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Market Focus

Global Strategy

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Long Shadows
Collateral Money, Asset Bubbles, and Inflation

> "There can be no doubt that besides the regular types of the circulating medium, such as coin, notes and bank deposits, which are generally recognised to be money or currency, and the quantity of which is regulated by some central authority or can at least be imagined to be so regulated, there exist still other forms of media of exchange which occasionally or permanently do the service of money.
>
> Now while for certain practical purposes we are accustomed to distinguish these forms of media of exchange from money proper as being mere substitutes for money, it is clear that, other things equal, any increase or decrease of these money substitutes will have exactly the same effects as an increase or decrease of the quantity of money proper, and should therefore, for the purposes of theoretical analysis, be counted as money."

Friedrich Hayek, *Prices and Production* 1931 - 1935.

Every boom spawns its own shadow banking system sooner or later.

Once the supply of shadow money starts to escalate, the bubble forms.

When it breaks, panic sets in.

If panic spreads, the supply of shadow money implodes.

And the demand for "safe" money explodes.

So "excess liquidity" can lead to depression and deflation, not inflation.

It has just happened again on an epic scale.

This is the Achilles heel of (democratic) capitalism.

So governments and central banks put all hands to the pumps.

Where does that leave the outlook for inflation?

Exhibit 1: US Effective Money Stock

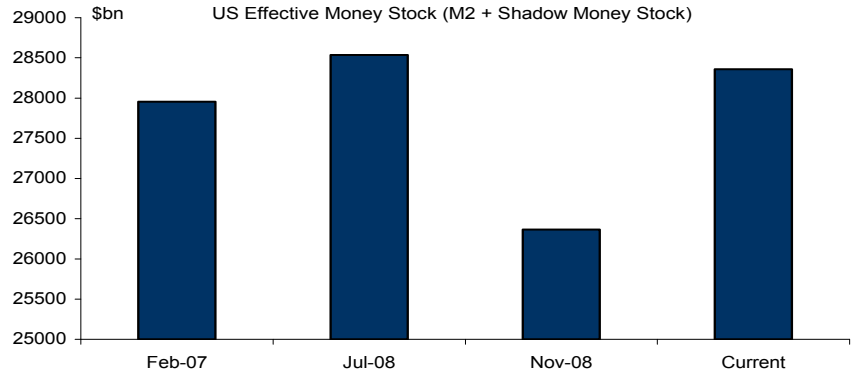


Exhibit 2: US Shadow Money Stock: Public vs. Private

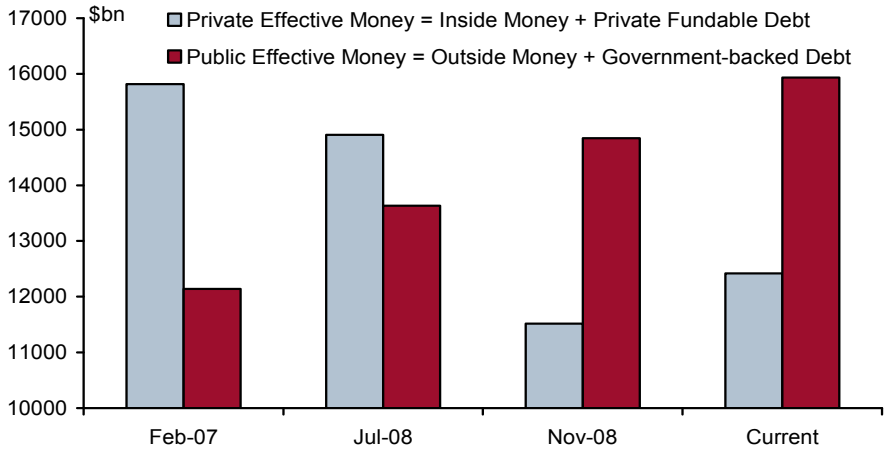
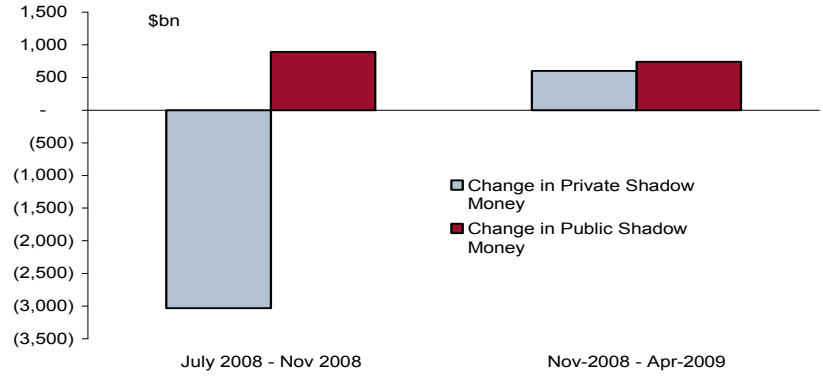


Exhibit 3: US Shadow Money Stock Changes: Public vs. Private



Source: Credit Suisse, SIFMA, Federal Reserve, US Treasury

Collateral Money, Asset Bubbles, and Inflation

Judging by the bond markets, longer-term inflation expectations in the US and Europe are rapidly mean reverting, after collapsing in October/November last year. Surveys have been quite volatile but generally within a familiar range.

Yet when we talk to investors, their inflation expectations seem to be remarkably unanchored. To put it bluntly, investors' inflation expectations seem to be all over the shop, ranging from extreme deflation to hyperinflation, and every shade of grey in between. But, for the majority of them, it is simply that they do not have much confidence in their ability to predict inflation after recent events.

Some argue that a huge legacy of excess debt and already massive global spare capacity make destructive deflation inevitable. Others feel that extreme policy stimulus – and in particular the huge jump in the size of central bank balance sheets – will inevitably fuel much higher inflation sooner or later.

Still others stress the idea that a secular break in the social, political and economic consensus might one day let inflation ride again. And never far below the surface is the notion that excessive debt burdens (public and private) will ultimately have to be inflated away.

What these debates are telling us is that price level uncertainty of a very unfamiliar sort has made a comeback.

In this piece, we stress the importance of the shadow banking system and what might be called the shadow money stock for thinking about inflation and deflation. Shadow money is by no means a new concept or reality, but it can mean that conventional measures of the money stock are a (very) poor gauge of inflationary or deflationary pressure. So we also make a preliminary attempt to measure the "effective" money supply in the US, including the close substitutes for conventional money that are especially important in setting asset prices and financial system leverage.

As the charts above show, what we call private shadow money in the US fell by about $3 trillion from July to November 2008 and has since recovered very slightly. Combined with the massive increase in the monetary base and public sector collateral money, this slight recovery has helped to stabilise the "effective" money stock.

This suggests that the immediate deflation risk has diminished somewhat, although we think that effective money **demand (**liquidity preference) has also been shocked higher by the recent crisis. Cementing the embryonic recovery in risk appetite, credit and equity values and the economy itself will almost certainly require a more decisive recovery in private shadow money and the effective money stock. Only once that is achieved will it be safe to wind down the policy stimulus and the stock of public shadow money, some of which will happen spontaneously.

Base Money, Bank Money, and Shadow Money

Shadow money and credit are arguably the Achilles heel of free market capitalism. But they are hard to regulate out of existence, especially once established, and most of the time serve a useful purpose rather than a destructive one.

Their existence – which makes conventional money stock measures incomplete or even downright misleading – helps to explain why, with the partial exception of the ECB, nobody targets or forecasts inflation any more by looking at money demand and money supply.

Right now, however, trying to measure – however crudely – what is happening to both private and public shadow money is the key to understanding the potential impact of QE and other unconventional forms of monetary policy. To understand why and how we have done this requires some technical groundwork, although the basic intuition can be summed up quite simply:

If government and central bank stimulus is successful in stabilising and rendering more predictable the markets for the most important collateral in the system (houses and mortgage-backed securities in particular), then it will likely succeed in preventing destructive deflation. Creating significant inflation on top of that will not be very easy, but in principle it is possible, and would need to operate by creating a sustained period of above-trend growth to absorb the very large amount of excess capacity in the global system.

Meanwhile, information on haircuts in the repo market for private collateral is probably the most sensitive and useful measure of success or failure in heading off deflation pressure, and this is what we use to calculate our measure of private shadow money and thus the effective money stock.

This information is not easily available – and a long time series is not available at all as far as we know – but we have been able to conduct an informal survey to obtain usable estimates for the recent past – see panel of charts on page 14 – and we hope to be able to monitor incremental changes going forward.

The standard monetarist framework tells the inflation story via longer-term trends in money supply and money demand (as conventionally measured). Milton Friedman himself emphasised the "long and variable lags" between excess money growth and inflation. So did the Bundesbank tradition for that matter.

Of course, even conventional measures of money supply and demand can be highly volatile and unpredictable in the short run, so the key idea was that over long periods there was a reasonably stable and mean-reverting relationship between the money stock and nominal income. Persistent money growth above or below the underlying potential growth rate of the economy – set by the fundamental forces of "productivity and thrift" in Friedman's language – would lead to either inflation or deflation.

For example, in the late 19th century, strong productivity and real income growth created strong trend money demand, but the classical gold standard and small commercial banking system did not create sufficient money to keep up with growth. The result was a trend deflation that became acute during periodic crises.

In most of the 20th century, by contrast, central banks could print money at their discretion and the public held more of their cash in banks, meaning it was easier for money supply to keep up with or even exceed money demand over time, generating positive inflation.

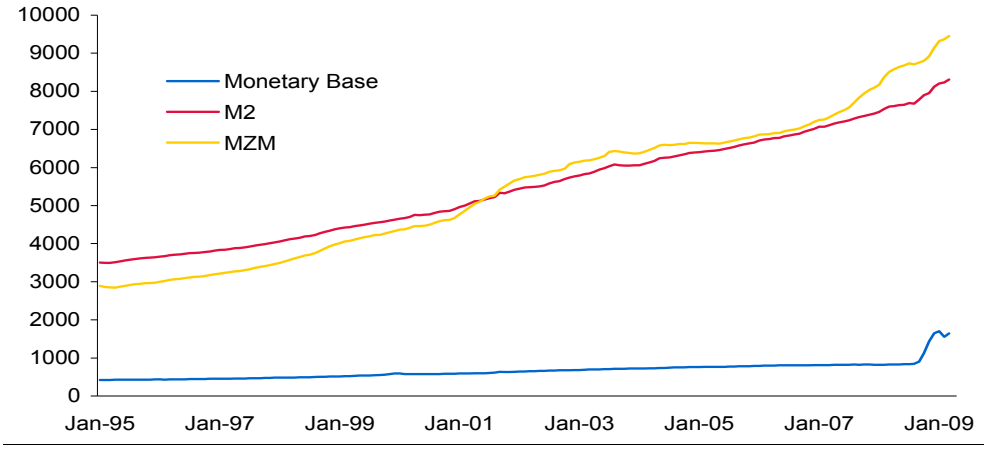
If the amount of private and public shadow money follows a cyclical, but mean-reverting path (relative to GDP), then this simple framework might still be valid as a long-run story, but it would almost certainly fail to adequately account for the true transmission mechanism of policy, fatally underestimate the cyclical volatility of the economy, and give no explanation at all for repeated asset market bubbles and crashes. And if the economy is – like most other complex adaptive systems – importantly path dependent, the standard framework could in fact be seriously misleading.

To see this more clearly, we need to run quickly through the standard framework.

The basic account of money supply starts with the monetary aggregates that by tradition matter most for CPI inflation: in the US case, cash balances in aggregates, such as M2 (roughly total deposits) or MZM (zero maturity money or cash plus bank claims and money market funds realizable as cash immediately). The available stock of money is determined by how much the central bank has printed (outside money) and how much the banking system has created by making loans (inside money). The inside money stock is much bigger than outside money because of the deposit multiplier.

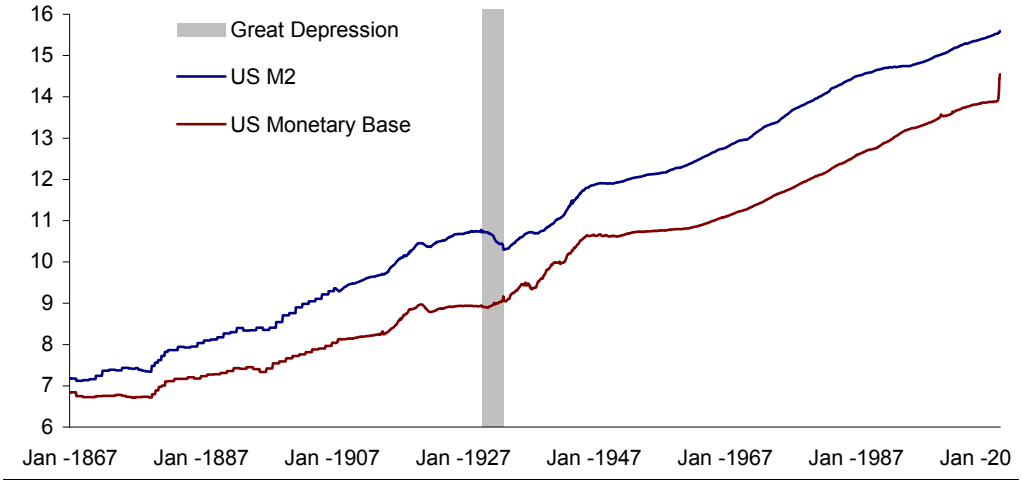
Exhibit 4 shows that inside money (largely bank deposits) was nine times the size of the monetary base (outside money) before the recent crisis began. Exhibit 5 shows how, exceptionally, the broader money stock and the monetary base can go in opposite directions, most obviously in the Great Depression.

Exhibit 4: US Money Stock and Monetary Base Since 1995



Source: Credit Suisse

Exhibit 5: US Money Stock and Monetary Base Since 1867



Source: Credit Suisse, Federal Reserve, Freidman and Schwartz

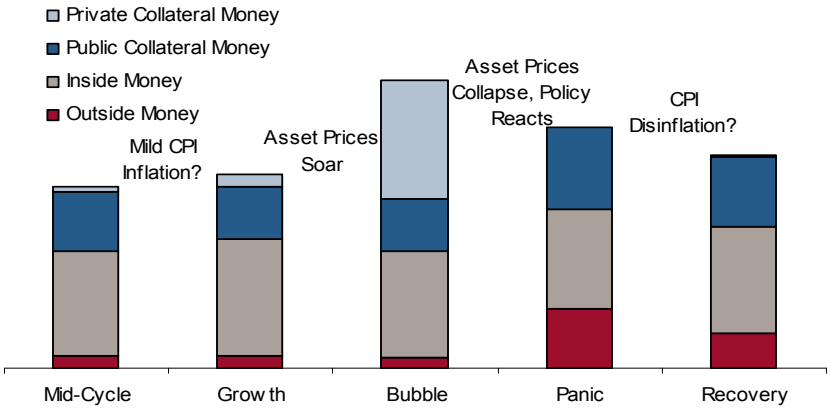
Money demand, meanwhile, is the desired cash balances held by the public. Money demand rises as the economy grows, via transactions demand, and falls as interest rates rise, because zero-yielding cash becomes less attractive. From the perspective of the equation of exchange, money demand is the inverse of the "velocity" of money. For example if MV = PY (where M is the money stock, V is velocity and PY is nominal GDP), then (1/V) = (M/PY), which is simply the level of the money stock relative to (nominal) GDP. For households, (1/V) can simply be thought of as desired money holdings as a share of nominal income. So for instance, if the average household decides it is prudent to increase their money holding to 9-months of income from 6-months, V would fall to 1.33 from 2.0.

This standard approach to money supply and demand captures some of the essentials but does not go far enough. Taking Hayek's quote from the front page a little further, he goes on to say:

> "It is necessary to take account of certain forms of credit not connected with banks which help, as is commonly said, to economise money, or to do the work for which, if they did not exist, money in the narrower sense would be required.
>
> The criterion by which we may distinguish these circulating credits from other forms which do not act as substitutes for money is that they give to somebody the means of purchasing goods [or securities] without at the same time diminishing the money spending power of somebody else. ….
>
> The characteristic peculiarity of these forms of credit is that they spring up without being subject to any central control**, but once they have come into existence their convertibility into other forms of money must be possible if a collapse of credit is to be avoided.**" (Emphasis added).

Hayek's point is that the economy can create its own media of exchange in order to economize on the use of inside and outside money when there is significant demand for some type of money for use in purchasing assets. Of course, when assets can themselves serve as collateral, allowing for leveraged purchases, then they take on money-like properties. And when financial assets serve as collateral for borrowing to purchase yet more financial assets (buying on margin) this form of shadow money can become particularly potent in driving asset price overshoots and bubbles.

Exhibit 6: Stylized Map of a Credit Boom & Bust with Shadow Money



Source: Credit Suisse

Exhibit 6 above is a stylized version of a credit bubble where shadow money becomes important. In our opinion, the stylized facts of this cycle – and many others before it – can be summed up roughly as follows.

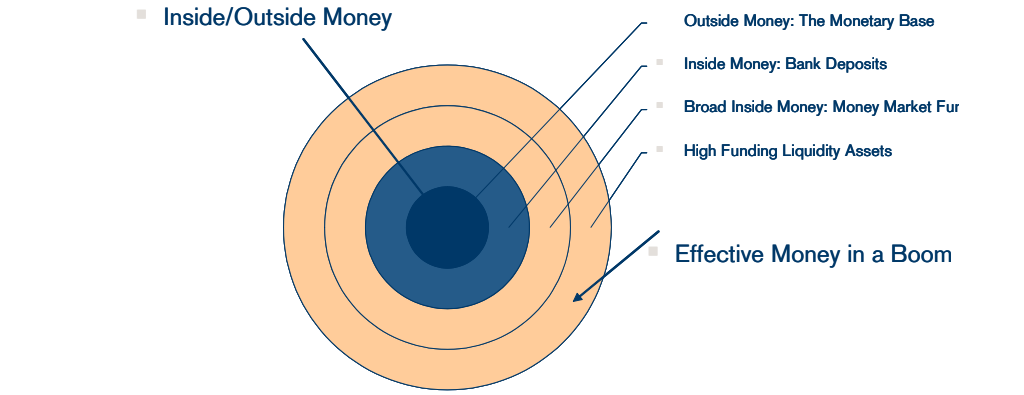
It starts with some genuine investment opportunity almost always related to a real improvement in technology or fundamentals. As strong price performance turns into a boom, optimistic investors desire to buy more on margin. They leverage up, usually using the buoyant asset itself as collateral. Lenders are all too willing to benefit by funding these purchases – after all, in the worst case, they will be holding valuable collateral. Borrowing terms such as haircuts, loan-to-value ratios, or margin requirements get easier. New money flows in, and associated financial assets begin to take on money-like attributes.

As buying on leverage accelerates, prices and credit conditions blow past what is warranted by fundamentals. There is a monetary expansion in the broad sense of shadow money, but when the bust comes this is quickly reversed. Lending conditions tighten, collateral prices plummet, and highly leveraged optimists are wiped out. Now cash is king; investors do not want houses, stocks, tulips or asset-backed commercial paper. To accommodate this demand for cash the government/central bank must quickly and forcefully expand the monetary base or else the increase in money demand can lead to a painful general deflation.

Meanwhile, the sudden disappearance of good collateral in the financial system has created a dangerous de-leveraging that could feed on itself. The government may respond by increasing its own debt, since public collateral in the forms of treasury bills and such do still have funding liquidity, and by flooding the market with government paper the leverage collapse can be better managed. In our stylized example effective money (meaning shadow money plus the conventional money stock) falls sharply, but it would have fallen much more without aggressive policy actions.

Exhibit 9 below shows effective money as a set of concentric circles, with the monetary base at the center and high-funding liquidity assets posing as shadow money at the edges. The blue part is the conventional money supply; during a boom broad money moves out further on the diagram. And, during a bust, the circle tightens.

Exhibit 7: Stylized Map of Effective Money



Source: Credit Suisse

Calculating the Shadow Money Stock

Shadow money is often a boom-time phenomenon: it is how the economy endogenously creates its own media of exchange to finance a bubble. Thus, it affects asset prices directly, but only indirectly affects goods and services prices.

We estimate shadow money by calculating the amount of immediate cash embodied in various debt securities. To do this, we use the assets' haircuts[1] in the repo market, as well as the current market values at going prices at four points in time: early 2007, the summer of 2008, November 2008, and currently.

For example, if the total market had outstanding securities worth $100bn and repo haircuts were 5%, then effective money would be $95bn. If the price fell 50% and the haircut rose to 20%, the new effective money would be ($100bn*(1-50%))*(1-20%)), or $40bn.

The appendix at the back of this piece shows specifically the calculations we used, and Exhibits 13 through 18 show the range of haircuts for each market in each period.

In Exhibit 1 above, we estimate the size of the total US effective money stock as the sum of deposit money plus shadow money. Shadow money is shown in Exhibit 2 and split between public and private assets. In Exhibit 3 we show how each part has changed recently.

We estimate that, since early 2007, the shadow money embodied in private debt securities (investment grade corporate bonds, high yield bonds, non-agency RMBS, CMBS, and remaining ABS) has fallen by $3.6tn (38%) to $5.9tn. The fall is due to a huge decrease in market values, an absence of issuance in all markets except investment grade bonds, and, importantly, a huge increase in repo haircuts.

[1] Haircut figures are indicative and based on conversations with market participants.

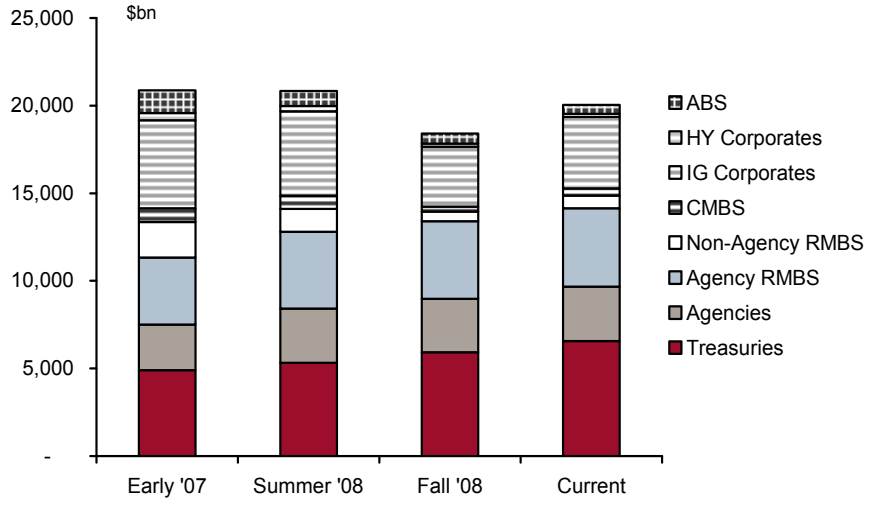
Meanwhile, the shadow money in publicly backed debt (treasuries, agency bonds, and agency RMBS) has risen by $2.8tn. The rise is due to a big increase in treasury issuance and an increase in prices in all groups. Treasury haircuts have been stable, but mortgage and agency haircuts have worsened slightly.

The Current Crisis

Obviously the process we have described fits the current cycle, but the idea has a more general application and has reappeared many times in economic history[2]. In a variety of instances, the bursting of large credit bubbles has led to deflation, even when the government balance sheet has expanded aggressively.

When G3 LIBORs soared above policy rates in August 2007, central banks gradually moved to a policy of first sharply lower interest rates and then significant new cash creation by crediting the reserves balances of banks. In the US, these new reserves were in fact "idle reserves" because they were not associated with new loan growth. In fact, the risk was that bank balance sheets would actually contract as old loans matured and banks were reluctant to make new ones. As a result, loan creation was limited, but outside money, or the monetary base, soared. Many market observers erroneously equate outside money with the money stock itself, and proclaim the Fed's actions inflationary.

Exhibit 8: Components of US Shadow Money



Source: Credit Suisse

In our view, they are not: the money stock has expanded, but not massively, and is perhaps better seen as an accommodation of increased money demand rather than an exogenous increase in money supply.

Banks' continued risk aversion means inside money contraction, and not outside money expansion, is the threat. Both a recovery in loan creation and a wilful allowance of rising inflation by policy makers are needed for there to be an inflation problem coming from money supply.

As Keynes understood, money demand is not merely a function of interest rates and growth. What also matters is "liquidity preference," or the desire by the public to hold large cash balances as buffers during times when they fear bad economic outcomes. An economist[3] once said that liquidity preference is like "a gossamer thread in a gusty wind," meaning it is based on mass psychology and nearly impossible to quantify or predict.

[2] See Galbraith's *The Great Crash or A Brief History of Financial Euphoria* for historical examples.
[3] GLS Shackle

Maybe so, but a huge increase in the demand for cash at a time of weak growth is a rare, dangerous, and potentially deflationary occurrence, and exactly what tends to happen in financial crises such as the current one.

But is the recent big increase in money demand so mysterious? We would argue that funding liquidity, or the ability of owners of assets to borrow money quickly against those assets, forms yet another portion of money demand, independent from growth and even interest rates. Obviously, households whose HELOCs have been cut or whose home equity has diminished; firms whose commercial property has collapsed in value; and banks whose ability to borrow in collateral markets has taken a hit, all face a similar situation. Because their perceived availability to raise cash has fallen, their actual cash holdings must rise. This is not temporary hoarding but permanent rebalancing. Their money demand goes up, and as a consequence the velocity of money must fall.

Clearly, the growth of the shadow banking sector and especially the mortgage market in the past decade made private collateral more central to credit creation than ever before. Repo lending became the critical swing variable in shadow banks' balance sheets; home equity extraction became the key means to smooth consumer spending during income shocks; and off-balance sheet funding of various assets became a major earnings generator for commercial banks.

The spiralling pro-cyclical boom in collateralized credit markets and related asset prices was the essence of the 2002-2007 economic cycle. But the process seems barely to have affected money demand and money supply in those years. Regular bank loan growth was limited, keeping the money stock from soaring, and money demand was held back by widespread beliefs in an easy availability of borrowing against collateral.

Policy was complicit in allowing this boom by focusing on price level inflation only and not effective money. With regular M2 or MZM money supply and demand effected only indirectly by the credit boom, not to mention a huge output gap following the 2001 recession, it was unlikely that inflation would soar. A similar credit boom occurred with no CPI inflation in the 1920s also, another period where a huge collateralized credit pyramid was built virtually on top of a reasonably stable money stock. It was as if this pyramid was build right on top of a central bank's headquarters but, because the traditional money numbers themselves were fairly stable, key decision-makers did not notice.

Whither the Price Level?

We can now see that the traditional monetarist notion that the recent expansion in the monetary base (and budget deficit) must lead eventually to inflation ignores the dynamic relationship between money demand and the funding liquidity of assets in an economy where collateral is central.

Government interventions in the market have so far only barely offset the reduction in effective money (see Exhibit 9 below). On our crude estimates, total effective money has been stable since early 2007, but there is now much more public shadow money and less private shadow money; and more monetary base without an expansion in banks' loans-to-deposits ratios.

Exhibit 9: Components of the US Effective Money Stock ($bn)

	Feb-07	Jul-08	Nov-08	Current
Outside Money	813	821	1434	1787
Inside Money	6263	6871	6517	6529
Public Shadow Money	11326	12810	13412	14150
Private Shadow Money	9553	8034	5001	5893
Public Effective Money	12139	13631	14846	15937
Private Effective Money	15816	14905	11518	12422
Total Effective Money	27955	28536	26364	28359

Source: Credit Suisse

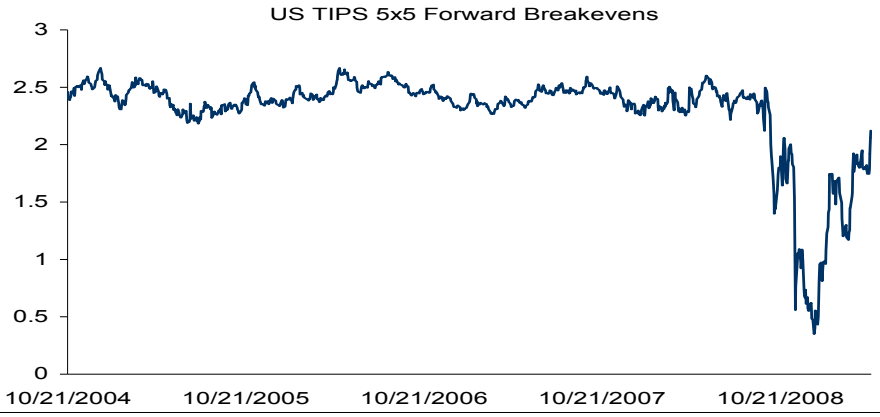
The increase in government liabilities has probably prevented large-scale deflation, but so far remains miles short of creating enough "safe" money to generate inflation. Critically, government collateral still has funding liquidity, and this should allow the economy to de-leverage more slowly than otherwise[4]. A faster de-leveraging would have increased money demand further and led to higher risks of severe deflation.

Recovery now rests on a stabilization of collateral values and a return of funding liquidity. An increased willingness to lend on collateral – and reduced haircuts in financial markets – would be a clear sign of stabilization; and perhaps a signal that government stimulus can start to be withdrawn.

So far there has been only a slight thaw in haircuts and the liquidity of private collateral, which has been driven in part by the promise of extending the TALF program to legacy assets, in part by diminishing systemic counterparty risk, in part by the direct expansion of the Fed's balance sheet, and in part by the increased supply of Treasury securities (public collateral money).

The more powerful part is twofold. First, we believe global growth momentum has now bottomed and started to turn sharply higher – a typical inventory cycle phenomenon – but one which feeds through into consumer and business confidence quite quickly. Second, once financial confidence and funding liquidity start to improve, the possibility – indeed the probability – exists that a self-reinforcing cycle of expanding private collateral money will take root.

Exhibit 10: US TIPS Forward Breakeven Inflation



Source: Credit Suisse

This could be surprisingly powerful as expectations for total credit market losses, the amount of new capital needed by banks, the cost to taxpayers of insuring the credit system, and the risk appetite of both hedge fund and real money investors all start to improve together, adding to the rebound in consumer and business confidence.

In our end-year piece *Overwhelming Force*, published on 17 December 2008, we called this the healing equilibrium. Provided this process is not suddenly disrupted by a new and fundamental shock to confidence and final demand (bad regulation, swine flu, protectionism etc), the healing process could lead to a rather rapid recovery in both credit and equity values, and certainly one that would surprise most observers. And that in turn would lead to a quicker rebound in output/demand than most people expect.

In our language, global industrial production growth might entirely reverse its 11% plunge from last July to this February by this coming summer or autumn as the effective money stock expands to meet the increased demand because the private shadow money stock partially recovers and public money has expanded.

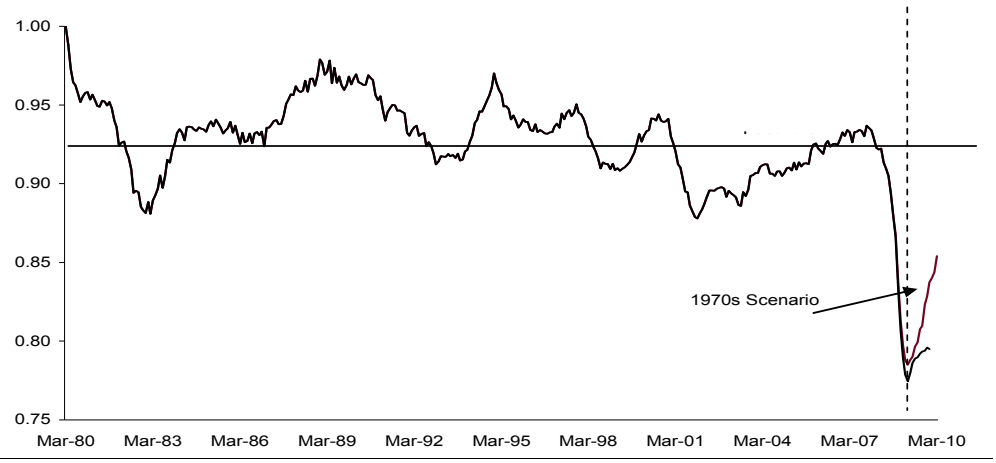
[4] For an interesting view on the role of government debt, see Michael Woodford's *Price Level Determinacy without Control of a Monetary Aggregate*, Carnegie-Rochester Conference Series on Public Policy, Vol. 43(1), 1-46.

Even then, we are likely to be a long way from generalised inflation for two reasons: first, because the global output gap will still be very large and, second, because we expect firms to react to the current crisis by seeking radical new ways to reduce overheads and improve efficiency. So productivity is set to improve sharply in our view into any rebound, which suggests that unemployment will stop rising but will not fall back to anywhere near the levels seen at the peak of the last boom.

Thus, we believe even a major extension of the embryonic rebound in growth and confidence will not be enough to stop core "deflation" (see Exhibit 6). It should, by contrast, be enough to drive up the prices of those industrial or food commodities in structurally short-supply, including oil and some of the industrial metals. So, if a sustainable rebound in output takes place, the result will probably be higher prices for energy and some food commodities and metals, but significantly lower prices for many other goods and services.

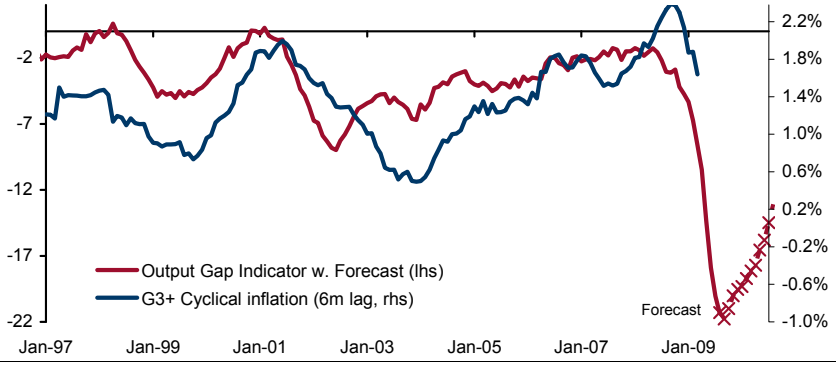
In this situation, buying assets directly linked to supply constrained commodities would be a much more effective "hedge" than buying breakevens because the likely drop in core inflation (80% of the total) would offset all or part of the rise in headline inflation driven by the rebound in commodity demand, in our view.

Exhibit 11: Global Output Gap (Industrial Production Based)



Source: Credit Suisse

Exhibit 12: G3+ Cyclical Inflation versus Global Output Gap



Source: Credit Suisse

Of course, the real inflation worries are not about a short-term rebound in a time of massive excess capacity. They are over the increased debt burdens of governments long on promises made but increasingly short on credibility of meeting them. We too are troubled by these often demographic problems.

We plan to address these issues more directly in a follow-up piece but, in the meantime, it is worth asking whether policy makers are aware of the kind of arguments about the shadow banking and money system set out here.

Of course they are in general terms. This whole perspective about money substitutes and the importance of collateral is not new – as we hope we have made clear in some of our quotes. Our emphasis on the endogenous nature of secondary money and credit creation may be unfamiliar, and our estimates of the level of the shadow money stock may be novel, but we think the basic intuition about what is going on is widely shared by now.

Moreover, our framework has some interesting implications for the prevention of future crises and the form of re-regulation. Namely, that central banks interested in a less pro-cyclical system should monitor haircuts on private collateral as one sign of excessive financial exuberance/risk appetite, and perhaps even regulate these haircuts as a supplement to or substitute for anti-cyclical capital requirements (macro-prudential policy).

If one doubts that policymakers are starting to think carefully about these issues, and worry about the government regulating the shadow banking system out of existence altogether, read the following interview in last week-end's *New York Times* magazine (a link to it is on our blog: www.credit-suisse.com/globalstrategyblog).

It is not with Chairman Bernanke or Tim Geithner, but with the president himself, and in it we believe he shows implicitly, if not explicitly, that he has already come to roughly similar conclusions about the desirability of re-expanding the shadow money stock, while also providing for more sensible oversight and supervision in the future.

For now, however, we think that the immediate focus belongs on whether confidence can progressively return: confidence in collateral, in lending, in economic risk taking. Once the immediate deflation shock wears off, we can consider the possibility of a return to an economy with strong enough aggregate demand to deliver inflation.

And whether it will probably depends not on what the government is doing now, but on what the private sector will be doing then.

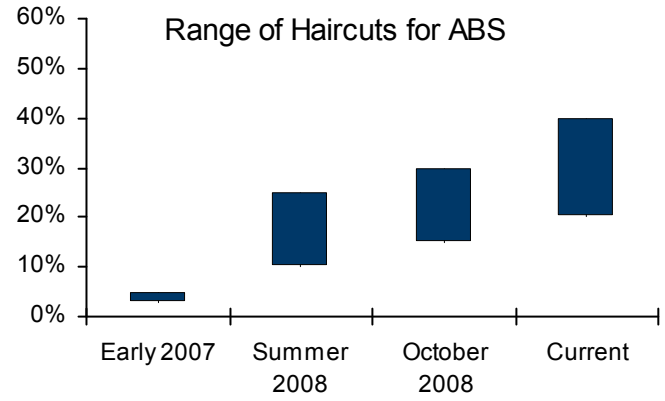
It will depend on whether we return to an economy confident enough to lend again on good terms and reasonable collateral.

True recovery lies not just in higher prices, but also in lower haircuts[5].

In other words, the answer lies in the shadows.

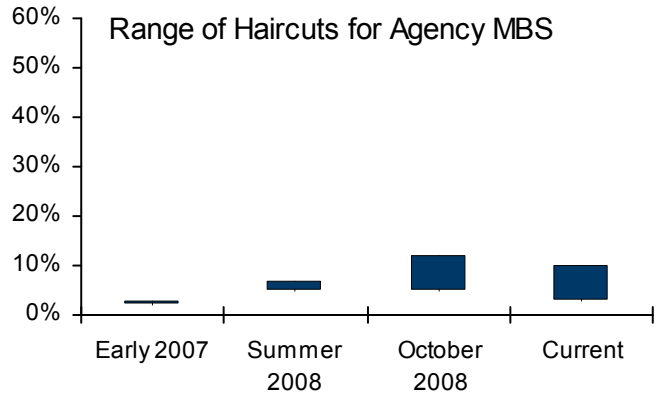
[5] For an interesting account of this, see Liquidity, Default, and Crashes by John Geanakoplos of the Cowles Foundation. The author argues that a change in lending terms (haircuts) "may be a more important harbinger of a liquidity crisis than a change in interest rates."

Exhibit 13: ABS Haircuts



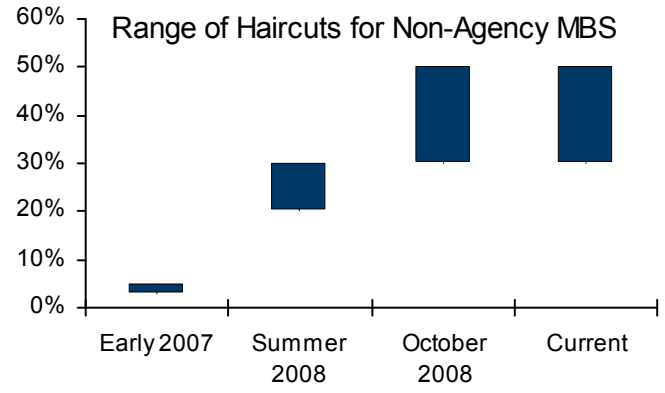
Source: Credit Suisse

Exhibit 14: RMBS Haircuts



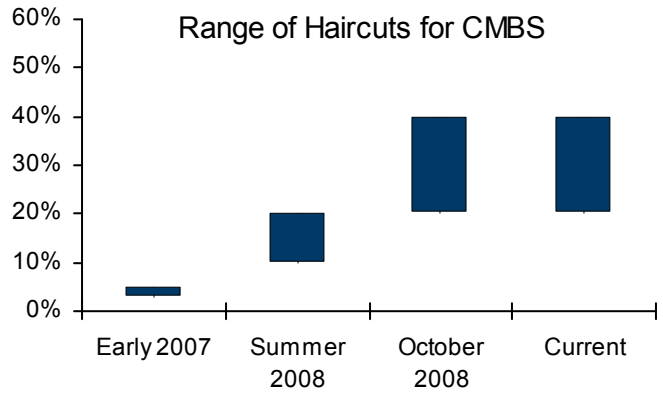
Source: Credit Suisse

Exhibit 15: Non-agency MBS Haircuts



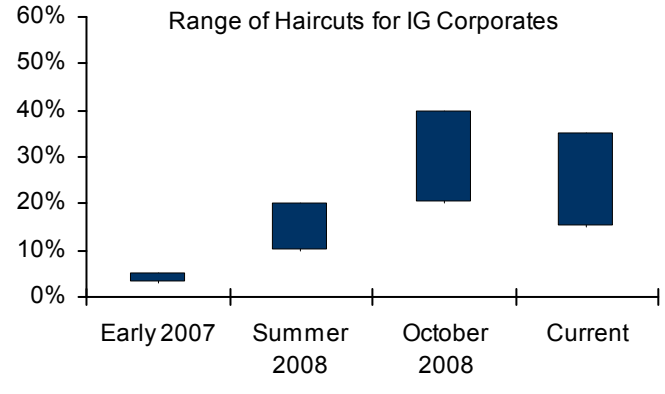
Source: Credit Suisse

Exhibit 16: CMBS Haircuts



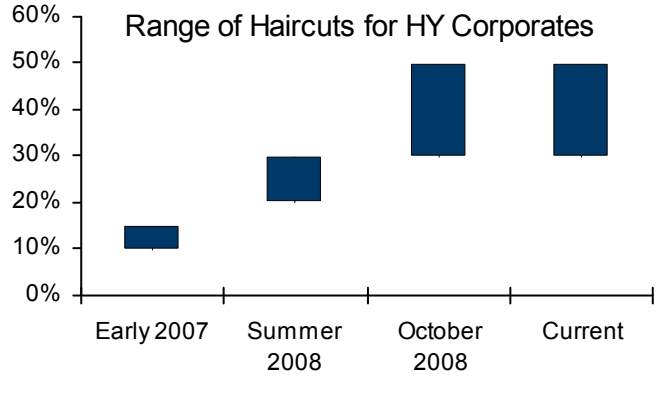
Source: Credit Suisse

Exhibit 17: Investment Grade Bond Haircuts



Source: Credit Suisse

Exhibit 18: High Yield Bond Haircuts



Source: Credit Suisse

Exhibit 19: Shadow Money

Public Debt and Shadow Money

US Treasuries

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	4,822	103.1	1.25%	4,912
Summer '08	5,105	105.6	1.25%	5,321
Fall '08	5,550	108.2	1.25%	5,932
Current	6,242	106.5	1.25%	6,566
Change				1,654

Agency Bonds

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	2,668	100.8	3.50%	2,596
Summer '08	3,128	102.8	3.50%	3,103
Fall '08	3,178	102.0	6.00%	3,046
Current	3,115	104.8	5.00%	3,101
Change				506

Agency RMBS

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	3,956	99.0	2.50%	3,818
Summer '08	4,761	98.0	6.00%	4,386
Fall '08	4,895	99.0	8.50%	4,434
Current	4,621	103.8	6.50%	4,483
				664

Private Debt and Shadow Money

Non-agency RMBS

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	2,163	98.4	4%	2,044
Summer '08	2,010	86.5	25%	1,303
Fall '08	1,931	47.0	40%	544
Current	1,750	67.8	40%	712
change				(1,332)

CMBS

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	805.3	100	4%	773
Summer '08	921.2	96	15%	752
Fall '08	905.6	46	30%	292
Current	894.3	68	30%	426
change				(347)

IG CORP

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	5129.513725	102	4%	5,023
Summer '08	5720.318182	99	15%	4,814
Fall '08	5682.166667	86	30%	3,421
Current	6124.85	94.9	30%	4,069
change				(954)

HY CORP

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	465.686275	102	13%	416
Summer '08	468.181818	88	25%	309
Fall '08	468.333333	60	40%	169
Current	468.75	64	40%	180
change				(236)

ABS

	Outstanding (B)	Price	Median Haircut	Shadow Money ($B)
Early '07	1352.2	100.0	4%	1,298
Summer '08	1209.5	85.8	18%	856
Fall '08	1170.3	63.5	23%	576
Current	1068.6	67.7	30%	507
change				(791)

Total Shadow Money

	Total	Private	Public
Early '07	20,879	9,553	11,326
Summer '08	20,844	8,034	12,810
Fall '08	18,413	5,001	13,412
Current	20,043	5,893	14,150
change	(836)	(3,660)	2,824

Source: Credit Suisse, Federal Reserve, SIFMA, US Treasury. Note: Haircuts are indicative and based on conversations with market participants.

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