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Ponzi Finance and the Mis-Pricing of Risk

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Summary

- The assumptions underlying conventional monetary/ flow of funds analysis have clearly broken down in the current super-mania. In the US, the personal sector financial deficit has begun to correct quite markedly, as problems in housing and housing finance intensify, but with seemingly minimal impact on financial markets. Concepts underlying conventional analysis, such as the presumed relationship between expected return and risk and some relationship between the prospective growth of the economy and the demand for credit at a given interest rate seemed to have ceased to apply. For predictive purposes at least, this suggests the need for a different way of thinking about this mania.
- There is now plenty of evidence that the enormous growth of the credit derivatives markets has led to a mis-pricing of risk on a massive scale. In total contrast to the mantra that credit derivatives are good because they ‘spread risk around the economy’, it seems more likely that the mis-pricing of risk is the result of greater concentration of risk in the hands of the investment banks and credit funds.
- The mis-pricing of risk creates the symptoms of a ‘wall of money’ in the global economy but can also have actual consequences for monetary conditions. Over time it leads to the mis-allocation of resources and growth decay. Eventually the latter will lead to a re-pricing which must be accompanied by a jump in savings and a collapse in economic activity and the real interest rate.
- The total picture of current global finance can be analyzed as the equivalent of a gigantic Ponzi scheme. Far be it from me to suggest in this article that there is anything illegal or unethical going on; it is simply that from a purely fundamental economic perspective, the basic characteristics of ‘Ponzi finance’ appear to be present in what is taking place at a macro level. This suggests that the global financial and economic situation (at least for the US and Europe) can be analyzed as if it is a Ponzi scheme, which gives rise to some insights.
- One of the insights is that the dominant financial market trades (bets on declining implied volatility, spread convergence, carry trades, rising stock markets) will simply continue until the collapse, which is likely to occur in one or two stages. A rather unpalatable insight is that the dominant trades and the key institutional ‘players’ cannot really be separated; the collapse of the trades will be their collapse too. This means that debate about the ‘chicken and egg’ issue of yen carry trades and the global credit bubble – in which I have been as involved as anyone – might well be rather pointless. Another insight is that current trends in the US economy, in particular – weakening housing and manufacturing but with firm services – will also stay broadly in place until the collapse.

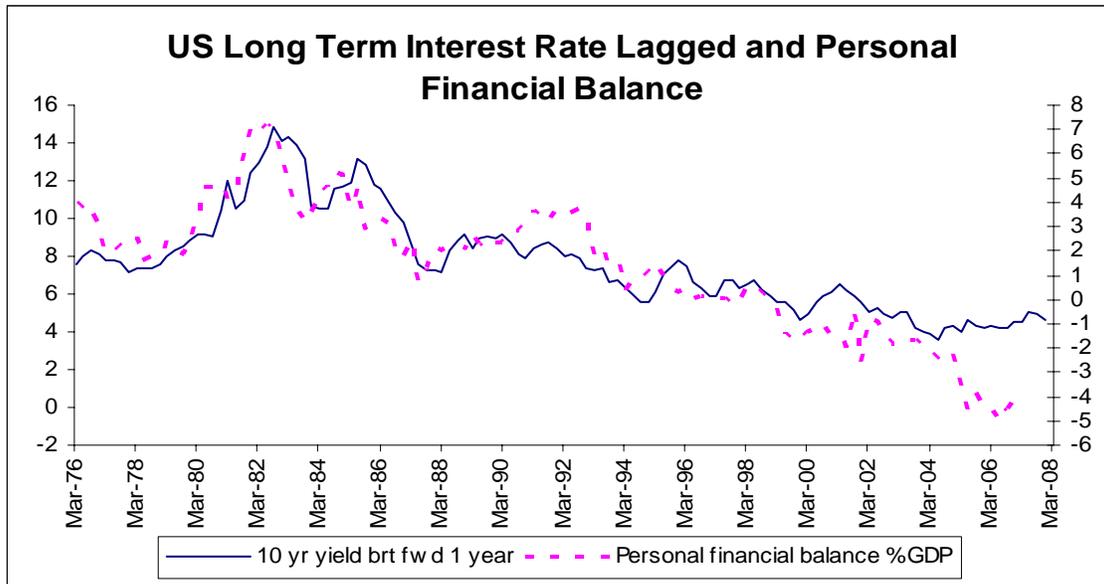
Introduction

This 'monthly' is a little different from previous 'monthlies' in that there are fewer charts. (I will make up for this in March, which should be the other way round). It is more of a 'think piece', with the objective of establishing an appropriate analytical framework for considering current and prospective financial and economic developments. My tried and tested framework, revolving around monetary conditions, savings investment balances and their relationship to each other and factors such as real interest rates and exchange rate valuations, has failed. Needless to say, I view this as likely to prove to be temporary in the context of the much bigger historical picture.

Nevertheless, as far as where we are now is concerned there is no escaping from the fact that the conclusions of my own analysis have not been borne out. In my January 'monthly' of last year, titled 'What Explains the Persistence of Global Imbalances?', I argued that the imbalances had been sustained up to that point by a sufficiently rapid generation of monetary inflation, which was being reflected in soaring gold and commodity prices. However, gold and commodity prices peaked in May and in the summer I began to believe that deflation had become the most likely ultimate outcome of the collapse of the giant bubble. In my October 'monthly', 'The Dynamics of the Bubble', I argued that the credit bubble had been sustained through a 'mini-cycle' in which leveraged speculative activity had been encouraged when monetary conditions had tightened enough to slow the global economy. I argued that this could not happen again because higher US short rates meant that the US yield curve had become inverted, resulting in the resort to carry trades as an ultimate funding source for the credit bubble to a degree which must prove unsustainable. I also argued that the bursting of the housing bubble in the US represented a more powerful force to credit contraction than leveraged financial speculation would be to credit expansion, signaling the beginning of the end of the credit bubble.

Now I am writing in early February. Carry trades are bigger than ever and have become an increasing concern of policy makers and a key focus of the financial media – but it still does not seem to have made any difference. In US housing finance there are signs of implosion of the sub-prime mortgage sector. Yet, contrary to my argument in October, leveraged financial speculation is in full flow as never before with most stock markets at, or very close to, highs and various measures of risk at or near all-time lows.

As for my previous arguments for dislocation, a correction of the US personal financial deficit has been underway for some time now, as is suggested by the chart below, with so far no (or at least only very limited) apparent ill effects for the dollar or the overall economy. To look at this simply, a monetary/ flow of funds perspective would say that the ongoing correction of the US personal deficit should have put downward pressure on the dollar. If the dollar cannot fall because of central bank intervention, then the downward pressure should have emerged in US market interest rates. If US market interest rates cannot fall because the Fed is holding interest rates up (therefore draining liquidity), then this should have been very negative for the stock market. Yet recently bond yields have risen and yet the stock market has been hitting new highs.



To sum it up bluntly, I have run out of explanations. There is something bigger going on – something that requires a different analytical approach to understanding the economic and financial extremes that we are experiencing, which by definition must be an approach that is subject to different assumptions. There are assumptions implicit in my normal, relatively conventional, analytical approach. For instance, I assume the usual relationship between risk and expected return. This lies at the heart of the idea that exchange rates will ultimately return to fair value, notwithstanding that extended deviations from fair value can be the result of changes in relative monetary conditions or the balance of supply and demand for funds within the economy. Assumptions of some reasonable stability in the demand for money function and a relationship between the prospective growth of the economy and the demand for credit at a given interest rate underlie the way I try to understand the development of monetary conditions. Clearly these assumptions are being violated. The Turkish lira, for instance, continues to rise to ever more incredible heights in real terms despite the massive current account deficit becoming even bigger and the economy weakening. According to most observers the world has become ‘awash with liquidity’, and credit growth has been accelerating despite that central banks have raised interest rates while economic growth has slowed globally.

In this piece I look at current global financial markets from two different, albeit ultimately similar, angles: The massive mis-pricing of risk that appears to be the result of the explosion in the size of credit derivatives markets, and the fundamentally Ponzi-like nature of modern global finance. I believe that both of these ‘models’ are now applicable and the conclusions of both for the economy are similar. The Ponzi analysis in some ways is little different from a ‘bubble’ analysis, but the conclusions become clearer, if unfortunately rather unpalatable. The overall conclusion that I reluctantly reach from this analysis is that this will end with the breakdown of the global financial system, or at least a substantial part of it. In this ‘monthly’ I end by touching on the likely manner of the collapse. I have to hold over the next part of the discussion, looking in more detail at specific economies (including emerging market economies), to the March ‘monthly’. In that ‘monthly’ I will also try to think about what governments will do and what will emerge from the rubble. The ‘good news’ is that I am not talking about a nuclear holocaust.

At the end of it we will all be alive and the real assets – land, property, plant, equipment and human capital – which constitute real wealth will still be here. Life goes on, as they say, and so will the global economy in one form or another.

On a personal note, the positions I am taking, while they may be of media interest, are not good for my business. My analysis is the basis for my own personal decisions and therefore I believe I have a duty to clients to ‘give it to you straight’, which I hope clients will appreciate.

Credit Derivatives and the Economic Consequences of the Mis-Pricing of Risk

From my, admittedly non-expert, perspective there is now plenty of evidence that the enormous growth of the credit derivatives markets has led to a mis-pricing of risk on a massive scale. By this I mean in particular that investors in structured credit products are buying riskier instruments than they think they are. Consequently they are over-paying. If true this would seem to be an issue for the rating agencies.

There are two approaches to thinking about this. One approach, which is more anecdotal, is to consider some of the things that are going on in the markets that point to mis-pricing of risk. The second approach is to think from first principles about what the proliferation of credit derivatives does to the distribution of risks in the market. In this second area I am on a hiding-to-nothing from the experts who know infinitely more about the mathematics of finance than I do. But I am going to have a little bit of a go at it anyway!

Bloomberg News recently carried an informative article, ‘CDO Surge Squeezes Deutsche Bank, Vanguard Bond Funds’ (February 6). The article starts by noting how the creation of synthetic collateralized debt obligations is driving down the cost of protection against default to such a degree that “even the government of Argentina...is paying less than ever to borrow.” The article goes on to discuss how CDOs that bundle together as many as 200 credit default swaps offer higher returns than bonds or individual CDS because they are tailored to a wider group of investors. The AAA-rated portion of the CDO could offer a spread of 50 or more basis points over LIBOR while a bond with the same credit rating would offer only about 34 basis points. A credit hedge fund manager is quoted saying that this has added huge downward pressure on spreads (“As long as the money pours in, I see no reason for spreads to widen again.”)

The article then goes on to discuss how falling costs for credit default swaps drive bond yields lower because of the arbitrage between the two markets. Another hedge fund manager is quoted telling how he bought a Swedish corporate bond and credit default swaps to hedge against the risk of default, with the net, apparently risk-free, yield being higher than on equivalent maturity government debt (“It’s like a free lunch. You’re immune to default.”)

Obviously markets move around and relative valuations shift, making different strategies appropriate at different times. Nevertheless, to me this seems contradictory. On the one hand we are told that tranches of CDOs that bundle CDS are more attractive than bonds because they offer a higher yield and on the other that bonds protected with CDS are more attractive because they offer a higher yield.

My own, non-expert, view is that the risk in CDOs is mis-priced, and that most of that mis-pricing occurs in the lower rated tranches. Imagine a game in which six players throw a die in rounds. Each round each player 'wins' 30 automatically but any player that throws a six loses 60. The mathematically expected gain from every round is therefore 20 (30 minus one-sixth of 60). The players each decide to pay 10 every round in insurance to cover the risk of losing 60 (meaning that they will then be left with a guaranteed 20 every round). But the insurance/risk is repackaged to six other players. Player 6 is going to pay up the 60 for the first six thrown by any player in a round, player 5 for the second six etcetera, up until player 1 who will only pay 60 if all six original players throw a six. The chance of the latter happening is fairly infinitesimal. The bulk of the risk is now with player 6, obviously. If I have my calculation right he will end up paying 60 roughly two-thirds of the time, which means that out of the total insurance stream of 60 he will require roughly 40 to break even. (The chance of at least one player throwing a six is one minus the chance of no one throwing a six. The chance of the latter is $5/6$ to the power of 6, which works out to be very close to $1/3$. Therefore the chance of at least one six is close to $2/3$).

In the real world the risks are correlated which means that the concentration of risk with player 6, in this example, is reduced and he will accept a lower return for taking on that risk. (Because of correlation there is a greater chance that no sixes will be thrown than would be suggested by random probability). But my guess is that once 'diversification' is used (by adopting similar positions in many different 'games'), because of cross-correlations (i.e. because of the economy) the chance of all the risky positions blowing up together is far greater than it appears.

In my opinion, the mantra that credit derivatives are good because they 'spread risk around the economy' is exactly wrong. They may take some risks off the books of the banks – at least in a direct way – but I think they actually concentrate risk overall, most of it in the hands of investment banks and a few credit funds. It is the concentration of risk that is driving prices to ridiculous levels, not the dispersing of it.

The concept of the lowest rated CDO tranches being 'equity' is somewhat misleading in this respect, because it appears to me, at least, that they must be much more highly leveraged than traditional equity. Superficially, given that a CDO is a basket of claims on an income/revenue stream, it would seem to be little different from the collection of assets that make up a company, and therefore the equity tranche of a CDO would seem to be rather equivalent to the equity of a company. However, think of 200 private equity deals (probably not too difficult to imagine in the current environment!). The original companies collectively represent a large collection of assets financed by a combination of debt and equity. The private equity deals replace most of the equity with debt. If the debt is repackaged into CDOs, the lowest rated tranches of the CDOs must represent a much more highly leveraged investment in the collection of assets than a portfolio of the original equity did.

To summarise, this all suggests to me that what has really been going on with the exponential growth of credit derivatives is a process of concentration of the real risk in fewer hands, with a consequent across-the-board mis-pricing of risk.

Now I get back to the safer ground (for me) of economics and a little 'thought experiment' I want to share. Imagine a country that is completely closed to the outside world (i.e. no trade or

capital flows). There is no central bank or modern banking system as such in this country. Instead there are 'credit funds', in which savers can buy units. Transactions in the economy are made either with precious metals (or notes backed by metals), by barter or by transferring units of the credit funds. The different funds have very different risk profiles – some funds lend only to the government, while others lend mainly to highly speculative ventures. Everything is completely transparent so the interest rates paid out to savers reflect the credit risks being taken by the funds. The interest rate paid out by funds lending only to the government is therefore the 'risk free rate', and a higher rate is paid by funds lending to high risk speculative ventures.

In theory it should be hard for persistent asset bubbles to occur in this country. If there was suddenly an incipient housing bubble, say, for some reason, the demand for credit for housing could rise. This would tend to force up interest rates paid by all the funds, encouraging greater saving and less consumption in the economy. The more house prices go up in bubble-fashion the higher interest rates would rise, in a process that would be unsustainable and brought to an end fairly quickly.

Now imagine that one fund has a 'good idea'. They realize that, through some financial 'sleight of hand', they can appear to be offering 'risk-free' units to savers while actually on-lending at least part of the funds to high risk speculators. They offer a higher interest rate than the risk-free rate to savers for a supposedly risk-free product, thereby taking market share, while offering to lend to high risk borrowers at lower than the normal rate for such borrowings. Other funds see what they are doing and are forced to copy or face losing market share. Speculative borrowers, who would normally find it hard to obtain credit in this sort of system, suddenly find there is a virtual 'wall of money' available to them. Clearly, though, there is no real increase in liquidity; there cannot be, absent a sudden increase in the supply of precious metals, because there is no central bank. Instead there is a mis-pricing of risk which to borrowers looks like a great increase in credit availability.

What actually happens is that the perceived risk-free rate available to savers rises, encouraging greater saving and less consumption. But, unrealized by savers, this saving is being disproportionately directed to speculation and high risk ventures, meaning a mis-allocation of resources for the economy. Ultimately economic growth will begin to decay. More of these speculative ventures will begin to fail, eventually bringing down some of the funds. Savers will realize that what they had thought were risk-free investments were not, and they have lost their savings. They will then attempt to rebuild savings, which will collapse consumption and interest rates and result in a sharp drop in economic activity in the short run.

Now imagine that all along there had actually been a central bank and a banking system in this hypothetical closed economy. In this case the perceived risk free rate will not initially rise so much because banks will increase lending and the central bank will accommodate by expanding the monetary base (assuming that the central bank has an interest rate targeting policy in the short-term, as all central banks do today). The consequent rise in money supply will more easily allow asset price speculation to translate into asset price increases and general inflation, helping to encourage further speculation. In this way the mis-pricing of risk can lead to inflation. The rise in asset prices can also lead to the savings rate falling because the savings rate is sensitive to perceived wealth as well as to potential return. Therefore, unlike the case without a conventional

monetary system, the mis-pricing of risk, if it persists, could ultimately result in the savings rate falling, rather than rising. This will tend to support the real interest rate (because of the relative lack of savings), offsetting or more than offsetting the central bank's influence in keeping the real interest rate down. This makes the outcome for the economy much worse because when the final result of the risk mis-pricing becomes evident, not only have savings been misallocated but there is less saving than there should have been. The collapse in the real interest rate will therefore be all the greater as savings are rebuilt.

What will the end game as it evolves look like, in this case? If mis-pricing of risk persists as a semi-permanent feature over time capital will become grossly mis-allocated. Speculative areas that have received too much capital will bust, leading to growth beginning to decay. The long-term trend rate of growth will fall as a result of the misallocation of resources. Projects that would have been viable in normal circumstances will be handicapped by lower long-term trend growth and the fact that the real interest rate (cost of capital) is too high relative to this low long-term trend growth rate because of low savings and too much capital incorrectly drawn to high return but high risk areas.

This sort of process is roughly what has been underway in the US economy, and to an increasing extent in the rest of the world also, for some long time now. In the US, the process was particularly obvious in the mis-pricing of risk in lending to the property market. The housing market is in a bust phase now and this is contributing to growth decay. The recovery in the housing market that most observers think they can see will only prove sustainable if there is a high rate of inflation across the economy as a whole. It is simply not possible, at this stage, for house prices to rise unless other prices are rising more quickly. We have a pure fiat money system globally and therefore only a fool would rule out entirely the possibility of very high rates of inflation. Nevertheless, as I argued in the January 'monthly', a destructive deflation now seems a more likely outcome, in which case the developing decline in house prices would be the first stage of this.

Ponzi Finance

The late Hyman Minsky believed that economic booms eventually turn to bust primarily because of the deterioration of the quality of debt issued as economic agents succumb to complacency or even euphoria as the boom runs on and on. In the early stage of the expansion 'hedge financing', or financing that can be serviced out of cash flows and incomes, dominates. In the final stage of the boom 'Ponzi finance' begins to dominate. Minsky defined Ponzi finance essentially as the servicing of debt through the issuance of more debt, rather than out of income or cash flows. There have been plenty of direct examples of this in this long bubble, including such things as issues of payment-in-kind notes by companies owned by private equity groups, and much financing of the personal sector in the US.

I cannot in all honesty claim to be familiar with Minsky's original work; what I know comes via the work of other financial economists such as Doug Noland and Paul McCulley. The following quote from Minsky's work, which I have taken from a paper written by Noland in 2000, struck me as I have wrestled with trying to understand how we have come this far with such huge imbalances, globally and within individual economies, but without any financial dislocation:

“It can be shown that if hedge financing dominates, then the economy may well be an equilibrium seeking and containing system. In contrast, the greater the weight of speculative and Ponzi finance, the greater the likelihood that the economy is a deviation amplifying system...Over a protracted period of good times, capitalist economies tend to move from a financial structure dominated by hedge finance units to a structure in which there is large weight to units engaged in speculative and Ponzi finance.”

Clearly if Minsky was alive today (he died in 1996), he would have a lot to say about the current economic and financial situation.

I suspect, though, that we have gone well beyond the concepts of Ponzi finance units that Minsky had in mind, and we have arrived at a stage over the past year or two where a substantial part of the global financial system can be analyzed as being equivalent to one gigantic Ponzi scheme. The simplest form of Ponzi scheme is one in which the promoter(s) offer participants a very high return on their money but pay out to any participants who withdraw their funds by using money committed by new participants. Obviously the promoters take a large cut themselves. Once going the scheme gains credibility as participants are able to withdraw funds to their credit in the scheme and others see the high returns that they are making. The scheme remains viable and continues for as long as new money committed (mostly by new participants) is greater than money withdrawn and the promoters’ ‘cut’. In practice, I believe all Ponzi schemes that have lasted for any length of time have been promoted on the basis of some supposedly clever investment wheeze, which makes participants believe that the promised returns have some genuine basis. The ‘original’ Ponzi scheme of Charles Ponzi (of course there were Ponzi schemes before Ponzi) was supposedly based on arbitraging mis-valuations of international postal reply coupons.

My own thinking is that in practice Ponzi schemes that are relatively large and long lasting have four main characteristics: 1) The funds supposedly standing to the credit of participants, or investors, are not backed by assets of equivalent value, when the value of assets is considered in terms of the future flow of goods and services that they can lay claim to or produce; 2) The scheme will collapse once withdrawals exceed new inflows for any significant length of time; 3) The scheme is generally endorsed, or seemingly endorsed, by the government or someone in authority; 4) The ‘fees’ taken by the promoters, or insiders, are high relative to the funds committed.

I gained some new personal insight from a paper I discovered on the internet, written by an economist at Indiana University, Utpal Bhattacharya, titled ‘The Optimal Design of Ponzi Schemes in Finite Economies’. Bhattacharya shows that in a Ponzi scheme that is going to terminate, it can still be rational to participate in the final round (when contributions are considered as taking place in rounds) if the scheme is sufficiently large and a post-collapse bailout is anticipated which will, inevitably, impose costs on non-participants. Extending this, my interpretation is that even if it is considered likely to be at a late stage in the viability of the scheme, it can be rational to be a participant. The calculation boils down to a consideration of the potential gain from the rest of the scheme’s life less the cost of collapse to participants, relative to the expected cost of collapse to non-participants resulting from the government bailout.

I am jumping ahead in the argument a little, but I see two important implications of this for the present US and global financial situation, if we analyze it as a gigantic Ponzi scheme. The first is the influence of my point 3) – the endorsement of government or authority – which is a generally accepted point. The beginning of the most recent phase of the financial mania, in June-July last year, after the May-June setback, coincided almost exactly with the appointment of Henry Paulson, former head of Goldman Sachs, to the post of Treasury Secretary. With the benefit of hindsight, this may have been a more important influence on markets than I, or most other analysts and observers, appreciated at the time. The subsequent stances Mr Paulson has taken on all finance and financial market-related issues – such as the yen and yen carry trades, the dollar, the role of hedge funds, the opening up of China etc – have been very much in the interests of speculative finance and finance in general.

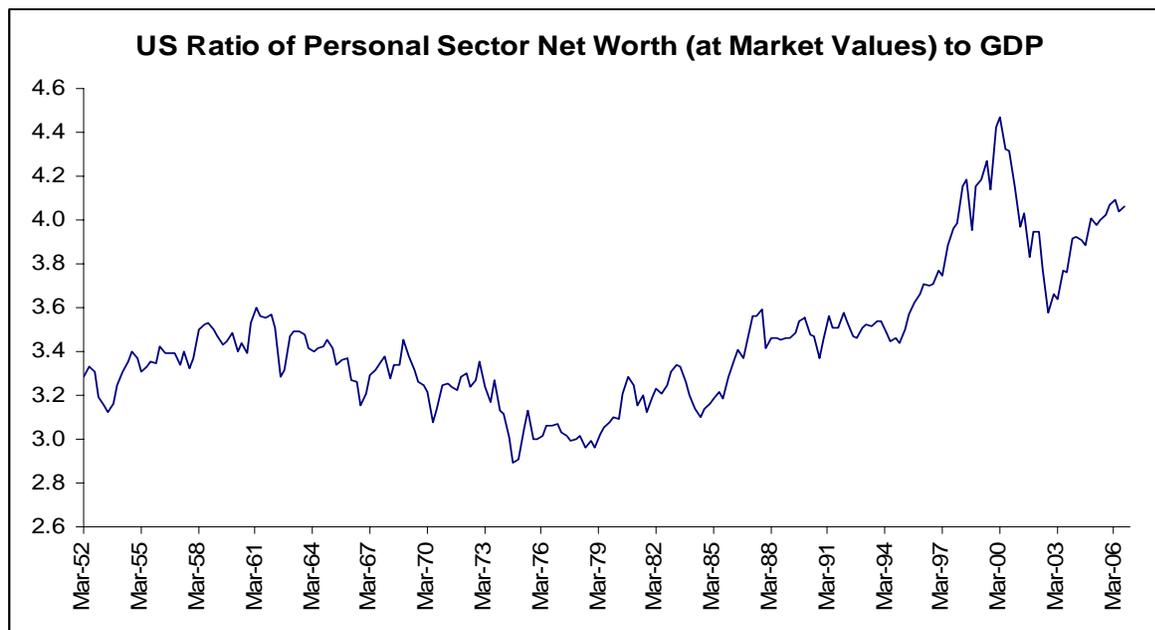
The second point is on the issue of yen carry trades. I elaborate on this shortly, but if we see yen carry trades as being necessary to the continuation of this global Ponzi finance, then this perspective casts some new light on the conundrum of why the yen has continued to weaken even as global concern about the carry trade has reached new heights. Quite a number of strategists have taken the ‘contrarian’ viewpoint that financial media focus on the yen carry trade issue has reached such a frenzy that it must be right to short the yen – the old idea that if it is ‘on the cover of ‘Business Week’ the implications must already be fully reflected in market prices and from an investment point of view it must be right to take the opposite stance. On this argument it seems to be the ‘dumb’ view to argue that the carry trade has to unwind and therefore to be long yen. The ‘smart’ view seems to be that the media must have it all wrong and therefore the low level of the yen, or even lower levels, must be fully justified.

However, once we perceive current financial development as equivalent to the progress of a gigantic Ponzi scheme, of which carry trades are a very necessary part, the perspective is different. Insiders may have no option but to engage in carry trades in order to be able to provide promised returns (i.e. keep the scheme going), while participants (i.e. outside investors) may recognize that this is totally unsustainable and ultimately likely to be disastrous for the financial system but choose to participate anyway based on the calculation outlined by Bhattacharya. This means that the yen will weaken as long as global Ponzi finance goes on, but the carry trade will collapse when the implosion begins.

I should say at this point that I am not suggesting that most of what has been going on in the financial world amounts to fraud. Deliberate Ponzi schemes are fraud. But in the case of hedge funds, for instance, I have no doubt that the principals of most funds are doing the best job they can do for clients and are not doing anything illegal. I am not taking into account the legality of any particular situation here. Additionally, of course, hedge funds and other investment funds hold net assets with a market value equal to the value of their investors’ known holdings in the funds. This is very different from a true Ponzi scheme, in which the Ponzi fund will not hold net assets equivalent to the outstanding liabilities to investors. However, from a purely economic perspective this difference might be less important than appears, if in practice the apparent market value of all the assets cannot be realized when it becomes necessary. I am merely saying that the financial system as a whole can be analyzed in terms of economic impact as if it is a Ponzi scheme if it satisfies my four conditions above. Once this is established it enables some

clearer thinking about the analytical framework for analyzing current economic and financial developments.

There are two ways of looking at my first characteristic of a Ponzi scheme. The first is to look at what is happening to funds invested. The second is to look at the value of assets that investors believe they hold in the scheme and the value of assets that actually exist. On the first point, a recent equity research study by Dresdner Kleinwort argues that virtually all hedge fund trading strategies boil down to the leveraged selling of volatility. As long as volatility continues to decline – which it has done – then hedge fund returns are high. More money going into hedge funds and more leverage being created and used in these strategies itself causes volatility to decline, in characteristic, circular, bubble fashion. However, in contrast to old-fashioned approaches to investment management, these strategies clearly do not contribute to wealth creation in the economy. In the long-run they contribute to mis-allocation of resources and wealth destruction. For instance, the declining volatility of the yen, as it has become ever more undervalued, has encouraged more and more yen carry trades, in a virtuous circle for hedge funds and other carry traders. The huge yen undervaluation depresses consumption and encourages investment in the export sector in Japan, while having to some extent the reverse effect for the US – the opposite of what the net foreign asset/debt imbalance between the two countries implies should be occurring. In contrast, if done correctly, old fashioned stock-picking strategies should contribute to wealth creation in the long run by sending price signals that encourage a better allocation of resources in the economy.



For the second point, it is only a rough approximation but the chart above, showing the ratio of net worth of the US personal sector measured at market values to nominal GDP, shows that the equity bubble that began in the mid-1990s took personal net worth at market values well out of line with its normal relationship to nominal GDP. We are now seeing this repeated again, having never completely returned to the more normal range of the ratio during the equity bust of 2001-2. The implications of this simple chart are worse than superficially appears because GDP itself has been artificially boosted by the growth of the financial sector.

The Dresdner Kleinwort study also estimates that the revenue pool that hedge funds provide to investment banks accounts for roughly 4% of the funds managed by hedge funds. With another 4-5% of management and performance fees accruing to the managers, Dresdner estimate that 8-9% of funds under management are taken up by these fees and transactions costs. This suggests, again according to Dresdner, that hedge funds require to achieve gross returns of 18-19% on assets under management. While by no means the whole story, these numbers are indicative of my fourth characteristic of Ponzi finance.

The Economic Manifestations of Ponzi Finance

Imagine a country in which a number of simple Ponzi schemes grow to become so large that they dominate the economy. (Something like this happened in Albania in 1997). Assuming there is also an ordinary banking system, what should we expect to see happen to some of the key economic variables?

To keep it simple, let us assume at the outset that the economy has a very low long-term sustainable growth rate, around 1%, and inflation is constant at zero. That means that normally the central bank would be setting interest rates at low levels and the whole structure of interest rates would anchor around not much more than 1% (if this is a closed economy). The expected return from risky financial assets (such as equities) would generally not be much more than 3-4% in this country. But the Ponzi schemes offer an extremely high apparent return of 20% every six months. As people gain confidence the schemes inevitably attract more and more money, leading them to open more and more branches, employing more people, across the country.

In the early stage of growth of the Ponzi schemes the savings rate for the economy would probably rise because of the apparently very high return to be earned from the schemes. Those investing in the schemes would be saving more and consuming less. A significant part of the funds they invest end up in the pockets of the promoters, who will consequently have high incomes and tend to save more than average. In other words, the inequality of income rises and this tends to result in a higher saving rate initially. The surplus of funds left in the schemes to cater for any withdrawals will be placed elsewhere, probably in the domestic banking system. This will tend to contribute to a higher demand for money (i.e. money supply relative to GDP) initially.

Money supply growth would probably also pick up in the initial stage of Ponzi growth. The central bank interest rate is far below the apparent returns available in the Ponzi schemes meaning that, whether directly or indirectly, bank borrowing will be used to fund investment in the schemes, resulting in higher money growth. Given that both the supply of money (driven by the greater demand for credit) and the demand for money (driven primarily by the bank deposits accumulated by the scheme and its promoters) have risen, it is unclear whether monetary conditions can be said to have loosened. The growth of the Ponzi schemes themselves, involving higher employment, will contribute to stronger economic growth initially. If the central bank raises interests in response to this and in response to higher money and credit growth it becomes even less clear whether monetary conditions are tightening or whether they are loosening.

As people gain confidence in the Ponzi schemes and they grow ever greater, the wealth that people believe they have accumulated in the schemes will become enormous, tending then to result in the savings rate dropping. Although apparent returns are very high, the fact that people are achieving or exceeding their 'wealth targets' will ultimately cause the savings rate to fall. This then creates the danger of flows into the schemes dropping below the level necessary to finance the schemes and their promoters, but collapse can be postponed perhaps for some time if there is a resort to credit. If credit and money growth in the economy keeps rising the central bank will tend to keep raising interest rates, but of course these will still be far below the Ponzi rate of return.

The growth of the Ponzi schemes naturally 'crowds out' the rest of the economy, taking employment and resources away from the rest of the economy. One likely result, in contrast I think to Minsky's analysis of Ponzi finance units, is that investment will suffer in particular. Consumption will rise as a share of the economy (because of high perceived wealth) but the central bank's interest rate will have been influenced upwards by the Ponzi rate of return. As a result, interest rates will be too high – perhaps far too high – for those areas of the economy which do not benefit much from the Ponzi scheme growth. This is likely to be the investment industries, particularly manufacturing, which will be negatively impacted by lower savings and higher interest rates across the economy.

When the collapse occurs, perceived wealth will collapse, and with it consumption. All the jobs in the 'Ponzi sector' and in those areas that benefited from it will be lost. The desired savings rate will soar and demand for credit will collapse. The fundamental problem is that there is more than just a transfer of income (from ordinary people to the 'promoters') that has taken place here. Resources in the economy, including peoples' jobs, are committed to areas that only made sense in the light of the very high returns in the 'Ponzi sector'. Interest rates will now need to fall below the starting equilibrium level – in this example certainly to zero – to have a chance to head off a devastating deflation and begin to restore an appropriate allocation of resources in the economy. It is this far-reaching structural aspect that makes this situation more serious than a bubble in a specific asset class, which is why I have sometimes referred to it as a 'structural bubble'.

One point to consider is that if there are many different schemes, what happens if only one scheme collapses? I think there is no definitive answer to that question. It depends purely on whether the collapse of the one scheme is perceived as the result of a problem very specific to that one scheme or has implications for other schemes. If it is the former, then funds will simply be diverted into other schemes, which will apparently prosper to an even greater extent for a time. This obviously rather resembles the way in which risk seeking in the US financial markets has reached new heights of euphoria as problems in housing and housing finance – which certainly have operated as Minsky Ponzi finance units – have looked increasingly serious.

The Mis-Pricing of Risk and Ponzi Finance Reconciled

The key conclusions from my discussion of the mis-pricing of risk are very similar to the conclusions from the discussion of Ponzi finance. Both the systematic mis-pricing of risk model and the Ponzi finance model suggest a lower savings rate, higher money and credit growth and a

mis-allocation of resources in the economy. In the late stages they both also result in economic growth decay, before an eventual collapse which sees a sharp rise in savings and a severe drop in interest rates. Are both models different ways of saying the same thing, therefore?

In the risk mis-pricing model the aggregate of the savings that economic participants believe they are making does translate into investment. It is simply that the investment does not equate, in terms of riskiness, with the return that savers are receiving. Therefore there is a mis-allocation of resources in the economy and there are likely other effects, for monetary policy, monetary conditions and potentially inflation. In the Ponzi finance model, the aggregate of savings that economic agents believe they are making does not translate into investment, or at least much of it does not. Much of the 'savings' will be consumed by employees and promoters of the Ponzi schemes. Therefore there is a big discrepancy between the sum of what people and companies believe to be their savings and actual national savings, which is the source of the divergence between perceived net worth and actual wealth of the economy. In the mis-pricing of risk model this divergence comes about as the result of a more normal bubble dynamic i.e. the mis-pricing of financial and other assets.

In the final analysis I think these differences mostly boil down to the fact that the Ponzi finance model is simply more extreme than the mis-pricing of risk model. This makes it equally applicable and, because it is simpler to understand, analytically more useful. I think in practice both elements are present in much of modern speculative finance and I think the evidence of the past year suggests that the Ponzi finance model is adequate for explaining much of the peculiar economic and financial phenomena that we see.

Because of the outgoings and the fees, Ponzi schemes have to keep getting bigger or else they will collapse. Applying a Ponzi analysis to current global finance, the central features are obvious:

- 1) The growing size and value of the hedge fund sector and power of the investment banking/ hedge fund nexus.
- 2) The persistent appreciation of high interest rate (i.e. above 3.5%) currencies against low interest rate currencies.
- 3) Continued narrowing of credit spreads and growth of the credit derivatives markets.
- 4) Continuously rising stock markets (without corrections).
- 5) Falling implied volatilities across all markets.

These trends will keep going until they collapse – which is perhaps a fairly obvious statement. I think the main insight to be gleaned from viewing current global finance as equivalent to a gigantic Ponzi scheme is in the manner of the collapse. Ponzi schemes, from what I have understood in reading of several, often collapse with one or two warning stages. At some stage, for some reason, nervousness takes hold and withdrawals begin to exceed new inflows. But the situation is often stabilized by some words of reassurance from someone in authority, albeit that confidence never fully recovers to its previous heights. A similar episode can occur again, but if so confidence is weakened further and so collapse becomes more likely. The key is that total collapse, when it occurs, occurs very rapidly as investors panic to try to withdraw funds.

When we consider the five features I listed above, it is hard to see that we have had one of these ‘warning stages’ already, unless we count last May. But last May is now some time ago and confidence has risen to even higher levels subsequently. It seems more likely that we will see at least one incidence of all five features of markets I listed go sharply into reverse, with attendant loss of market confidence, only to recover somewhat before the final collapse.

The unfortunate crucial insight here is that ‘collapse’ here does not simply involve a bit of a problem in markets but, by definition, the collapse of most of the ‘apparatus’ of speculative finance. This means that many, or perhaps even most, hedge funds are likely to go under as well as most, perhaps all, of the major investment banks – or at least they will become technically insolvent, on life support. Clearly governments will take action to attempt to prevent the crisis bringing down major commercial banks, and this might involve an attempt to separate out the investment banking parts of the major institutions from the retail banking arms, while instituting a freeze on deposits above insured amounts at the retail banks. In the US the Fed will cut interest rates to zero, of course, and provide unlimited liquidity to banks via purchasing their assets, but exchange controls will have to be imposed to prevent a total collapse of the dollar. I will elaborate further in the March ‘monthly’.

When will this happen? It is impossible to know. The assumption I am working with is that the five market trends I listed will continue, with only very minimal corrections, until the first ‘warning’, which will look like a more severe and dangerous correction than last May. That will be essentially the start of the collapse and I would guess that the final complete meltdown, which I expect only to take a matter of days, would then be within 2-3 months at the outside.

Because of the nature of this piece, as more of a ‘think piece’, I have decided to hold revised forecasts over to next month, when I will use more charts to consider the issues for forecasts more specifically. Other material that I had ready to include in this ‘monthly’ I also have to hold over because of length considerations.

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