances of output gap and consumer price index inflation.

Do we have sufficient confidence in our alternative monetary policy tools to stabilize the economy at the zero lower bound?

Central banks have at least two powerful – and complementary – tools to reflate a depressed economy:

Printing money

Supporting the nominal price of public and private debt

Forward guidance, to the extent this means making a time inconsistent promise to target the price level, is NOT in my judgment a reliable tool.

A determined central bank can deploy both tools for as long as it wants regardless of

How 'credible' it's commitment is

How expectations are formed

How term or default premia are determined.

Are These Tools Enough?

Can these tools, aggressively deployed, eventually generate sufficient expectations of inflation so that they lower real interest rates?

Forward looking models generally predict that the answer is yes. However, given the prominent role that inflation expectations play in inflation dynamics, inflation inertia is the enemy of reflation once deflation set in.

Is the monetary transmission mechanism impaired?. In a neoclassical world that abstracts from financial frictions, a sufficiently low , potentially negative real interest rate can trigger a large enough inter - temporal shift in consumption and investment to close even large output gap.

But in a world where financial intermediation is essential, an impairment in intermediation – a credit crunch – can dilute or even negate the impact of real interest rates on aggregate demand.

De - leveraging and the collapse of bank lending represent a significant headwind that presents a challenge to policy effectiveness.