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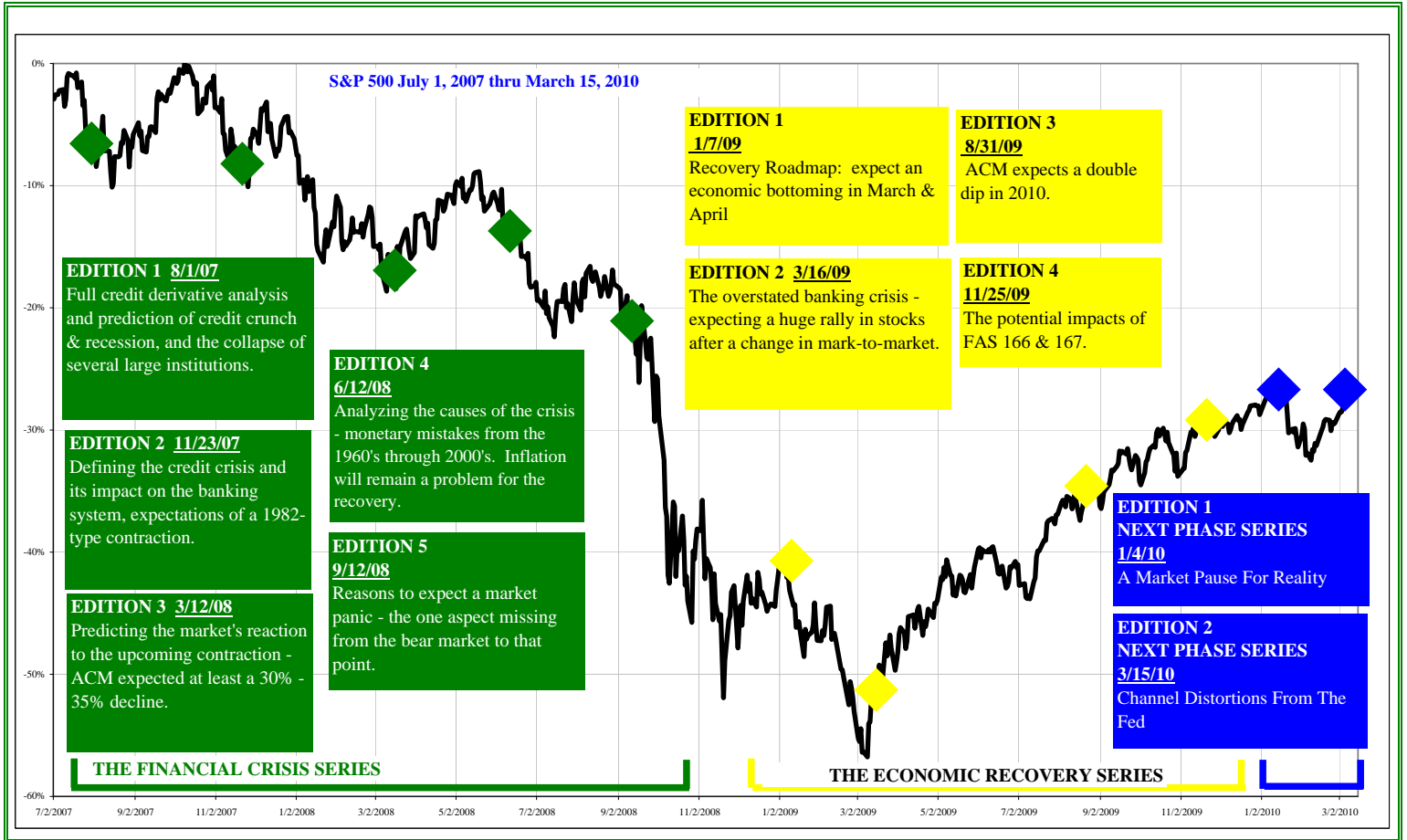
CHANNEL DISTORTIONS FROM THE FED

The Chapter On Liquidity Traps Was Left Out Of The Textbook

SPECIAL INVESTMENT RESEARCH REPORT
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REPORT SUMMARY

The Federal Reserve's policy plans since the crisis have been twofold. Step 1 – Reflate the leverage markets to buy time to introduce Step 2 – Deleverage the financial system in a managed, orderly fashion.

We see complications to these processes:

1. The Federal Reserve's history of mismanagement and denial. Not only is the Fed complicit in the asset bubbles, it denies it had any role in them. If it cannot learn from its mistakes, it will certainly repeat them. Most of the monetary mistakes were created by a religious adherence to textbook modeling. Instead of fine-tuning the models, or scrapping them for more real world methods, the Fed has been pushing material that demonstrates it has not learned its lessons. It will continue to use the same methods in managing monetary policy in Step 2 that were complicit in building the crisis.

Fed Publications and Pronouncements we cite in this Report:

- ❖ “Monetary Policy and the Housing Bubble”, December 2009. Fed study that tries to show that low interest rates *did not* contribute significantly to the housing bubble. The devotion to textbook models is on full display.
 - ❖ “Is a New Asset Bubble Emerging in Certain Markets”, February 2010, Federal Reserve Bank of Richmond. An article in their Economic Brief that “suggests” the rapid price increases in emerging markets and commodities are for fundamental, “new equilibrium” reasons, and are not a new bubble based on cheap leverage.
 - ❖ The 2003 Fed rule change to Regulation A. The rule modification changed the discount window framework over the many reasonable (and, as it turns out, prescient) objections from financial institutions.
 - ❖ Prepared remarks by Fed Chairman Ben Bernanke to the House on February 10, 2010. Mr. Bernanke talks about how low rates stimulate the economy.
 - ❖ April 2009 speech by William Dudley, President and CEO of the New York Fed. He reiterates the low rate paradigm of Mr. Bernanke, and tries to explain why the rapid increase in the Fed balance sheet is benign.
 - ❖ “Why Are Banks Holding So Many Excess Reserves?”, Staff Report of the New York Fed from July 2009. This shows that the amount of excess reserves in the banking system is simply a reflection of the size of the Fed's policy initiatives and nothing more.
 - ❖ “Special Repo Rates: An Introduction”, A study of convergence trades in the repo market by the Atlanta Fed. The study links hedging demand (shorting US Treasuries) to demand for US Treasuries at auction. This is very relevant as the Fed attempts Step 2.
 - ❖ A March 2010 speech by Brian Sack, Executive VP of the Fed. He speaks about the policy exit that will be “using tools” that will have to be “implemented on a scale that the Fed has never tried before” and “operating in a framework of interest on reserves that has not been fully tested in U.S. markets.” Step 2 is a huge exercise in classroom, textbook experimentation.
2. The process of reflating the leverage markets in Step 1 has created distortions that are still present and will complicate Step 2.
 - ❖ The managed deleveraging process in Step 2 will include reducing both supply and demand for leverage. FAS 166 & 167 and the new restrictions on money market funds will reduce the supply of leverage. The Fed's massive purchases of MBS reduced the demand, but there are signs of imbalances and distortions.
 - ❖ Full financial function has not been restored. Evidence: Commercial paper is still far from its peak, and more importantly, swap spreads still indicate stress. The 30-year swap spread

has been persistently negative since the crisis, something that was thought *impossible*. The implications are that many traders still lack leverage funding.

- ❖ There is still a lack of risk capital available as a liquidity cushion, despite the massive excess reserves.
- ❖ “In the first phase of the grand experiment, central banks worldwide reflat leveraged. But the crisis changed the market for leverage, putting liquidity ahead of credit risk. So liquid assets (equities, treasuries, agencies and foreign sovereigns) have been favored over the old illiquid securities (mortgage securities).” The vacuum that is being filled by the liquid asset classes is the source for the dollar carry trade and rising correlations across liquid classes (including stocks).

3. The distortions created by Step 1 have had collateral impacts.

- ❖ The contraction in consumer and business credit is due to the new priorities of the leverage market, namely liquidity. Low interest spreads for risky assets have combined with the liquidity preference to favor the US Treasury and mortgage agencies as the only profitable lending.
- ❖ Worries over the Fed and its balance sheet combine with fiscal recklessness to produce huge short positions in US Treasuries. These shorts (as the Atlanta Fed study above showed) increase demand for treasuries at auction. The high demand, in turn, keeps rates in the wider market subdued.
- ❖ By continuing its policies, the Fed has destroyed the dual-leverage (cost and regulatory) that makes real economic lending profitable, so changing its rate policy will not lead to new lending. A change in rate policy may disrupt treasury demand, meaning volatility in interest rates.
- ❖ *Low rates are supposed to stimulate the economy, but, because the Fed models lack the ability to see channels, the low rates conspire against the economy by suppressing credit. The liquidity is instead channeled to asset prices that fit the new risk/reward calculus of the new leveraged system, the very system the Fed unintentionally created. This flies in the face of the central pillar of monetary policy and should be a sign that monetary policy is badly misaligned.*

“Volatility cannot stay low forever. With so many hard choices ahead, it will be impossible to engineer a low volatility tightening. The negative consequences are easy to imagine since they are not that far in the past. This does not necessarily mean another panicky funding crisis. The current economic state is not what “extend and pretend” had hoped for, but as the market reasserts itself the extenders will have less leverage over the final outcome.

No matter how much liquidity the Fed adds or takes away, the result may be the same. In the parlance of classical economics and somewhat contrary to its first use, market *volatility* has become almost perfectly elastic.”

The classical definition of a “liquidity trap” was a market condition where interest rates were fully inelastic with regard to additional monetary stimulus. Under these conditions, additional injections of cash into the money markets would not raise or lower interest rates.

The concept of the liquidity trap morphed to its current usage, usually associated with the Japanese experience of the “lost decade”. This iteration translates to a decided lack of economic progress or improvement despite large fiscal and monetary accommodation.

We agree that the newest version of the term is an accurate description of the current US economic conundrum (trillions in “stimulative” monetary and fiscal dollars with no definable improvement). For forward-looking investors, the only real debate surrounds the exit of those strategies, or the extension of them indefinitely.

Conventional debate on this topic centers on market and economic reaction to the differences between those two distinct policy positions. What we propose in this report, is a third definition of the liquidity trap that is defined as market and economic reaction that is the same regardless of either policy position (or any policy position for that matter). In this liquidity trap version, the markets will react the same way regardless of what the Federal Reserve does in the immediate term.

The reason for this view is based upon our understanding of the recent history (which is shared by many market participants) of monetary policy and its flaws. In our view, the Fed, through quantitative easing (QE), has simply substituted one unstable, leveraged system for another.

Monetary policy, at its textbook core, is predicated on the demand for money or credit. To stimulate economic activity, interest rates are reduced so that consumers and businesses are able to increase borrowing, which (automatically in the textbook view) produces economic transactions. The validity of this belief rests on decades of history. But, as we detailed in August 2009, there was a distinct change in marginal economic factors that mitigated this demand for credit calculus.

As such, the Fed’s textbook has not caught up to the current reality by not considering channels of monetary activity. Nor does the Fed consider that its central focus on the demand for money may



be entirely invalidated. The interaction of those two fundamental factors is driving our new liquidity trap definition. The latter speaks to both previous versions of the liquidity trap – that no matter how cheap credit is, channels are important for the transmission into desired effect, and, if sufficiently distorted, can decouple economic activity from the supply of money.

Credit market conditions bear this out. Interest rates across the board are at historic lows, yet consumer and business credit persistently declines, reducing the viability of the recovery (which is picked up in the real economy as a reluctance of business to increase spending and hiring). But those trillions of dollars did do something.

There is a growing volume of literature and speeches that show the Fed's unwillingness to depart from its textbook understanding of monetary policy. These efforts deny any causal link between monetary policy and *any* undesired effects. Under these assumptions, monetary policy *only* produces desired outcomes.

And therein lies the trap. If the Fed is serious in its academic exercises to deny any causal relationship between monetary policy and the vast undesired effects of the last decade (asset bubble collapses) then it will certainly have a blind spot to any new asset bubble formations. Even if the Fed becomes aware of a new bubble, it denies any power to stop it.

As we will detail in this report, the current monetary, financial and shadow financial systems increasingly resemble Summer 2008. While the Fed carries out its academic response to the crisis of that autumn, it does so unaware or self-neutered to the unintended consequence of the first definition of the liquidity trap – that cheaper credit does not always flow as the textbooks say. Instead, that cheap credit is channeled to other uses that conspire against the textbook, intended outcome.



Part 1 The Monetary Textbook

The unraveling of the leveraged mortgage derivatives markets produced excessive deflationary pressures – leveraged positions needed to be unwound once the quality of collateral was questioned. In the monetary policy textbook, deflation needs to be stopped at all costs by flooding the money markets with new credit. The Fed, out of fear of collapse, tried desperately to save the system by rebuilding it with the same leverage it blamed for the collapse. Then does it make sense to rebuild the shadow markets in the first place only to tear them apart in the second? A better way to think of that question is whether or not debt deflation can be managed and unwound in an orderly fashion.

What we see and will detail through this report, is exactly that, an attempt to reflate so that authorities can deflate at the time and manner of their choosing. Given the ad hoc nature of the first part of that policy, there are no shortages of distortions that will complicate the effort. Beyond those, we question whether the Fed has the correct plan or even has the ability to carry it out. Reviewing its past history does not inspire confidence. Analyzing its efforts to judge itself during that history in the most positive manner inspires less.

THE WHITEWASH OF MONETARY HISTORY

In December 2009 the Federal Reserve published a study titled “Monetary Policy and the Housing Bubble”¹. On Page 1 its authors conclude, “...our review suggests that the course of policy during the first half of this decade accorded well with conventional prescriptions.” They go on to absolve themselves while oblivious to their admission of the Fed’s real weakness:

“We do not believe that the accommodative monetary policies of the period played a large role, although it is

possible that the shifts in housing finance we discuss may have interacted with monetary policy in ways that are not captured by the historical relationship embedded in our macro-based approach.”

The Federal Reserve operates a model-based policy that is totally dependent on historical relationships. It is an academic mindset that precludes unconventional thinking – the textbook term for this is “recency bias”. The recency bias affected Ben Bernanke in a July 2005 interview² when he was asked to comment on the possibility of a housing bust causing a recession. Mr. Bernanke replied:

“It’s a pretty unlikely possibility. We’ve never had a decline in house prices on a nationwide basis. So what I think is more likely is that house prices will slow, maybe stabilize: might slow consumption spending a bit. I don’t think it’s going to drive the economy too far from its full employment path, though.”

Notice the historic-based thinking, since housing prices have never declined they never can. So a housing bubble is never modeled since it is not part of the historical record. This mindset forms the basis for monetary policy, including the important, historical link between cost of credit and demand for it. Back to the study, on Page 9 the Fed authors echo Mr. Bernanke’s viewpoint:

“Given the near attainment of both the price stability and the maximum sustainable employment objectives of the Federal Reserve, there appears to be little to suggest that the federal funds rate should have been markedly higher”

In other words, no one should complain because it could not have been better. What is disturbingly absent is the housing bubble itself. Irrational increases in the prices of



assets does not at first seem consistent with the attainment of price stability until you realize that persistent asset price increases is not textbook inflation. So long as consumer prices were stable, the Fed did its job. But did they?

“In 2003, inflation came in modestly higher than expected, but in 2004 the miss was more substantial, amounting to 2 percentage points for the change in overall PCE prices. The latter miss is partly explained by an unexpected jump in the price of oil that year.”³

So price stability, as defined by the Fed, does not include energy prices. We have previously detailed the Fed’s view of commodity prices driving inflation – they do not believe it is possible. Only an overheated employment market can drive consumer inflation.

“It is not obvious, in our view, that the string of surprises on the price of oil, which led to unexpectedly high overall PCE inflation, suggests that monetary policy should have been tighter during this period. In particular, these increases in the price of oil were not expected by most economists.”⁴

This hardly describes price stability, but the hidden bias comes at the end. If economists do not expect something to happen, then no one can. Because economists’ models lacked an oil price input for inflation, the rise in oil prices was a complete shock. It is the academic, model mindset that infects all monetary policy. The problem with this thinking, which is entirely relevant in 2010, is that oil prices reflect the *expectations* of market participants. People with money on the line expected inflationary pressures vs. those in academia whose models never saw it coming. As we saw during the crisis period, economists’ predictive capacity is quite limited. Yet the Fed favors it.

“From this perspective, it is very clear that the path of the federal funds rate over the

past decade has been very consistent with the policy strategy over the preceding twenty five years. This result echoes the spirit of our earlier discussion, in which the setting of policy during this period seemed broadly in line with the macroeconomic environment.”⁵

The housing bubble was created outside the macroeconomic environment, perhaps in the vacuum of space? This statement is a review of the Fed’s monetary policy *model*, which is explained further:

“As is clear from the figure, the housing market developments over 2003 through 2008 were far outside the 2-standard deviation confidence bands based on observed macro variables, *including the federal funds rate* and the VAR’s estimated parameters. With that said, it is important to note that the confidence interval for the share of residential investment in GDP includes 5 percent for much of the period up to 2006 - which would have been the highest realized share in over 20 years; in this respect, accommodative monetary policy was certainly supportive of macroeconomic activity and a source of strength in the housing market. Nonetheless, the simulation suggests that macroeconomic conditions did not drive the housing market developments in this period--at least not in a historically typical manner, as captured by the VAR.”⁶ [emphasis in original]

Their model was based on historical assumptions, but even this should have sounded some sort of warning. In other words, housing activity within GDP was at its upper limit for four straight years. But because it did not breach that limit, interest rate policy cannot, by this historic model, be said to be part of the problem. The problem with that interpretation comes in the first sentence, that the housing market (meaning prices) itself was *historically* deviant. The housing bubble was forming outside of any established, textbook perspective. Because



it was not modeled within historical norms, it had to be ignored as a collateral consequence of little monetary significance.

Knowing full well that the housing market was acting contrary to its models and historical norms, the authors theorize:

“...we do not have many convincing models that explain when and why bubbles start.”⁷

This sentiment is echoed in a lot of Federal Reserve literature (which we will go through below). Fortunately for the authors and the Fed, there is a convenient explanation for all of this:

“Securitization allows the risk to be allocated to willing investors, in turn allowing the riskier borrowers to get loans. Alternatively, investors may have been overly sanguine about the risks posed by securities backed by riskier loans. In either case, a group of borrowers that had previously been rationed out of the credit market found credit readily available.”⁸

The final conclusion is presented:

“We do not necessarily identify what event sparked the cycle leading to the housing bubble. Monetary policy probably influenced house prices to a modest degree through traditional channels, and these effects may have been amplified to some extent by changes in mortgage financing. However, we think a more powerful force resided in the rapid increase in nontraditional mortgage financing funded through private securitization. This enabled the feedback between the availability of credit and the rise in house prices to continue for several years, and with enough force to create the largest boom and bust cycle in the U.S. since the Great Depression.”⁹

This conclusion is extremely problematic for several reasons. First and most obvious to everyone outside the Federal Reserve, is that

securitization was predicated on leverage. Securitization was only the transmission mechanism, not the cause! Without a low, stable cost of leverage (in this case the repo market tied to the Fed funds rate) securitization never would have contributed to the housing bubble (does the Fed not understand that “availability of credit” is its responsibility?). Second, they admit low rates may have contributed to some of the bubble but only through traditional, textbook channels. The missing logic is something ACM has written extensively about, namely that excessive credit production can channel through **both** asset prices and consumer prices. By excluding asset price channels, the Fed models consistently and significantly understate the effects of credit creation from monetary accommodation.

Because they only focus on channeling credit into economic activity (the focus on housing activity within GDP and not on the other factors), the Fed is missing the collateral consequences of its output gap calculations (we detail this in our August 2009 Special Report). By using the output gap as its pivotal monetary policy measurement tool, the Fed misses asset inflation.

On page 10 of the study, the authors present various output gap model expectations vs. actual results. In each year, GDP is well below *every* model’s expectations. The authors portray this as vindication (a positive output gap that allows for more accommodative policy) while missing the real implication. Cheap credit does not necessarily lead to economic activity; it can just as well go toward the purchase of assets. The consistently low GDP results should have been a warning that credit production was being siphoned from GDP activity to asset activity. But neither the models nor methodology were changed – the Fed stuck to its textbook despite growing evidence that the textbook is only partially written.

One of the reasons the Fed’s manual is incomplete is the implicit disregard for its



dual mandate (full employment and stable prices). The following puts to rest the real mandate:

“For example, the unemployment rate (top right panel) would have been 50 basis points higher, on average, during the entire simulation period (2003-06) under the strict implementation of Taylor's 1993 rule. In contrast, as noted earlier, the current account deficit as a share of GDP (bottom right panel) would only be slightly lower.

Indeed, it is quite clear from these simulation results that a stance of monetary policy sufficiently "tight" so as to exert a considerable drag on the housing market during its most exuberant phase would have resulted--at least according to the FRB/US model--in an unemployment rate far higher than the rate realized over this period.”¹⁰

As long as people are currently employed there is no need to worry about asset prices. This is particularly true if the asset prices support that employment. Even if housing activity through traditional channels is at the upper bound of its comfort zone forever, no matter, as long as it is positive for employment.

The Federal Reserve is incapable of doing the hard tasks that require leadership. Instead, it has cloaked itself in the veneer of competence through textbook modeling. The appearance of understanding can only be maintained, in the face of such obvious failures, through pointless academia (if economists cannot predict it, no one can).

This point is reinforced in another Fed masterpiece. In its February 2010 “Economic Brief” magazine, the Richmond Fed writes:

“There is intense debate within the economics profession about whether it is typically possible to know in real time, **outside of lucky guesses**, when asset

prices have outstripped fundamentals.”¹¹
[emphasis added]

While investors bet real money on inanities like asset bubbles, the “experts” do not believe it possible to forecast one. Absolution through ignorance! If only the Fed had data that showed housing activity well outside historic norms, or housing-related GDP at the extreme upper bounds. Although by Richmond Fed’s logic, correctly interpreting such data would only amount to a lucky guess.

This pattern of behavior has become the norm at the Fed. The Richmond Fed article pertains to the existence of a dollar carry trade:

“Additionally, the U.S. dollar has declined relative to several other currencies...As described below, some commentators have suggested that expectations of a declining dollar, combined with easy monetary policy, has heightened “carry trade” activity and as a result has contributed to these asset market rallies – and a new bubble.”¹²

Before questioning the carry trade’s existence, the Richmond Fed writers start by citing the MSCI Emerging Market index’s doubling in 2009, while the Commodity Research Bureau’s Metals Index more than doubled.

“One possible explanation is that prices of equities and commodities have been on a transition to a new equilibrium.”¹³

This argument is not a new one. It was made repeatedly in the late 1990’s to justify stock prices in the US. Setting aside that history, for this to even make sense, would it not require a return to 2007 levels of economic activity in the US, Europe, and Asia? While we can argue how robust the recoveries in those economies are, no one can deny that economic levels are still massively depressed. So the increase in prices is an expectation of a return to pre-



crisis economic levels, despite repeated pronouncements from economists and the Fed itself that the current “recovery” will be very slow¹⁴. Perhaps there is the slightest possibility that these markets have gotten ahead of themselves?

The new equilibrium argument is a very easy way to justify non-action. And since none of the expert economists can spot a bubble anyway, there is no reason for the Fed to disregard the textbook. So it is entirely remarkable that the “experts” deny the ability to see bubbles, but accept the ability to see where they are *not*.

These singular economic abilities were also used in January 2003 when the Fed amended Regulation A¹⁵. That amendment ended the traditional discount window regime – where the discount rate was below the Fed funds rate. The rationale used at the time was twofold. First, that a discount rate below the Fed funds rate was an “incentive for depository institutions to exploit the below-market rate”¹⁶, and second, that meant “borrowing requests are subject to considerable administration.”¹⁷ The considerable administration for discount window borrowing in the second part was the safeguard to ensure that institutions would not succumb to the temptation to abuse it in the first part. Historical evidence shows very little abuse of the window because of both the administrative hurdles and the stigma associated with it.

So why the change?

“Reserve Bank administration of adjustment credit tends to create uncertainty among depository institutions about their access to discount window credit. In addition, institutions that have borrowed at the discount window after advertising their need for funds in the market have expressed concern that borrowing at the window signals weakness and is a source of stigma. Concerns such as these in some cases have deterred depository institutions from

borrowing at the discount window during very tight money markets when doing so would have been appropriate. This in turn has hampered the ability of the discount window to buffer shocks to the money markets.”¹⁸

In other words, the administrative hurdles are so confusing no institution would want to use the window. Does that even make sense? In a funding crisis, an institution would do whatever it needed to do to remain solvent. It is hard to fathom paperwork as a reason for selecting self-extinction. The stigma is what keeps discount activity at a minimum.

So the Fed removed the administrative hurdles to accessing the new “primary credit”, instead replacing it with a 100bp spread *above* the Fed funds rate. This excess spread would then become the deterrent for abuse, replacing the burdensome paperwork (begging the question of just who was burdened by said paperwork).

As may be expected, support for the decision was rather limited. Thirty institutions commented on the primary credit change, only 14 out of 30 were “generally” supportive. Of the dissenters, “concerns focused mainly on the proposed 100-basis-point spread between the target federal funds and primary credit rates.”¹⁹ Overturning the system that had worked well for decades in order to save some paperwork should bring dissent.

“Although some critics of the proposal thought that the new framework would prevent extreme spikes in the federal funds rate, many commenters thought that volatility, especially intraday volatility, would increase rather than decrease. Other commenters thought that depository institutions would be at least as reluctant as they are currently to seek discount window credit because stigma would remain or because the above-market rate would deter borrowing. Still other



commenters asserted that the Board’s proposal would not be less burdensome for borrowers.”²⁰

Volatility in the Fed funds rate kills the carry trade. In order to properly conduct carry trade intermediation, a stable cost of funds is essential. But by moving the discount rate above the Fed funds rate, there is no longer a systemic pin to the Fed funds rate (the rate at which almost every short term borrowing cost is associated – repo rates in particular). With a discount rate below the Fed funds rate, institutions could access a lower cost alternative if the Fed funds rate moved significantly higher. By making the “last resort” option more expensive, the Fed funds rate had more room to move before triggering discount window usage. And this is exactly what happened during the financial crisis, starting in 2007.

In August 2007 and again many times in the rest of the crisis, the 100bp cushion evaporated. The Fed funds rate began to hug the discount rate, with volatility increasing. At several points during 2008, in March during the Bear Stearns crisis and in September and October during the meltdown, the Fed funds rate spiked well above the discount rate. But back in the classroom textbook of 2003, the Fed, brushing aside those uneducated concerns from the real world, was supremely confident in itself:

“It is possible that certain measures of volatility of the federal funds rate — particularly those that give some weight to small deviations from the target, such as

the intraday standard deviation of the federal funds rate—will increase under the above-market framework. **However, the Board believes that an above-market framework will reduce the potential for more extreme, unintended movements in the funds rate.** These extreme movements arguably are more problematic than smaller ones because they tend to occur in the context of, and can exacerbate, conditions of market stress.”²¹
[emphasis added]

History has proven the above statement not only wrong, but dead wrong. To remove administrative burdens upon itself, the Fed changed the longstanding operation of the discount window over the reasonable objections of those for whom it was designed. As we have seen time and again, the Fed’s opinion, based on academic, textbook understanding is supreme law. What is most disturbing is that it never learns from any mistakes, instead focusing its efforts on absolving itself from any responsibility (we have yet to fully focus on the Fed’s terrific response to the 2007 crisis the obviously averted worse disaster, but not disaster). That focus fully extends to preserving its textbook, model method of operation. It is simply too much power for an organization to have. Power concentrated where it can never be judged will never end well. Being insulated from judgment allows the Fed to conduct its classroom experiments with the financial system as its guinea pig. Bubbles can inflate and burst with terrific consequences, but the Fed *always* has the right monetary policy in place.



Part 2 When Textbooks Attack

In his February remarks to Congress, Fed Chairman Bernanke referenced the fundamental pillar of monetary policy, “The Federal Reserve believes that these programs were effective in supporting the functioning of financial markets and in helping to promote a resumption of economic growth.”²² It is a standard bland statement that is repeated by everyone at the Fed. In an April 2009 speech, New York Fed President Dudley words it more directly, saying the Fed’s actions were designed to “reduce long-term private sector interest rates, and thereby provide stimulus to the economy.”²³

It may seem unproductive to challenge such bland boilerplate, but that is where we are. What stimulus have historically low interest rates provided? Credit has contracted and unemployment has remained persistently high. The trough of the recession came as a function of businesses cutting costs and capital expenditures, but true topline growth is completely absent.

In our August 2009 report, we dealt extensively with the new paradigm of low interest rates. They are a hindrance to household spending since they constrain asset income (a very significant source of household funding in the wake of the savings bubble of the 1970’s). That is only half the story. The low rates are also the driving force behind the contraction in credit.

Later in Mr. Dudley’s speech, he gets to the primary source of disagreement about the supposedly benign nature of the Fed’s monetary policy, namely its radically expanded balance sheet.

“The goal is not the expansion of the balance sheet, per se, but the objectives that I laid out earlier.”²⁴

The rapid increase in the Fed’s balance sheet was undertaken to “counteract shrinkage underway in the non-bank financial sector” (the deflation of the shadow credit markets) and to

stimulate the economy through low interest rates. Most investors view those goals as worthy, but may see the massive size of the initiative as inflationary. Once the extraordinary measures are no longer needed, those that worry think the massive bank reserves will unleash a torrent of money expansion that produces rapid consumer price increases (remember, excess credit never results in asset price increases).

To counter that fear, the New York Fed published a study titled “Why Are Banks Holding So Many Excess Reserves?” in July 2009²⁵. Most of the paper focuses on the *size* of the Fed’s actions, proving its innocuousness. They provide simple examples that show the size of the balance sheet actions are simply measurements of the Fed’s activities, and that the size of the policy initiatives do not have an explicit meaning or bearing on the financial system or economy. Mr. Dudley reflected on this in his speech:

“...balance sheet size should be interpreted in light of the impact on market function and financial market conditions, not by the impact on the size of the balance sheet.”²⁶

The size of bank reserves and the Fed balance sheet are coincident measures and do not themselves reflect what the Fed is trying to do. What the Fed was trying to do was reduce interest rates. In an environment of rampant fear, large measures were needed to overcome the financial dysfunction. By page 4 of the July NY Fed study, the textbook monetary pillar is repeated:

“When the central bank lowers this target rate, other interest rates tend to decrease as well, which stimulates economic activity.”²⁷

All the textbooks say that lower interest rates automatically increase spending, through expanded lending activity since “some lending opportunities that were previously unattractive become profitable.”²⁸ Here they certainly mean



that these new opportunities are profitable to the *borrower*. What about profitability to the *lender*? Left unsaid is another Fed pillar, that reducing interest rates decreases bank costs as well as revenue, shifting the entire yield curve lower. So the borrower's calculus revolves around the nominal interest rate, while the lender makes determinations by the yield curve's slope (the spread between short-term borrowing costs and long-term loan income). As long as the spread stays intact, or even widens, then low interest rates should be stimulative to credit activity.

Pinning bank-funding costs to near-zero, the Fed has essentially handed the banking system a free pass to make money. All they need to do is lend. What is absent from the textbook is that banks actually care about who they lend to, and that yield curve spread is not the sole factor for determining profitability.

The former speaks to lending standards, particularly in light of economic losses suffered in all kinds of lending – from mortgages to credit cards to auto loans. With interest rates low and risk spreads compressed, the borrower's credit history matters now more than ever. For example, would a bank rather tie up capital for 30 years in a residential mortgage or buy a 30-year US Treasury? Since the interest on the mortgage is only 70 – 80 basis points higher, banks are retreating from the mortgage market, leaving it entirely to GNMA and its broker FHA. The same calculus applies to other consumer and business loans – low risk spreads are more than contributing to the contraction in credit. This is a direct result of the Fed's policies.

The second half of the profitability equation is leverage. And it is here that the Fed's policies are really distorting the markets. What they call a resumption of functioning financial markets is really about restoring leverage. While it is nice to have zero funding costs and a steep yield curve, the reality is that no financial institution is going to make a lot of money earning 4% a year. The only way to achieve and maintain profitability is by leveraging that 4% many times.

The easiest, most straightforward way to get that leverage is through the repo market (banks also need regulatory leverage, more on that later). Repo means repurchase agreement, essentially a sale of a security and a follow-on agreement to buy it back at some point in the future. Technically, it works as two linked transactions. However, a repo trade is really a collateralized loan. Most are overnight in term, so one party exchanges cash for a security one day, and the counterparty returns the cash, plus overnight interest, the next day in exchange for the security (it can be the same exact security or similar). The repo market functions both as a way to lend excess cash in a very liquid market, and as a way for short sellers to replace securities previously sold.

The collateral itself accomplishes leverage. In a simple carry trade, an institution can purchase a longer dated US Treasury security (say a 10-year note) and lend out the security in the repo market for cash. By rolling the repo lending as long as the security is held, the institution gets the cash it needs to pay for the note at the cheapest rate available, pocketing the spread between the repo rate and the treasury coupon rate.

The only wrinkle is the "haircut". The haircut determines just how much of its own money an institution has to front. For high quality, low credit risk securities, the haircut is typically 3%. That is the leeway lenders will give – high quality securities are not expected to move more than 3% during the short duration of the loan. The haircut protects the lender against changes in prices of the collateral. But for the borrower, it is the leverage charge. For a repo with a 3% haircut, an institution would only have to front \$3 million on a \$100 million position, achieving a 33 to 1 leverage ratio.

Since repo transactions are really just collateralized loans, they cost less than the Fed funds rate or LIBOR. This makes repos the cheapest source of leverage.

The Fed held the Fed funds rate under 2% from late 2001 all the way through mid-2004. Mortgage, US Treasury, and other securities saw their rates fall as well, but not nearly as far as



the Fed funds rate. Consequently, the attractive spreads and stable low interest cost structure of that period attracted a lot of carry trade money, including the basis for the securitization boom. It became common during this period to use MBS tranches as collateral in the repo market. With their widespread usage and AAA-ratings, the haircuts on the securities depressed over time allowing for greater low cost leverage and high returns. That attracted even more money, and so on. The housing bubble was predicated by an extremely low Fed funds rate that set the repo rate. Since longer and riskier assets did not decline as much, the yield curve steepened to make these trades extremely profitable. If the Fed funds rate had been properly calibrated, spreads and leverage costs would have kept a lot of credit sidelined. But that really was the point – the Fed *wanted* to stimulate lending.

The repo market exploded throughout the mid-2000's before imploding during the financial crisis, a crisis that began in the repo and commercial paper markets. As the MBS tranches used as collateral started to become suspect, lenders, suspicious of their true value as collateral, began demanding larger haircuts. On a leveraged position, a bigger haircut is essentially a margin call – a demand to put up more of your own money. But in a tightly confined system, cash was not readily available. The first round of asset sales accompanied the first haircuts, which drove illiquidity as prices declined. That, in turn, increased the incentives for institutions to abandon their collateral altogether, keeping the cash (broken trades spiked during the initial phases of the crisis). Those broken trades made lenders even more reluctant to lend, regardless of haircuts (nobody

wanted to get stuck with illiquid MBS tranches that may be worth a lot less than first thought). All the suspicion over the collateral stemmed from an information disparity – lenders outsourced the exact understanding of the mortgage securities to the ratings agencies.

The Fed responded to the crisis by creating ad hoc programs that had little effect (i.e., TAF). It was trying to address the lack of liquidity rather than the information disparity. Every policy response was met with more crisis pressure. By September 2008 the Fed simply took over the entire system – a zero interest rate policy that both steepened the yield curve (profit for lenders) and shifted the entire curve lower (less cost for borrowers).

The textbook says that both those policies should have stimulated the economy. But credit has contracted and the recovery stubbornly refuses to ignite – the Japanese definition of the liquidity trap. Now the Fed has to make a choice, its policies have, or are about to, run their course. In our analysis, however, it will not matter what choice the Fed makes – continue QE or allow it to end, raise rates or keep them at zero for an “extended period”. Because of the distortions in the capital markets that were required to enforce the steep curve at nominal lows, the new leveraged system that has grown up in the place of the old bears little resemblance to a fundamentally functioning credit market. Since the Fed does not see bubbles, it will continue to conduct its policies blind to asset pricing anomalies. Such an unstable system, much like the leveraged system of 2007, can only end with unwinding. The only question is whether or not there is order to it.



Part 3 Unstable Systems

Before explaining the liquidity trap, we need to step back and review the leveraging system that has evolved since late 2008. The deflationary pressures that the Fed has worked to dissipate were caused by the repo/leverage breakdown. There were simply massive amounts of leverage through repos and swaps that could not unwind without causing a severe shortage of dollars. Even though many of the positions were synthetic (they were not real loans affecting the economy) the unwinding threatened to undermine the capital positions of intermediaries that were engaged in real economic lending.

Banks that give loans to consumers and businesses were also very much involved in the shadow lending – the endless transference of wealth from one perception to another (as Gordon Gekko proudly described his activities in the movie *Wall Street*). When the crisis was allowed to reach its climax, the fiscal and monetary authorities decided the best course of action was to simply recreate what was failing. The Fed would not only be lender of last resort, but also the primary source of leverage. The idea, the goal, was to save the system long enough to unwind it carefully later (some have called this “extend and pretend”).

So the problem is located, again, in the process of unwinding. The calculations the Fed has to make centers on whether or not “managed” unwinding will recreate the stresses that culminated in the panic. Is the system sound enough to allow a second removal of leverage?

The unwinding process requires both a reduction in the supply of leverage while simultaneously reducing the demand for it. Any imbalance in that equation creates distortions that can be potentially messy. Clearly it is impossible to reduce both equally at the same time, so the variable is really the margin for error. Now that financial function has been restored (in the opinion of the Fed) through releveraging after the crisis, the Fed and markets are beginning to

estimate the size of the margin, and any ramifications for missing it.

The move to FAS 166 & 167 is one of the first steps in removing leverage. Forcing institutions to account for securitization structures on-balance sheet, regardless of who ultimately absorbs any economic losses, reduces the amount of bank capital available for other uses, removing bank leverage. It also makes securitization more expensive, since it will tie up more capital going forward, meaning less incentive to use it extensively.

Parallel to the securitization thrust, there is a move against money market funds. Most investors are unaware of the efforts of authorities, in this case the Fed acting through the SEC, to remove any preferred status money market funds have over traditional bank deposits in the minds of investors. On January 27, 2010, the SEC approved a rule modification allowing money market funds to suspend redemptions during periods of stress²⁹, thereby removing the liquidity pillar of money funds (making them more like gated hedge funds). But the regulators are not going to stop there. The SEC is considering forcing funds’ Net Asset Values to float. From SEC Chairman Mary Shapiro:

“At my request, the Commission’s staff is actively engaged in evaluating and preparing recommendations that will more fundamentally transform money market funds -- with a particular focus on evaluating the merits of a floating NAV.”³⁰

As might be expected, the industry is adamantly opposed to such a move. From the Investment Company Institute:

“We will continue to oppose strongly any move that would directly or indirectly require money market funds to abandon the \$1.00 fixed net asset value that has been a defining feature of these funds.”³¹



The opposition is with good reason – by removing two of the fundamental pillars of money market funds, the SEC will leave investors with little reason to put money in them. These fundamental features are the reason their use has exploded since the early 1990's, at the expense of traditional bank deposits. The SEC, acting at the behest of the the Fed, are publicizing the moves, as well as new, tighter regulations on the securities money funds can invest in, as a concerted effort to improve money market fund transparency since they were the lynchpin of the 2008 panic.

That, however, does not appear to be the real motivation, particularly when viewed within the context of the leveraged financial system. Money funds are one of the largest sources of funding for the repo market, and thereby one of the largest sources of leverage. Making them an unattractive alternative to traditional bank deposits will, in reality, remove leverage supply from the system while at the same time forcing money from the shadow financial system back into the regulated system (deposits at depository institutions are the prime alternative to money market funds).

Simultaneous to the efforts on reducing the aggregate supply of leverage, the Fed has used QE to remove demand. The \$1.5 trillion purchase of MBS securities, the very same securities that were used as repo collateral before the panic, has effectively removed a great deal of demand for leverage. The restrictions on money market investments parallels the MBS purchases, reducing the alternatives for money market investments. As the Fed looks for ways to use reverse repos as a tool for draining the liquidity/leverage it has added since autumn 2008, it needs enough willing participants to engage in these transactions (the entire primary dealer network can only add about \$180 billion in capacity). Those investment restrictions should drive money market funds to the Fed's reverse repo program as the only viable alternative to T-bills. It is very much like forcing money market funds to willingly participate in their own demise. The Fed hopes, that will take the shadow banking system with it.

When viewing the Fed's plans for reworking the financial system away from leveraged, shadow trading, it seems to be a very thought out, worthwhile endeavor. In fact, there are probably very few outside of Wall Street that would have an objection to the effort. Where this process becomes problematic is in its execution. Given the Fed's inability to accept blame, or even see unintended consequences and distortions that have formed during the releveraging phase, the current environment will not accommodate a second deleveraging effort, managed or not. If the Fed does not account for bubbles that may have popped up due to its efforts, it will not likely account for them when it deflates them. There is also a real possibility the Fed waits too long before changing to the managed deleveraging phase, making the problems incrementally bigger.

STRESS BELOW THE SURFACE

On the surface, echoed by the many Fed publications and appearances, the financial system has been restored to nearly its pre-crisis operations. Certainly there are indications that that might be the case – a normal LIBOR and Fed funds environment, much less fear and potential danger to larger institutions. But there are many more signs that stress is still very much a part of the current environment. The commercial paper market is still a shell of its former self. More tellingly, the swap market, particularly the swap curve, has never returned to a more normal stance.

When discussing leverage, the swap market cannot be left out. The swap and repo markets together account for nearly all leverage available. The dynamic between both markets reveal a lot about their functioning.

Essentially, total return swaps act as synthetic repos. So there is a degree of portability between the two, but they are not perfect substitutes. While repo traders enjoy a cost *below* the Fed funds rate, swap-leveraged positions typically pay 10-20bp *above* LIBOR for the same kind of leverage. The reason is the different nature of risk in each position. The repo trade involves little to no credit risk during normal functioning. The swap trade introduces



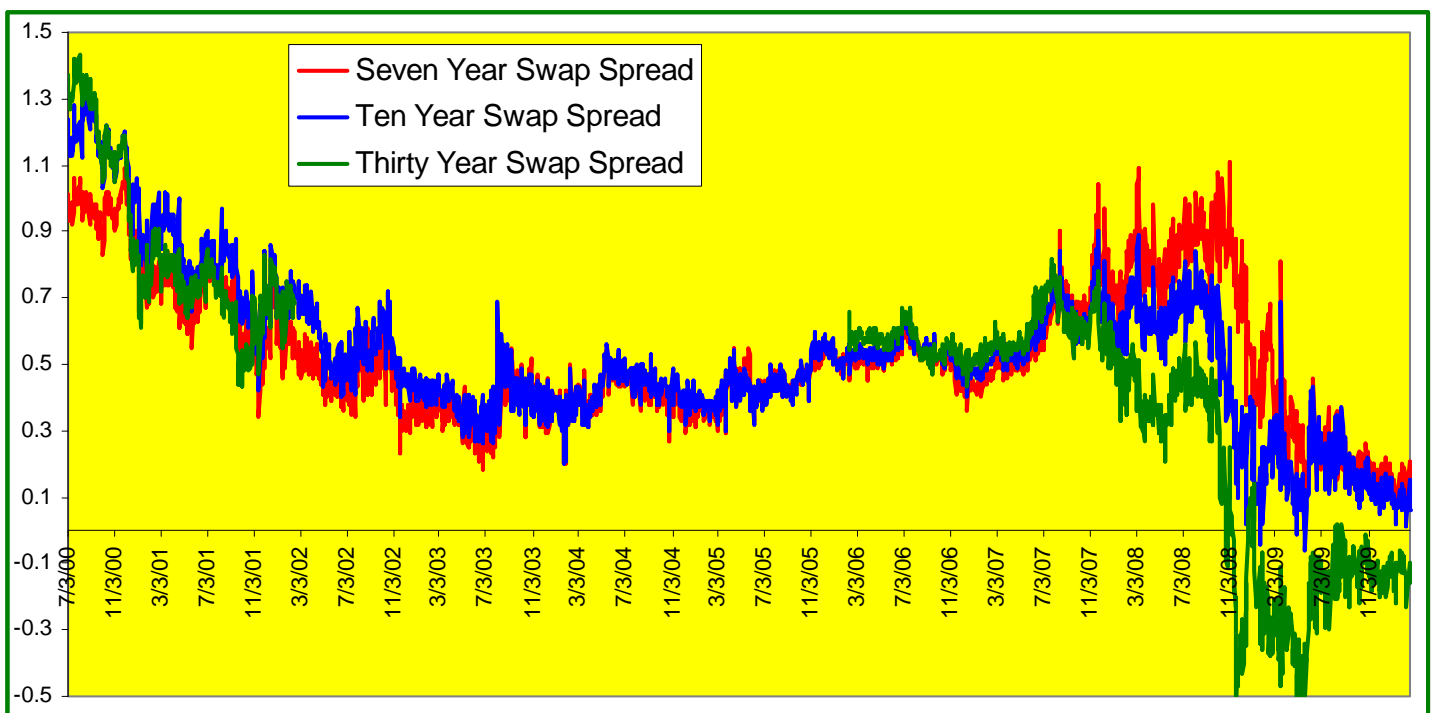
counterparty risk, since there is no actual nominal investment up front, no actual collateral (swaps exchange and mimic the cash flows of a security without the need to actually purchase it). That counterparty risk is manifested in the risk that one party will not be able to keep making payments (either the fixed or floating legs). In the repo market, the risk is mitigated by the collateral created through the actual purchase of the security. Swaps are more customizable and synthetic, but they have a higher cost of leverage.

In a normal swap environment (from 2003 to early-2007), swap rates traded at a near constant premium to similar maturity US Treasuries (between 30 and 50bp roughly). The resultant “swap curve” took the shape of the Treasury curve, with a minor increase in steepness (swap spreads at the longer end were typically about 10bp above spreads at the shorter end). A swap curve with that shape reflects a normal pricing of risk – the counterparty risk in a swap trade should command a higher interest rate than a similar maturity US Treasury. Also, the upward slope reflects gently increasing risk to tie up money for longer periods of time.

Swap rates began to rise in earnest in February 2007 as news of the Bear Stearns subprime hedge funds was becoming louder. By August 2007, the credit markets had “frozen”, meaning short-term leverage rates had jumped

dramatically. Swap spreads over US Treasuries moved higher as well across the yield curve. However, the longer end of the swap curve began to move contrary to expectations (meaning rates on the 30 year swaps declined *closer* to the 30-year US Treasury).

The 30-year swap spread, which had risen to 80bp at the onset of the credit freeze, kept falling into 2008. It hit a low of 21bp in May. While the shorter maturity spreads kept rising during the period, the ten year spread also began to slowly decline, falling well below the seven and five year spreads. Swap spreads stabilized through the summer of 2008, but then collapsed during the panic in the first week of October. The 30-year spread went negative on October 24 before falling further negative on the TARP change announcement of early November. The ten year spread hit a low of 10bp on November 25 before rising toward 30bp through January 6, 2009. On January 7, the ten and thirty year spreads collapsed again (matching exactly the move in the stock market), staying reduced (ten year swap spreads) or negative (thirty year swap spreads) until May 20. After a dramatic improvement in spreads in the last ten days of May and into June 2009, spreads are still at reduced levels (seven and ten year spreads) or, in the case of thirty year swap spreads, have remained negative.





This inversion in the swap curve is counterintuitive – as perceptions of credit risk rose, those spreads should have risen like the other sections of the swap curve. And not only is it counterintuitive, it was thought before the crisis to be *impossible*. There are stories of more than a few trading software systems that did not allow for a negative swap spread input.

The question is what to make of all this inverted activity. If swaps are more risky than US Treasuries, swap rates should be above treasury rates at all points on the yield curve. While it could be dismissed as a short-term, panic-driven movement, the fact that it has persisted means something else is going on.

While it is easy to speculate that the negative thirty year spread is a reflection of heightened worries about the safety of long-dated treasuries, it appears, particularly when examining the timing of the moves, that the swap spread puzzle relates closely to the availability of leverage financing. During the crisis, as the price of leverage (LIBOR or repo rates) increased, it reflected a reduction in supply from fear over the collateral, and of the potential for bankruptcy (when liquidity was at such a high premium, no repo counterparty wanted to get stuck with illiquid collateral while having to fight a bankrupt entity for a return of cash). In other words, as leveraged players began to get shut out of the LIBOR market or the repo market, they turned to the swap market for leverage. But in doing so, the supply/demand imbalance worked *against* them, yet they did it anyway. This is very suggestive of a last resort option. From PIMCO in September 2009, *before* the negative spread:

“In effect, if you own the swap, you receive about 85–100 bps less on the cash invested than you pay in 6-month LIBOR to receive the fixed coupon. But the fixed coupon is only 5–10 bps higher than the government bond! What this is telling you is that it costs you 75–95 bps per year for the privilege to own the swap instead of the government security.”³²

The only reason to pay more for the privilege of getting beat up on the fixed coupon is that the market for leverage dried up to the point that this

was the only alternative left. Worse yet, because this impossible dynamic has persisted, the implication is that the leverage market has not yet returned to normal function (despite the Fed’s proclamations).

Outside of the leverage market, there is another implication for the Fed to ponder. The persistence of negative swap spreads (a negative carry trade) should also be impossible. The negative carry represents an extremely valuable arbitrage opportunity. As soon as, or not soon after, the swap spread went negative there should have been a line of large institutions willing to take on trades to arbitrage the negative spread back to positive, and then back to more normal levels.

The arbitrage trade would consist of buying (long) the 30-year US Treasury and paying the repo rate (and with so many short treasury positions, it is likely that the repo rate would be the “special”, lower rate, more on this later) while simultaneously paying fixed in a swap and receiving LIBOR plus a spread. Because of the negative carry, the fixed receipt from the US Treasury is greater than the payment of the fixed swap leg, while the short-term funding payment of the repo rate is also below the short-term receipt from the floating swap payment. This trade pays both on the funding side and on the long side. In the current rate environment, there is little risk that either leg will move against the trade, meaning very low total risk.

The worrisome implication is that there must not be enough institutions with enough risk capital (likely due to FAS 166 & 167) sufficiently confident they can overcome persistent liquidity concerns. As tempting as the negative carry trade is, it does require a steady rollover of short-term repo financing and enough risk capital to fund haircuts. Those risks must be enough to keep traders from a trade with almost no credit risk. So nearly eighteen months after the panic, liquidity and capital risk still take precedence over credit risk. This is something other than normal capital market operation.



DISTORTIONS EXTEND TO REAL CREDIT

The widespread use of securitized asset tranches, especially residential and commercial real estate loans, as collateral for repo financing essentially ended in 2008. The need to fund those positions did not. Without access to repo funding, investors had to sell them at firesale prices and replicate the trades elsewhere. From the Bank for Institutional Settlements in December 2008:

“Before the outbreak of the turmoil, the United States featured an active repo market for structured securities, such as private label MBS and collateralized debt obligations, as well as lower-rated collateral, such as highyield bonds. As a result, investment banks with large portfolios of structured products are reported to have financed up to **half their total assets** in the repo market, particularly the triparty repo market.”³³ [emphasis added]

Half of their asset base using repo financing!
Again, from the BIS:

“...repo market activity has become more concentrated on government securities, with cash providers showing a preference for highquality collateral that is liquid and widely accepted. It seems likely that the repo markets for structured products or lower-rated collateral may not recover to their previous levels.”³⁴

This helps to explain the Fed’s QE purchase of MBS securities discussed above. Those securities needed financing and the Fed felt it had to step in to prevent more asset sales and unwinding. But the Fed did not/can not purchase all these assets. The swap market provided another alternative – total return swaps can be structured as synthetic securitizations, including balance sheet and capital relief to the security holders.

If holders of lower quality, illiquid collateral formerly financed by the repo market have found funding in the swap market and are not likely to return to the repo market, then what forms of assets are currently being financed by the Fed’s propped up repo market? Could this be the genesis of the dollar carry trade, or the

equity carry trade? Some classes of assets have experienced a rapid growth in financing since the repo market was resurrected – someone is taking advantage of the low cost leverage since MBS investors cannot.

Because certain investors have been locked out of the repo market does not necessarily mean that the repo market is at capacity. Instead, the focus on bankruptcy risk and liquidity of collateral may have shifted the focus of lenders toward less risky counterparties and into more liquid collateral. Some examples of more liquid collateral assets include US Treasuries, but also foreign sovereign bonds, commodities, and even equities.

An example of this type of change in focus can be found from a PIMCO essay/advertisement on the usefulness of actively managing LDI-driven positions at pension funds. Without getting into too much detail, LDI (Liabilities Driven Investment) seeks to match assets to liabilities, matching both risks and rewards. The first iteration of LDI featured a passive swap overlay that created a leveraged cash or bond position to achieve a desired credit hedge and/or bond duration that equalled the expected duration of the fund’s liabilities. In the PIMCO ad, the actively managed part comes from changing the passive swap overlay to equity futures, but this requires access to the repo market for financing.

“Given that the breakdown in the previously strong relationship between swap spreads and corporate spreads has created a situation where traditional swap overlay programs can now lead to a significant mismatch between plan assets and liabilities, it is a good time for sponsors to consider a long bonds and **equity overlay structure** for their dollar duration matching strategies. That alternative structure is designed to provide a tighter fit between plan assets and liabilities, as the sources of asset duration are better aligned with typical liability discounting methodologies.”³⁵
[emphasis added]

In another essay/advertisement, PIMCO makes the link to the repo market:



“Swaps can still be used to fine-tune curve positions and for overlay structures. However, in this environment it does not make sense to passively restrict LDI mandates to swaps only. It is time to introduce (government) bonds in these portfolios. To take advantage of this dislocation by introducing bonds in LDI portfolios, your asset manager has to be able to actively repo the government bonds in your portfolio...”³⁶

Notice that PIMCO references the expensive nature of swaps “in this environment”, meaning it is more cost effective to use repo-financed government bonds to create liquidity for the equity futures overlays. This is just one example of how the cheap repo financing can leak, or has leaked, into other asset classes. Given the current repo preference for liquid collateral, it makes sense that the most liquid asset classes would be used. Only the haircut needs to be fine-tuned, particularly with the Fed as repo collateral collector of last resort. From Andrew Wyke of Goldman Sachs at a June 2009 roundtable discussion:

“We have also seen people return to the market. But in some cases they are now more keen to take equity as collateral than they have been historically. People have become much more granular in terms of the haircuts they want to assign to specific asset classes...So, assuming you get the haircut correct and you’re comfortable with the integrity of the pricing provided by the tri-party provider, it’s as close to a zero risk trade [for the lender] as you can get.”³⁷

This continued bias toward liquidity has also distorted the real credit markets and, coupled with the historically low Fed-engineered interest rate regime, is directly responsible for the contraction in consumer and business credit.

Getting back to the New York Fed’s paper (from Part 2) on the excess reserves of the banking system, the main point of that work was to show that the large quantity of reserves are not dangerous or inflationary by themselves. They are, rather, simply a function of another monetary goal, the normal functioning of the banking system:

“It is important to keep in mind that the excess reserves in our example were **not** created with the goal of lowering interest rates or increasing bank lending significantly relative to pre-crisis levels. Rather, these reserves were created as a byproduct of lending policies designed to mitigate the effects of a disruption in financial markets.”³⁸ [emphasis in original]

For the most part the Fed is technically correct, particularly regarding the ability of the Fed to pay interest on the excess reserves.

“When the market interest rate is zero, banks no longer face an opportunity cost of holding reserves and, hence, no longer have an incentive to lend out their excess reserves.”³⁹

By paying interest on deposits at the Fed, the Fed is able to control the level of opportunity cost, thereby controlling the amount of reserves subject to cost considerations. But if we look at this opportunity cost control through the perspective of the malfunctioning leverage market, the Fed is actually creating incentives *not to lend* in the real economy.

In the context of a low interest rate environment, particularly an environment with a lot of uncertainty regarding principal credit risk, safety and liquidity are paramount. Previously, banks were able to leverage all manner of credit risky assets within the repo market (for funding leverage) and securitizations (for regulatory leverage). Even though interest rates on risky assets were nominally low, the low cost and easy access to leverage overcame that pricing anomaly (risky assets are not supposed to be low interest). To put it another way, intermediaries had to use leverage in a low rate environment to make it worthwhile on a risk adjusted basis to commence the most basic of lending activities (as we stated before, no one wants to make just 4% on a carry trade in riskless assets, let alone in riskier assets).

After the crisis, as we demonstrated above, liquidity and safety rule the leverage roost. The securitization markets have nearly ceased (and will completely dry up after full implementation of FAS 166 & 167) and repo leverage is restricted to US Treasuries or agency collateral –



the most liquid of fixed income classes. With interest rates historically low, meaning spreads above lower risk assets tight, there is no incentive to lend to anyone other than the US Treasury, or in any form that will get shut out of repo financing (remember the swap trades are overpriced).

The only risk to banks is liquidity. That is where the excess reserves come into play. The Fed, which by its own admission has created these reserves, has removed liquidity risk too. By paying interest on those reserves, the Fed has handed the banking system the liquidity it needs to establish riskless carry trade positions on the US Treasury and agency yield curves, and no others.

Since the week of January 21, 2009 (the peak in bank credit) the commercial banking system has shed \$640 billion of consumer and commercial credit assets. At the same time, banks have added \$178 billion in US Treasury and agency securities. With tight spreads and guaranteed liquidity (\$1.1 trillion in cash assets have been added since August 2008, the total cash position is now 11.7% of all bank assets), there is no reason to marginally invest in any other asset class. This has left the government as the sum total of the mortgage market and has left consumers and businesses without credit (there is a debate whether or not either would want it if they could get it. We certainly believe that many qualified consumers and almost all small and medium businesses have less access than they optimally need, contributing to the continued weakness). The net contraction in total bank credit is an example of capital constraints tied to the regulatory deleveraging of the shadow markets, and how that process is not without distortion.

This flies in the face of textbook monetary policy. Low interest rates are supposed to create more credit. In a perverse way, the textbook has worked, just for the wrong borrowers (US Treasury over private economy). In classic Federal Reserve classroom fashion, its monetary response to the crisis never took into account distortions to credit channel incentives.

So, reversing the low interest rate policy and letting risky rates rise will reverse this distortion and get credit flowing again? Not without leverage. For the banking system, leverage refers not only to funding costs but also to regulatory capital leverage – getting the most return for lowest amount of required reserves. This is where securitization was so appealing and expanded so fast. Securitizations reduced regulatory capital requirements through credit enhancements (making securities AAA-rated), which also made them eligible for low-haircut, low rate repo financing.

FAS 166 & 167 removes the regulatory capital leverage of securitizations since it will require banks to hold regulatory capital against all securitization structures regardless of who owns the tranches. The only exception to the new rules is agency securitizations. In this context, it is little wonder that banks only want to lend through Ginnie Mae. It is the only way to replicate the dual leverage of the pre-crisis period. Without a concerted effort to expand the dual leverage to normal credit channels (mortgages, car loans, business loans) it is hard to see how credit will expand in the real economy. This is especially true since the Fed and other regulatory authorities are working directly to ensure that those methods of dual-leverage *never return*.



Part 4 The Menace of Volatility

The leverage bias toward safer, liquid assets has given the US Treasury a funding advantage. This advantage has been used to finance exploding deficits. Setting aside conspiracies surrounding direct bidders, this bias is one of the reasons Treasury rates have risen only modestly, with the net effect of a steeper yield curve (favoring carry traders even more). However, the more investors are convinced that the fiscal deficit is unsustainable, the more the demand for those same treasuries rise. The mechanism for this counterintuitive feedback loop is the repo market and the demand for leverage.

To an investor that believes the US Treasury will run into a funding crisis of its own (to varying degrees), the prudent trade is to short the highest duration section of the yield curve (most sensitive to changes in rate expectations). Selling short creates a need to close out the short position at some point in the future. This is done in the repo market.

Increased demand for a particular security (because of shorts) in the repo market increases its value, its “specialness”. Repos of the most special securities are done at the lowest rates possible, even below the typical general collateral (GC) repo rate. This makes them highly in demand for leveraging purposes. So the more shorts there are for a particular security, the lower the cost of leverage to buy it. In other words, the more investors short treasuries, the greater demand for treasuries at auction (on-the-run treasuries are those most recently auctioned, are the most liquid, and therefore where shorting is most often accomplished). The greater the demand for auctioned treasuries, the more it convinces short investors that interest rates can only go up, so they short some more, and so on.

The feedback loop starts with the idea that deficits are unsustainable and higher rates at some point will be needed to entice investors. It gets bigger as the Fed’s balance sheet expansion feeds inflation expectations. Finally, everyone

in the world is told to short the treasury market, as Nassim Taleb proclaimed in Moscow in early February⁴⁰. But all that is accomplished is an increase in demand for on-the-run treasuries, keeping interest rates low, confounding and entrenching hedgers and speculators alike.

The Fed is well aware of this dynamic, publishing a study in 2002.

“Dealers sell short on-the-run Treasuries in order to hedge the interest rate risk in other securities. Having sold short, the dealers must acquire the securities via reverse repurchase agreements and deliver them to the purchasers. Thus, an increase in hedging demand by dealers translates into an increase in the demand to acquire the on-the-run security (that is, specific collateral) in the repo market.”⁴¹

The 2002 study, authored at the Atlanta Fed, was focused on the potential for convergence trades, but the conclusions are extremely relevant to the current environment. The Atlanta Fed found that convergence trades were not profitable since any liquidity premium attributed to on-the-run securities decreases the farther the security gets from auction. By the time the next auction occurs, the former on-the-run security has lost its liquidity premium and has converged with the rest of the “older” securities (convergence traders disrupt this process, artificially inflating the premium at a loss for the trader). In the treasury market of 2002, the auction price does not directly determine the direction of treasury rates since the auction prices converge to the existing treasury market, not the other way around.

Fast forward to 2010. The process has flipped. In a tightly watched, heavily shorted market, the auction price and stats *do* directly affect all treasury rates. The auction results at each maturity have had significant consequences for interest rates, most notably the 30-year auction of mid-December 2009. After a tepid auction,



the entire yield curve steepened to record maturity spreads. Every auction is news since they are usually “at record” levels. So the direct link between excess shorting and demand for on-the-run treasuries from 2002 has been extended to include a direct linkage with the wider rate environment. In short form, the more investors short treasuries, the lower interest rates stay. This confirms for hedgers and Taleb’s speculators that more short positions are needed since interest rates can only go in one direction from their lows (particularly among shorter maturity rates closer to zero), serving to keep rates low, and entice even more shorting.

So how does this unwind? If the Fed goes through with its tightening posture (removing liquidity from the leverage market through reverse repos and increasing short term leverage costs by paying incrementally higher amounts of interest on those excess reserves) do the short positions get rewarded and renewed, or do they walk away with profits? How does that play out with carry trade positions and their hedges?

It is the grand experiment the Fed is about to conduct. As Brian Sack, the Fed’s Executive Vice President said in Arlington, VA, in early March:

“First, this tightening cycle will have two policy dimensions, in that the FOMC will have to decide on the path of its asset holdings in addition to the path of the short-term interest rate. Second, we will be using tools to drain reserves that are new and that will have to be implemented on a scale that the Fed has never before tried. And third, we will be operating in a framework of interest on reserves that has not fully been tested in U.S. markets.”⁴²

Given the Fed’s history of enforcing classroom trials on the financial system, what could go wrong?

The greatest danger is that the Fed forces unintended collateral damage and does nothing about it (sort of like the housing bubble) so that it can continue to unfold its preplanned textbook policies. In the context of 2010, an increase in

short-term rates would immediately increase volatility in leverage funding, reverting the money markets back toward harmful liquidity premiums. The information from the swap spread inversion tells that story already, that many leveraged positions will not suffer another increase in funding requirements without massive liquidations – they have no where else to turn.

There is a parallel problem to that, a manager bias. Because there was so much leveraged money during mid-decade, it attracted a lot of money managers that had little experience or talent for these types of trades (not to mention religious adherence to flawed mathematical models). And since money was leveraged to the extreme, any mistakes were huge. It is likely that many of the worst were wiped out and tossed onto the rubble of the panic, but those that survived likely did so by the narrowest of margins.

The pension industry is a perfect example. It got lucky because corporate rates increased instead of following the treasury market. In an LDI management structure, it meant that expected liabilities were discounted at the higher, corporate rates, reducing the present value of those liabilities. If the opposite had happened, it would have been a disaster since many LDI hedges did not perform as expected in the historically abnormal crisis environment (this is where recency bias could have really been disastrous).

When there was wide access to repo and LIBOR funding, leveraged traders had enough flexibility in profitable spreads to maintain a margin of safety (hedging costs money, so the greater the margin of safety the more it costs). Now that so many have been banished to the swap markets for leveraged trading, their margins of safety have been markedly diminished. The cost of short-term leverage in the swap market is LIBOR+, as opposed to the repo rate which was less than LIBOR. In addition, the fixed coupon in the swap market is also less than the coupons in the cash market. This certainly has been translated into lower margins of safety.



If short-term costs are pushed higher by the Fed, how many leveraged traders have enough margin to maintain their long positions without collateral calls and forced sales? In 1994, Robert Citron, treasurer of Orange County, California, found himself in exactly this position. His margin of safety was not enough to withstand the Fed's short-term rate hikes. As derivative values fell, lenders demanded more collateral. Instead of liquidating and taking his losses, Citron doubled down, using proceeds from 11 *general obligation* bond offerings to expand his pool, some after losses began to mount. He never could get ahead of the collateral calls and the county was forced into bankruptcy. If Orange County had been able to post collateral and get through 1994, Citron's trades would have been profitable. Without sufficient access to liquidity, it did not matter (where was Orange County going to get another \$1.2 billion?)⁴³.

This is precisely the kind of activity that transpired during the panic. Given the continued heightened risk aversion in certain classes, anything that causes lenders of leverage to reevaluate their criteria can lead to a transmission of aversion across the rest of the leveraged asset classes. The leverage being provided in the swap market is not isolated enough to quarantine any renewed problems. If leverage costs rise for traders with minimal safety margins, it will force asset sales within and without. Managers will look to raise collateral cash from any source that is liquid, meaning sales in many markets. This is pretty well understood by the Fed, and is, in fact, counted on as a method of transmitting short-term rate increases down the yield curve. What is not well understood and what Mr. Sack was alluding to, was exactly how orderly does this process unfold, and how does it end with so much leverage still being applied.

If there are enough Orange County's out there, this process gets ugly. The banking system has stored over a trillion dollars as a source of liquidity (those excess reserves). That liquidity is not uniformly distributed, instead hoarded by the "too big to fail". So while the banks have a backup source of cash, will they be willing to

part with it if another funding crisis appears? How much liquidity will they be willing to part with if counterparties falter? If they don't, will falling asset prices infect the larger deposit or money market base, regardless of liquidity (if regional banks fail, it can create another environment of fear and mistrust)?

To frame this issue another way, the swap market was an alternate source of leverage when the repo market fell apart. Can the converse be true if the roles are reversed? It does not seem likely without increasing liquidity stress. If the OIS (overnight index swap) rate rises faster than intended by the Fed due to losses accumulating from awry swap positions, how will the broader market interpret the move? What if that move is accompanied by a stronger than usual demand for LIBOR or repo funds as leveraged traders try to access those markets to avoid having to completely unwind swap positions? That process would bid up LIBOR or repo rates above what "creditworthy" borrowers would pay. In other words, the demand for leverage may end up producing a competition for funding, a situation similar to the early stages of the 2008 panic.

LIBOR and repo rates are going to be closely watched by all market participants for any signs of distress. Even small, unintended moves could be amplified by a heightened state of awareness. This was exactly the case on February 18, 2010, when the Fed surprised the credit markets with a 50bp rise in the discount rate. Even though that rate has little-to-no effect now on the leverage markets, the reaction was extreme.

The S&P minis futures contracts fell from around 1106 to 1096, the dollar index (DXY) rose from 80.4 to 80.935, and the yield curve between the 2 year and 10 year US Treasuries flattened by nearly 16 bp, all within minutes of the announcement. Needless to say, these were very large and exaggerated moves for such a small period of time (see Charts below⁴⁴). It took more than a full trading day for these to return to their pre-announcement levels, with a lot of Fed assurances that the Fed funds rate was not going to be hiked in the near future.



What these movements showed was an environment extremely afraid of volatility in funding costs, indicating that the margin for safety is not wide enough to accommodate a significant increase. I also believe that, since it was a surprise, inter-meeting rate hike on a now-unused monetary tool, the Fed was testing the market. The leverage markets did not pass the test.

So now the Fed is caught in a real conundrum, caught between inflation expectations (including members of the FOMC committee) and the unstable leverage system it has built. If it does

raise rates, we are likely to see sustained movements like those of February 18. These movements could be very damaging to the financial system that has yet to fully recover. As the carry trades unwind, so does demand for treasuries. The yield curve movements become exaggerated and volatile, particularly at auctions.

If the Fed does not raise rates (by pursuing a second QE) it threatens to destroy the demand dynamic in the treasury market described above. Another round of QE may convince many investors to give up on their short trades (don't fight the Fed), reducing demand for treasuries, and increasing interest rates. That would signal the Fed had lost control of the curve, and volatility and fear rise.

With so much aversion and imbalance in these markets, it is hard to see any credible way to unwind it all. No matter what the Fed does, the end result is likely volatility, particularly with a hard deadline at the end of March 2010. If the Fed ends QE and rates stay relatively stable, it could give the Fed enough courage to tighten. But market participants making the same interpretation will unwind in anticipation of that courage. If the opposite happens, then the unwinding begins anyway.

In our opinion, the Fed has pushed the financial system into a trap. No matter which way it moves, one side of the leverage trade gets disappointed and wraps up. The end result is volatility and rising fear. In such an unstable environment with so many artificial imbalances, it is exceedingly difficult to see a Goldilocks scenario unfold. This is particularly true given the Fed's history of blindness to unintended consequences and its lack of ability to learn from, or even acknowledge, mistakes. Even worse, this is all a classroom, textbook exercise from the same economists who thought the economy was fine in 2008, the same Fed Chairman that denied a housing bust since such a thing had never happened before, and the same agency that believes its models are perfectly fine despite the economic carnage all around it.



Conclusions

To be optimistic about the immediate economic future is to be optimistic of the Fed's chances of navigating all the potential pitfalls flawlessly. Given the historic recession, the continued sorry state of the financial system, and the myriad imbalances causing distorted incentives, it is hard to see how even the most well-run and forward-thinking central bank could successfully navigate them. With the collection of academic bureaucrats currently inhabiting the Fed, it is downright unbelievable.

In the first phase of the grand experiment, central banks worldwide reflat leveraged. But the crisis changed the market for leverage, putting liquidity ahead of credit risk. So liquid assets (equities, treasuries, agencies and foreign sovereigns) have been favored over the old illiquid securities (mortgage securities). There is a distinct difference between leveraged fixed income and leveraged equities. Moving to the second phase, how will prices respond to risky liquid assets?

The potential for another funding crisis is there since prices affect a much larger investor segment in liquid classes (meaning the crisis that started in subprime has now moved to a still wider audience). Even if the huge excessive reserve levels provide a cushion, it is not uniform in this environment. Many institutions and investors still have funding difficulties (negative swap spread, MBS holders, falling regulatory capital ratios). Those fortunate to be too big to fail have been able to access the cheapest funding sources to build up their liquid cushion and have leveraged that position to dictate terms of trading. Removing any of those backstops could return the short-term money market to a competitive place where those currently stuck on the lower end of those trades suddenly become competitors for funds. This is especially true if price movements are outside of expectations.

That is the real story of the next phase of the crisis. When the special protections and favors afforded the largest players are removed, how will the markets in general react? The dynamic that has favored the US Treasury as borrower du jour will not likely continue. Without the perverse incentives to lending that bias it, the deficits become real – up to now, for the first time in history, the cost of massively increasing lending has gone *down*.

Caught in between inflation expectations and bond vigilantes on one hand, and a low bank profit and higher cost environment on the other, the Fed seeks to give both what they want. They appear to be inflation hawks by hiking the discount rate, while soothing the rattled nerves of the free-money carry traders on the other side. By choosing both, the Fed is likely to disappoint both. That means volatility as both sides reevaluate their leveraged risk positions through hedging adjustments.

The one thing the Fed *has* accomplished is record low volatility in the fixed income markets. It was the one essential component to financial salvation, but what is the ultimate price for that salvation? Volatility cannot stay low forever. With so many hard choices ahead, it will be impossible to engineer a low volatility tightening. The negative consequences are easy to imagine since they are not that far in the past. This does not necessarily mean another panicky funding crisis. The current economic state is not what “extend and pretend” had hoped for, but as the market reasserts itself the extenders will have less leverage over the final outcome.

No matter how much liquidity the Fed adds or takes away, the result may be the same. In the parlance of classical economics and somewhat contrary to its first use, market *volatility* has become almost perfectly elastic.



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