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When Collateral Is King

The theme of our previous pieces on shadow banking is that almost everything about traditional monetary analysis looks different when one understands that collateralized money and credit is an important and largely beneficial innovation, which is NOT primarily driven by regulatory arbitrage.

Here we revisit some key implications, including the role of the public sector and the Fed in allowing the private sector to deleverage "safely" (i.e., without creating a cascade of disastrous debt deflation) and the risk that misdirected re-regulation could perversely undermine that vital role. In short:

- Liquid collateral is the lifeblood of the modern economy[1].
- Liquid and safe collateral is the main form of money for large firms, asset managers, and financial institutions. Unsecured bank deposits can never play that role.
- A globalized/globalizing economy has large liquidity needs, which can only be met by a collateral-based financial system.
- The efficiency advantages of a collateral-based financial system include its adaptability and reduced need for costly relationship-based lending.
- But as in any credit system, including one with conventional deposit-taking banks, the velocity of money and collateral, as well as the cost and availability of credit, tends to be pro-cyclical.
- High levels of economic activity tend to make all forms of collateral (including housing financed by conventional mortgages) more liquid, and foster over optimistic expectations about future returns, leading to asset price bubbles.
- And vice versa. When a credit bubble bursts, money-like collateral shrinks, haircuts rise, and LTV ratios fall. After major shocks such as 2008-2009 and the 2011 euro crisis the velocity of money and collateral falls steeply.
- In response, the central bank must provide liquidity and/or the government must sell money-like collateral on a vast scale just to pre-empt and prevent deflation. So far this has happened when most needed.
- Even so, the fragility of the financial system as it delevers leaves a deflationary undertow that can flare up quickly in response to new shocks.
- A further risk to recovery comes from regulatory overreactions that limit the system's future ability to evolve and meet the economy's needs.
- Don't throw the baby, a highly evolved financial system, out with the bath water, a credit bubble and recession.

[1] But this is by no means a unique modern phenomenon.

Collateral as Lifeblood

Central banks are going far beyond Bagehot's ancient advice of lending freely at a penalty rate against good collateral. Instead, they are lending at extremely low rates at below market haircuts against practically all manner of collateral for term. This is literally true in Europe under the LTROs, and implicit in the US, where large reserve balances and longer-term interest rate commitments are part of a package that promises to assure funding liquidity and support recovery. The BOJ and BOE are moving in the same direction.

Central banks have been doing what's normally the financial system's job – credit and maturity transformation on a large scale – as well as expanding their traditional role of assuring funding liquidity beyond traditional banks, an absolutely vital role if modern day "bank runs" are to be prevented.

Though the specific challenges and circumstances in the US and Europe were very different – sub-prime mortgages in the US, sub-prime sovereigns in Europe – the effects have been very similar: namely, to short-circuit uncontrolled and uncontrollable deleveraging of the financial system that would otherwise have led to a deflationary cascade of shrinking money, credit and output, indeed probably to outright depression.

In our view, that is essentially the correct response to a classic information problem after a credit shock – heightened uncertainty as to who is solvent or not, and thus an excessive contraction in the natural stock of safe liquid collateral on which so much financing and funding now depends. Thus one can picture a large part of the expansion in central bank balance sheets as simply a buffer stock that prevents doubts about specific banks (or sovereigns), creating economic conditions in which virtually no bank (or sovereign) is truly solvent.

The longer term signaling problem is that success requires very large scale intervention, so that doubts about even the weakest banks, financial institutions, and other systemically important borrowers are suspended. Many see that exercise as building up larger adjustment problems – or inflationary potential – for the future but that is neither the inevitable nor the targeted outcome.

We believe it is more accurate to say that these interventions allow time and space for the stronger parts of the economy and financial system to lead recovery, and for gradual delevering, adjustment and repair to take place in the weakest parts. Only once there is sufficient recovery in economic activity – which in turn makes possible stabilization of both liquid and illiquid collateral values – will the private sector credit system begin to function "normally" again. At which point, the need for these expanded central bank balance sheets should start to reverse.

This simple framework explains two apparent paradoxes. In Europe, the system cannot be stabilized over the long term without deep changes in the framework of fiscal oversight and mutual support (progress towards fiscal union), nor without politically difficult reforms that boost flexibility and competitiveness in the periphery. This means that the ECB (and the German government) should not, indeed must not, provide unconditional support (firewalls) until these changes have progressed further.

But it also helps explain why – even with growth conditions improving and some signs of life in private credit demand emerging, the Federal Reserve seems to be itching to do more – or at least to make clear its willingness to do more should growth falter or new threats to recovery emerge. That in turn makes perfect sense given that the stock of liquid private collateral – the source material of "shadow money" – still isn't growing. That's consistent with an economy operating well below its capacity. It is the modern monetary counterpart of large output gaps.

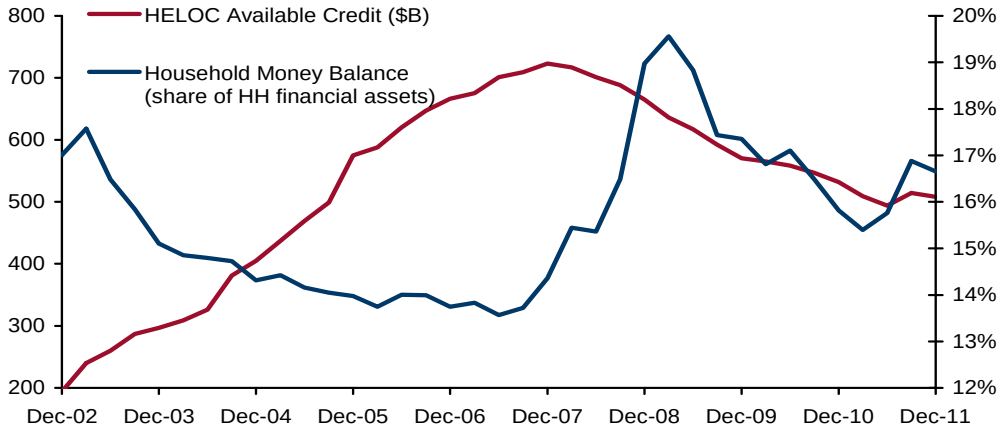
That is, by the way, not some arcane technical point; it is above all about jobs, hardship and hope in the high foreclosure counties and states, where recovery in income, spending and collateral values have clearly lagged the rest of the country. Indeed, it is only now that there are tentative signs of stabilization in those areas.

Theoretically there is a wide variety – both equity and debt, both financial and not – that can serve as collateral for a loan. But to get an overview of the problem it is essential to understand just how much collateral damage there has been on Main Street as well as on Wall Street.

Households can use houses, cars, or other valuables as collateral, but houses are most important by far. The US household sector owned $20.8 trillion of real estate assets in 2007 and has $16.0 trillion now. Owners' equity in residential housing has dropped from $10.3 trillion to $6.1 trillion, a 41% decline.

Moreover housing equity is frequently used as collateral to start or expand small businesses, so it is not just current spending but business formation and jobs growth that suffer. More generally, home-equity lines of credit allow households to monetize their main asset and hold lower deposit amounts in general. So the decline in home equity leads directly to higher money demand, which needs to be accommodated to assure recovery and prevent disinflation or worse (see Exhibit 1).

Exhibit 1: Available Heloc credit versus Household Money Balances



Source: Credit Suisse, Thomson Reuters DataStream, Credit Suisse US Interest Rates Strategy Team

In addition to the falling value of the housing stock and the sharp fall in homeowners' equity, the amount that homeowners can borrow against their home equity has been cut as a result of tighter bank credit conditions. Likewise, for new home buyers, significantly larger down-payments are required now than before 2007, meaning effectively that the haircuts on housing collateral have risen.

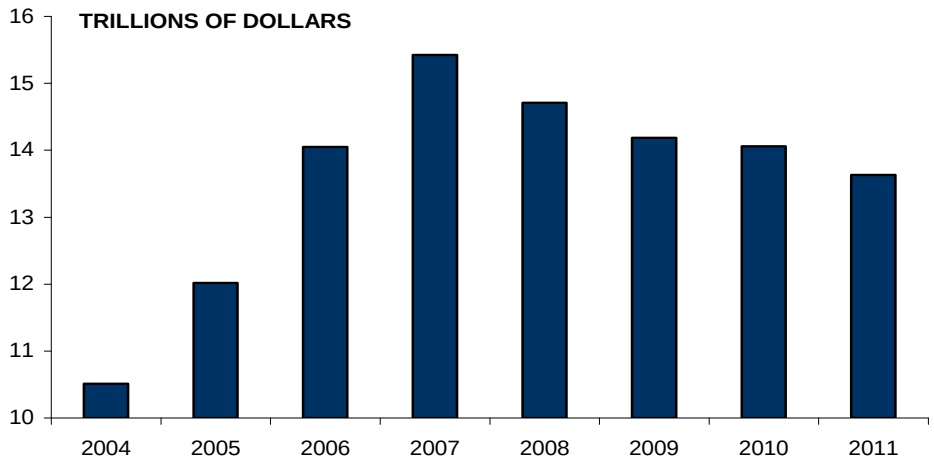
The impact of this change is most severe for homeowners who were credit constrained before the subprime boom began. For those households, the widespread abundance of subprime mortgages and the simultaneous sharp rise of local house prices acted as an easing of a previously very tight cash and credit constraint. During the boom, those households could spend and smooth income shocks like never before.

There is strong evidence that the dynamics of the recovery (and recession) are much sharper in the parts of the United States where this credit easing occurred and then abruptly stopped. Academic research has shown a strong relationship between the severity of the shock in house prices, car sales, and (especially non-tradable) employment at the local level and the degree of household borrowing that built up during the boom.[2] The key driver of this was the increasing value and moneyness of the housing collateral owned by formerly credit-constrained households during the boom, and the subsequent extremely sharp reversal during the recession (and recovery).

In the financial markets, debt securities serve most often as collateral. Here again the total value of collateral matters, as well how much can be borrowed against a unit of collateral, which is usually determined by repo or prime broker haircuts. There is another extremely important factor, which is the "velocity" of collateral, or the number of times collateral churns. All three factors – value, haircuts, and velocity – were disrupted in the bust, and there has been only a partial and uneven recovery.

The outstanding value of private debt securities in the US (corporates, money market, asset-backed, and excluding agency mortgages) has fallen from $15.4 trillion in 2007 to $13.6 trillion now (Exhibit 2). The moneyness of those securities fell very sharply during the crisis, when haircuts spiked to extreme levels, but in many cases haircuts have improved significantly since then, though not back to pre-recession levels in most cases.

Exhibit 2: Outstanding Value of Private US Debt Securities



Source: Credit Suisse, SIFMA

Although the reduction in the total value of private debt securities has been severe, the value is still significantly above the levels of 2004 and 2005. Recently, strong gross new issuance has occurred in corporate bonds (including high yield) and there has been improvement in ABS (cards, autos, and student loans). However, net corporate debt growth is likely to be negative in 2012, driven by contracting financial debt, and all types of ABS are being issued at much lower rates than before the recession.

Rising house prices and corporate investment would likely reverse the weakness in private sector collateral creation. Those changes might be on the horizon, but so far recent improvements have not been large.

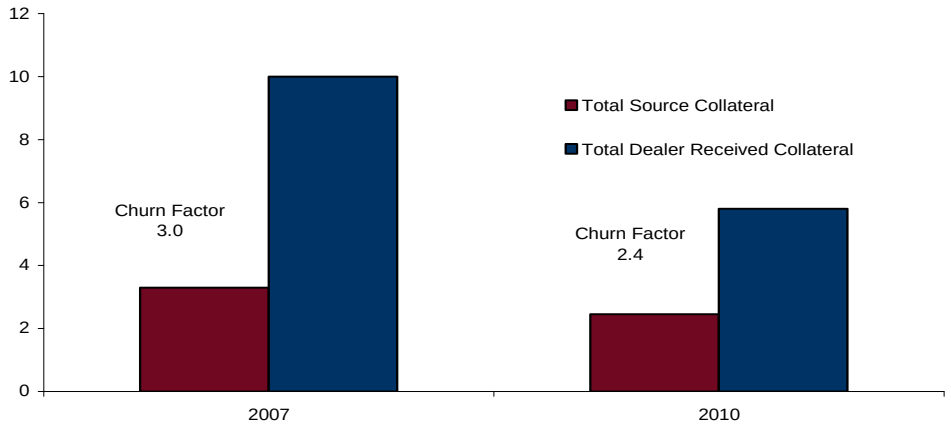
[2] See Mian and Sufi, "What Explains High Unemployment? The Aggregate Demand Channel" (2011). And Mian, Rao, and Sufi, "Household Balance Sheets, Consumption, and the Economic Slump" (2011).

The velocity of collateral reflects rehypothecation; it is the number of times one unit of collateral is used. According to Manmohan Singh[3] of the IMF, "there are 10-14 large banks active in collateral management globally." Singh estimates that as of late 2007 these banks had received $10 trillion in collateral. He compares that to $3.3 trillion in source collateral to calculate a velocity or churn factor of roughly 3.

He reports that, as of a year ago, total collateral was down sharply to $5.8 trillion with $2.45 trillion in source collateral, reflecting a significantly lower velocity of 2.4.

Less debt, lower value, higher haircuts, and reduced collateral velocity: in our view, this is an ongoing and significant *monetary* shock.

Exhibit 3: Rehypothecation (Singh's estimate of Churning of Dealer Collateral)



Source: Credit Suisse, IMF

Shadow Money

Manmohan Singh's estimates of liquid collateral focus on securities actually being re-hypothecated in the shadow banking system.

Although only a portion of liquid debt securities are used as collateral, a much wider pool of debt can become "shadow money," or securities that can easily be borrowed against. This broader concept is relevant because an asset holder always benefits when his assets become more money-like. His improved ability to realize liquidity quickly means he need not hold the same amount of cash.[4] In addition, his asset may appreciate in value because of a liquidity premium. This has been a central driver of credit bubbles since time immemorial.

Our estimates of the stock of shadow money, first published in 2009, were based on the total outstanding value of various classes of debt, adjusted by each market's average repo haircut.

For example, if a bond is worth $100 and its repo haircut is 5%, then a holder of that bond can easily raise $95 of cash when holding that bond. The holder has $95 of shadow money, and this is likely to reduce his need to hold cash, just as a household with a home equity line of credit can have a lower checking account balance (Exhibit 1).

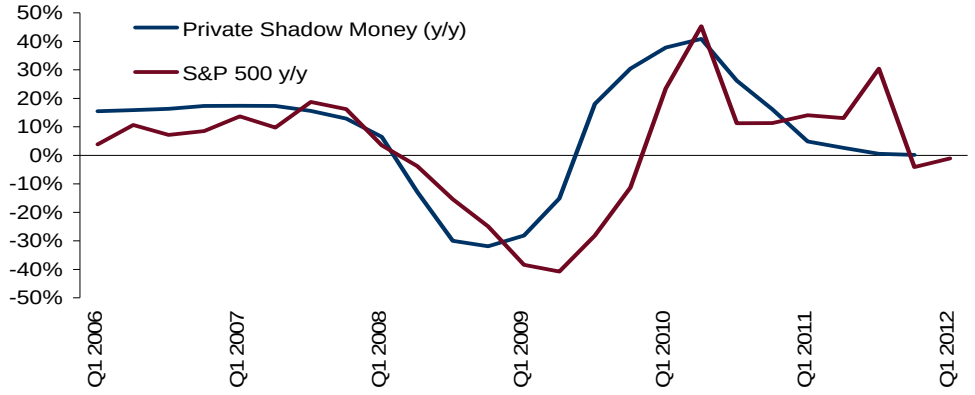
[3] http://www.imf.org/external/pubs/ft/wp/2011/wp11256.pdf

[4] A complete model of an economy where collateral eases the need to hold cash is constructed by Midrigan and Philippon, "Household Leverage and the Recession" (2011). Their equation (28) suggests that the value of collateral and the haircut applied to it directly determine the demand for money.

The surge in the demand for bank deposits and safe securities from 2008 was closely related to the collapse in private shadow money, which was caused by negative net debt issuance, falls in the market value of debt, and sharp increases in repo haircuts.

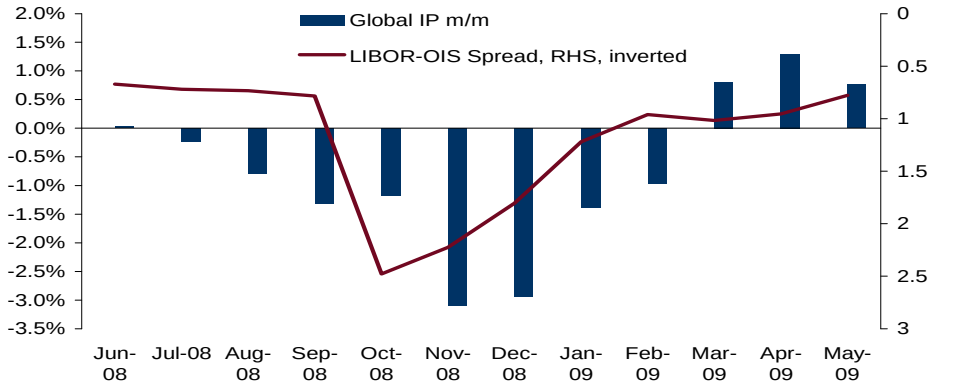
The collapse and later recovery in private shadow money led the move in equity prices, which of course are quite sensitive to deflationary risks (Exhibit 4).

Exhibit 4: Private Shadow Money versus S&P 500



Source: Credit Suisse, Thomson Reuters DataStream

Exhibit 5: Global Industrial Production versus LIBOR-OIS spread



Source: Credit Suisse, Thomson Reuters DataStream, SIFMA

Moreover, the terrible funding market conditions that caused the huge drop in private shadow money did direct damage to real economic activity by tightening trade and inventory finance globally and causing a sharp fall in business confidence. Exhibit 5 shows the very close relationship between monthly global industrial production growth and the LIBOR/OIS spread in the months after Lehman Brothers' failure.

This deflation shock begged for a massive fiscal and monetary response. A sharp fiscal easing then created a flood of safe collateral that caused the public shadow money (Treasuries, mbs, agencies) to soar, fully offsetting the contraction in private shadow money (corporate bonds, asset-backed securities, and non-agency mortgages). Central banks, meanwhile, were lowering interest rates and finding ways to improve the liquidity, value, and moneyness of various types of public and private collateral through their balance sheet operations.

This is not to say that policymakers were consciously targeting shadow money, or that these money and credit developments were driving policy behavior more than the shock to growth occurring simultaneously. But we believe this perspective shows a far more accurate and complete view of the money and credit dimension of this cycle, and offers a stark alternative to the traditional bank and money multiplier-based approach many people still use.

Private shadow money was growing better than 15% p.a. in the several years before 2007, but it peaked at $8.9 trillion in Q4 2007 and plummeted to $6.1 trillion only a year later. It began to recover in late 2009 as haircuts improved and some debt issuance resumed. It reached $9.1 trillion in Q3 2010 but has contracted slightly since then.

We expect it to contract further in 2012, driven by negative net issuance of financial debt of nearly half a trillion dollars. (Estimate courtesy of Ira Jersey of our US Interest Rate Strategy team.) Even this potential fall in 2012 is tiny compared to 2008, but it comes at a time when fiscal deficits are shrinking.

The disinflationary forces created by stagnant or falling private shadow money have so far been countered by aggressive reflationary policy responses. The extremely strong ongoing demand for money and safe assets is very visible in the historically low levels of interest rates (Exhibit 6), which would be very low even in the absence of QE and operation twist, in our view.

Exhibit 7 shows that public shadow money grew from $11.2 trillion to $13.5 trillion in the three years before the recession, but then began to grow very sharply, reaching $19.3 trillion recently.

In Exhibit 8 we add total shadow money to M2 (we call this "effective money") and divide it into public and private components.[5] The idea is to calculate a broad measure of privately and publicly created money, or inside and outside money.[6]

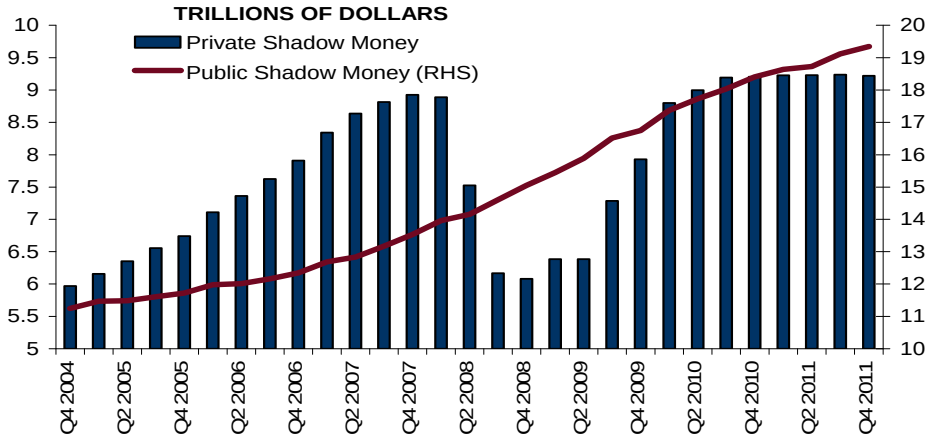
Exhibit 6: US Long-Term Real Interest Rates

Source: Credit Suisse estimates, Thomson Reuters DatasSream

[5] The monetary base is considered part of public effective money, and bank money (m2 minus the monetary base) is considered private effective money. We add these to public and private shadow money, respectively.

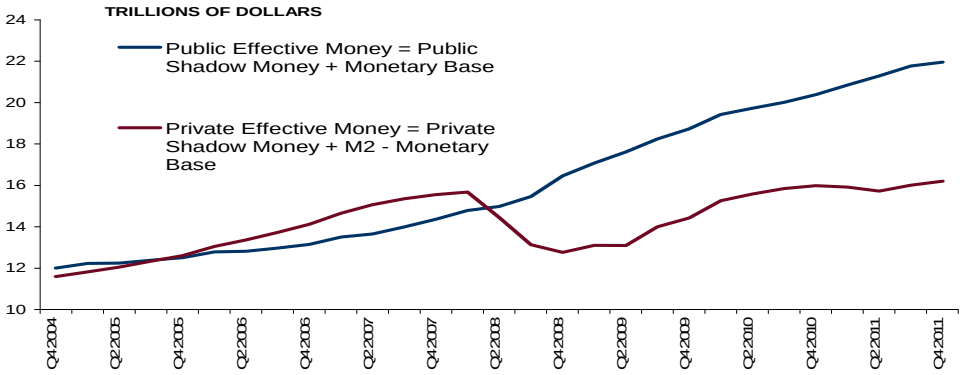
[6] Inside money refers to money created within the economy (e.g., by banks) and outside money refers to money created from another source (e.g., government liabilities).

Exhibit 7: US Shadow Money



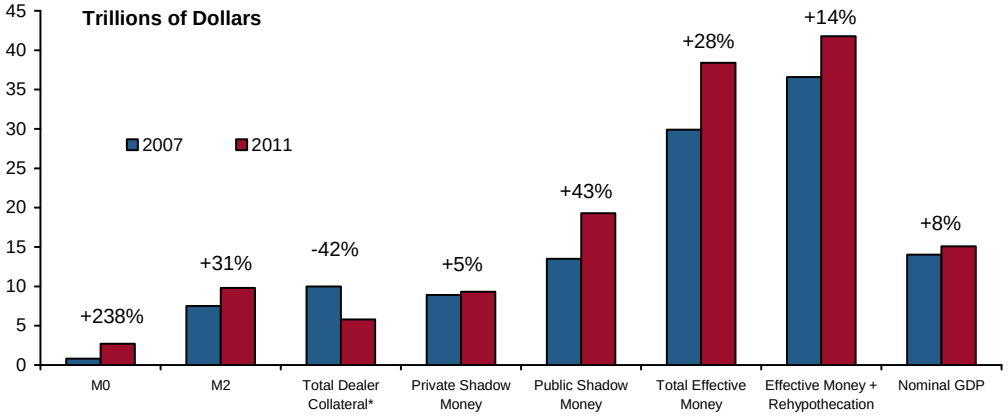
Source: Credit Suisse, Thomson Reuters DataStream

Exhibit 8: Public versus Private "Effective" Money



Source: Credit Suisse, Thomson Reuters DataStream, SIFMA

Exhibit 9: US Monetary and Shadow Monetary Aggregates



Source: Credit Suisse, Thomson Reuters DataStream, SIFMA

Exhibit 9 puts all of these numbers in perspective. Here we compare the 2007 and most recent levels of the US monetary base, M2 money supply, Manmohan Singh's estimates of total dealer collateral (reflecting rehypothecation), private shadow money, and public shadow money.

Crucially, this chart and the shadow money perspective allows one to see that there has been (1) a huge and necessary change in the composition of the effective money stock, (2) a big reduction in the velocity of circulation of liquid collateral, (3) a sharp reduction in the value of illiquid collateral (houses), (4) an increase in the "haircuts" on illiquid collateral (higher LTV ratios), and (5) a big increase in the precautionary demand for money by both firms and households.

The net result cannot be reasonably characterized as posing a major inflationary threat – at least until such time as financial system deleveraging is more complete, collateral values, especially house prices have recovered substantially, and overall private sector credit demand is growing strongly.

Indeed, for now the system remains vulnerable to policy, regulatory, or supply shocks even as the natural forces of recovery gradually progress.

And as Exhibit 8 **makes clear the private sector is still not creating money.**

The public sector is still doing King Collateral's work. How long it acts as Regent may be the central question for financial markets in the next decade.

Conclusions

The key takeaways from our analysis are that until output gaps close and private collateral begins to grow again:

- Underlying deflation risks will persist.
- Central bank balance sheets and fiscal debt may need to expand further.
- Interest rates will stay in an historically low range, though not always as low as now.
- The more macroprudential regulation is driven by hostility to shadow banking (money and credit chains backed by safe liquid collateral) the longer the conditions above will last.

Coda: In Praise of Shadows

Policymakers have learned lessons from the events of the past few years. Key among these lessons is that the liquidity of collateral is vitally important for monetary policy. Assuming macroprudential policy does not regulate this system away, it therefore makes sense to consider whether we have entered a new regime for monetary policy generally.

Professor Perry Mehrling has proposed such a regime. He observes three fundamental risk exposures that the Fed is taking on now:

"a kind of overnight index swap, a kind of interest rate swap, and a kind of credit default swap. In all three dimensions, the Fed is operating to support market liquidity, much as our idealized Global Money Dealer and Derivative Dealer do in their balance sheets. In all three dimensions, the Fed can be seen as adapting to its new role as liquidity backstop for the emerging new market-based credit system."[7]

[7] See "Three Principles for Market-based Credit Regulation" by Perry Mehrling. http://www.aeaweb.org/aea/2012conference/program/retrieve.php?pdfid=497

This is a new notion of a central bank. Instead of manipulating the level of bank reserves, policymakers now stand as guardians of collateral and collateral liquidity. Implementing policy is about committing to take on exposures like the swaps above that support collateral.

This is Bagehot for the collateral-based financial system: a guide to monetary policy in a future where shadow banks and securities markets still dominate. We think a move toward Mehrling's system would be a very positive development.

Ironically, however, "nostalgia" for a simpler financial system centered on deposit-taking banks might actually produce regulation that drives more financial activity into shadow banking, or at least away from Europe and North America. The collateral-based financial system is very unlikely to disappear just because it is misunderstood by regulators.

But there is another possible path, where shadow banking is less prevalent and the financial system is under heavy government control. In this world the sovereign monopoly on money is far more important, and shadow money would become less relevant.

We see significant dangers in that scenario, and hope that regulators will embrace some uncertainty – some activity and innovation occurring in the shadows – in order to allow the financial system's evolution to meet the economy's needs.

Shadow banking was not well understood before the crisis and still isn't. It is a core part of the complex ecosystem of fund flows that is the financial foundation of modern global capitalism.

Jettisoning it quickly, without a deeper theoretical and practical understanding, may be a dangerous and premature idea that risks throwing the baby, a highly evolved financial system, out with the bath water, a credit bubble and recession.

"We... tend to seek our satisfactions in whatever surroundings we happen to find ourselves, to content ourselves with things as they are; and so darkness causes us no discontent, we resign ourselves to it as inevitable. If light is scarce then light is scarce; we will immerse ourselves in the darkness and there discover its own particular beauty. But the progressive Westerner is determined always to better his lot. From candle to oil lamp, oil lamp to gaslight, gaslight to electric light – his quest for a brighter light never ceases, he spares no pains to eradicate even the minutest shadow."

-Junichiro Tanazaki (1933)

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