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These are perilous times. But history tells us they will pass. This evening I should like to trace a likely future path out of what will surely be the longest and deepest global economic contraction since the 1930s.

The disclosure in August 2007 that highly leveraged financial institutions were holding significant quantities of defaulting securitized American subprime mortgages shocked markets and precipitated what became a global solvency crisis. For the year following, weakened banks struggled to respond to investor demands for larger capital cushions. But in the end, bank efforts to fortify their balance sheets fell short, and, in the wake of the Lehman Brothers default in September 2008, the financial system at the heart of our global economy seized up.

Banks, fearful of their own solvency, all but stopped lending. Issuance of corporate bonds, commercial paper, and a wide variety of other financial products largely ceased. Credit-financed economic activity was brought to a virtual standstill. If there had been any question that we now live in a fully integrated global economic and financial system, the speed and depth of the contraction in global trade, in a matter of a few short weeks, should have set aside any such doubts. Global manufacturing production in October of last year fell off a cliff, and, at least in the United States, production continued to fall sharply.

For a few months subsequent to the August 2007 disruption, the crisis was wholly financial. The world's nonfinancial sector balance sheets and cash flows were in as good shape as I can recall. But, the contagion from the crisis in finance took hold in the fall of 2007. Global stock prices peaked at the end of October, and then progressively declined for nearly a year into the Lehman crisis. Global losses in publicly traded corporate equities up to that point totaled $16 trillion, but losses more than doubled in the ten weeks following the Lehman default, bringing cumulative global losses to almost $35 trillion, a decline of more than 50% and an effective doubling of the degree of corporate leverage. Added to that are trillions of dollars of losses of equity in homes ($4 trillion in the U.S. alone) and losses of non-listed corporate and unincorporated businesses that could readily bring the aggregate equity loss to well over $40 trillion, a staggering two thirds of last year's global GDP.

This combined loss has been critically important in the disabling of global finance because equity capital serves as the support for all corporate and mortgage debt and their derivatives. These assets are the collateral that powers global intermediation, the process that directs a nation's saving into physical productive investment.

I find it useful to think of the world economy's equity capital in the context of the global consolidated balance sheet. All debt and derivatives cancel out leaving intellectual and physical assets at market value on the left hand side of the balance sheet and the market value of equity on the right hand side. Changes in equity values change both sides of the global balance sheet equally. Debt and derivatives are then best seen as a grossing up, reflecting the degree of intermediation or leverage.

Failures of intermediation have hobbled many economies over the decades, most conspicuously Japan in the 1990s. But there is arguably a more direct effect of stock prices on economic activity. We tend to think of fluctuations in stock prices in terms of "paper" profits and losses somehow not connected to the real world. But, the evaporation of the value of those "paper claims" can have a profoundly deflationary impact on global economic activity. The household wealth effect on personal consumption expenditures has been extensively documented. But, stock prices have a significant impact on private capital investment as well. In a paper I published in 1959, I related the American ratio of the market value of existing corporate assets, that is, stock prices, to the replacement value of those assets. It correlated quite well with machinery orders going back to the 1920s. I recently updated the analysis and was amazed at how well this simple relationship still works, even tracing the recent sharp fluctuations in real private capital investment. Since 1991, for example, with an R^2 of *0*.94, a 10% change in stock prices has been associated with a 3% change in real capital expenditures in the same direction. Such analyses suggest that much of the recent decline in global economic activity can be associated directly and indirectly with declining equity values.

Of course, it is not simple to disentangle the complex sequence of cause and effect between change in the market value of assets and economic activity. If stock prices were wholly reflective of changes in economic variables, movements in asset prices could be modeled as endogenous and given little attention. But, they are not. A significant part of stock price dynamics is driven by the innate human propensity to intermittently swing between euphoria and fear, which, while heavily influenced by real economic events, nonetheless has a partial life of its own. And, in my experience, such episodes are often not mere forecasts of future business activity, but are an important cause of that activity.

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Stock prices are governed through most of the business cycle by profit expectations and economic activity. They appear to become increasingly independent of that activity at turning points. That is the meaning of being a leading indicator, the conclusion of most business cycle analysts.

When we look back on this period, I very much suspect that the force that will be seen to have been most instrumental to global economic recovery will be a partial reversal of the $35 trillion global loss in corporate equity values that has so devastated financial intermediation. A recovery of the equity market driven largely by a receding of fear may well be a seminal turning point of the current crisis.

The key issue, of course, is when. Certainly by any historical measure, world stock prices are cheap. But as history also counsels they could get a lot cheaper before they turn. What is undeniable is that stock market prices today are being suppressed by a degree of fear not experienced since the early 20th century (1907 and 1932 come to mind). But history tells us that there is a limit to how deep, and for how long, fear can paralyze market participants. The pace of economic deterioration cannot persist indefinitely.

It is the rate of decline of product, labor, and financial markets that generates much of the uncertainty that in turn fuels fear. To an employed person, it is the layoff rate, more than the level of unemployment, that fosters job insecurity and all the economic responses that go with it. The current pace of deterioration is bound to slow and with it there should come a lessening of the level of fear. A measure of the degree of fear, corporate bond yield spreads over U.S. Treasuries, has historically been range bound. They have exhibited consistent upside and downside limits clearly indicated by data that reach back to the 1870s. Today we are at an outer extreme of historic credit risk.

Since the onset of the crisis in August 2007, the yield spreads on corporate investment grade debt over U.S. Treasuries have moved inversely to equity prices. The correlation coefficient between the two has been almost perfect: 0.98. Insolvency fears have clearly been driving the market values of stocks as well as debt products.

U.S. policy actions that have in effect substituted dollar sovereign credits for private credits have already eased much of the post Lehman credit squeeze, especially for commercial paper and some high grade corporate bond issuance. The U.S. Treasury's Troubled Asset Relief Program (TARP) has been partially successful in recapitalizing banks. Nevertheless, the TARP still has work to do because investors – both depositors and holders of bank debt – apparently now seek a significantly larger capital cushion in banks than they did prior to the current crisis. Assuaging investor concerns apparently will require not only capital infusion to replenish an estimated hundreds of billions of dollars of unrecorded losses, but an additional buffer that would add a needed several percentage points to the capital - asset ratio. Moreover, until risk-taking investors freely fund banks, loan officers will remain chary of granting new loans. To stabilize the American banking system and restore normal lending, additional TARP funds will be required.

Risk spreads have narrowed since the TARP injected significant equity into U.S. banks. However, the 3 month Libor / Overnight Index Swaps spread, another useful measure of market fears of bank insolvency, at 100 basis points, remains many multiples above the pre-crisis level of 10 basis points.

It is very difficult to judge when (not if) market perceptions of risk will abate sufficiently to encourage greater participation by private lenders in the financial intermediation process. In the interim, the substitution of sovereign for private credit is containing some of the severest consequences of the crisis.

As I have noted over the past year, a necessary condition for an end to the financial crisis is a stabilization of the prices of American homes. That will stabilize the value of equity in homes financed with now toxic mortgages and add important clarity to the value of the mortgage backed securities, many troubled, that infest the balance sheets of financial intermediaries worldwide. More importantly, this will add clarity to the value of bank capital as well.

Unfortunately, the prospect of stable home prices remains many months in the future. Until liquidation of the excess inventory of vacant single-family homes proceeds in earnest, the level at which those prices will stabilize remains problematic. Many forecasters project a decline in home prices of 10% or more from current levels.

Going forward, I am confident that a combination of an eventual stabilization of home prices and a repair of our global financial system will restore lending and, with the help of rising equity values, lead to economic recovery in the United States and the rest of the world. I hope it is sooner rather than later, but I do not see how we can know. Global output is still in free fall as the world economy endeavors to rid itself of a large, unplanned accumulation of inventories of a vast array of products, not just residential housing, the consequence of the abrupt collapse in aggregate final demand last fall. Working off these inventories will take many more months.

Clearly the unprecedentedly large fiscal programs currently in train in the United States, China, and a growing number of other countries will be a major contributor to how economic forces play out. Much has been written on fiscal multipliers, the relative impact of government spending and tax cuts, and the income distribution impact of various alternative programs. I have little to add except to say that I agree with Alice Rivlin's suggestion several weeks ago that it is important to separate short term and temporary fiscal stimulus from longer term fiscal initiatives. Moreover given the Japanese experience of the 1990s, we need to assure that the repair of our financial system *precedes* the onset of major fiscal stimulus. Unless we are successful at that, in my judgment, the positive impact of a fiscal stimulus will

peter out after its scheduled completion. Remember, the real test of fiscal stimulus is not whether it temporarily expands GDP, but whether it primes the pump for private demand.

I am also convinced that it is not too soon to contemplate and plan the exit strategy from the unsustainable crisis-related fiscal and monetary policy programs now underway. We are fortunate in that the Administration's and Federal Reserve's economic policymakers, a talented team, are sensitive to the possibilities and limits of policy initiatives.

The substitution of sovereign for private credit through TARP and the Federal Reserve's massive expansion of its balance sheet have at least the potential, politics willing, of being reversed without a long term drain on the American taxpayer or a major threat of inflation in the future. TARP and Federal Reserve actions are purchases of assets that could end up costing the American taxpayer only a modest fraction of current outstandings, once the economy has recovered. The vast majority of the Federal Reserve balance sheet expansion reflects short term credits that expire relatively quickly and the monetary consequences of Fed actions can be reversed. TARP operations will take longer to unwind, but at least in principle, financial losses could be limited.

Fiscal stimulus by its intent, however, seeks to enhance aggregate demand through massive increases in government deficits. To implement that policy, in turn, requires finding buyers for large quantities of U.S. Treasury securities. For the moment, the U.S. Treasury is having no difficulty selling its heavy issuance at exceptionally low interest rates. Much of the fiscal deficit is being funded by foreigners who see U.S. government debt as the ultimate safe haven in all this turbulence. The long American history of honoring our obligations, dating back to Alexander Hamilton, remains a powerful attraction to foreign investors. But there is obviously a limit to the expansion of U.S. federal debt. The recent rise of long term interest rates may be signaling market concerns about inflationary pressures. Such pressures will need to be contained or global equity recovery will be at risk.

It would be foolish to disregard how American politics will shape the fiscal and monetary resolution of our current crisis. At the first signs of stabilization and a flattening of the unemployment rate, I presume the Federal Reserve will start to rein in much of its credit extension. However, Congress is likely to strongly object to any tightening of credit prior to full employment being restored. Policy reversals on the fiscal front are nearly certain to meet stiff resistance – new spending programs and tax subsidies rapidly develop constituencies that have a vested interest in maintaining the dollar flow.

Politics will also turn on how the crisis and its solution affect the day to day lives of the American people, who are beginning to feel the full brunt of the downturn. The fear of job loss is unquestionably their first concern, but close behind is the fear of losing their homes.

Stemming foreclosures, which is in the interest of both lenders and borrowers, is being frustrated by the unremitting fall in home prices. A joint study by the Office of the Comptroller of the Currency and the Office of Thrift Supervision reported last December that for loans modified in the first quarter of 2008, 55% re-defaulted within six months. Accordingly, efforts to reprice and reset mortgage terms need to adjust for the likelihood of further declines in prices, possibly by linking the extent of mortgage relief to a home price index. Assistance could be periodically reviewed and adjusted should home prices continue to fall. Admittedly this is a potentially quite expensive approach, but it should hasten stabilization of the housing and mortgage markets.

Let me now turn to the critical issue of financial market regulation going forward.

The extraordinary risk management discipline that developed out of the writings of the University of Chicago's Harry Markowitz in the 1950s, produced insights that won several Nobel Prizes in Economics. It was widely embraced not only by academia but also by a large majority of financial professionals and global regulators.

But in August 2007, the risk management structure cracked. All of the sophisticated mathematics and computer wizardry essentially rested on one central premise: that enlightened self interest of owners and managers of financial institutions would lead them to maintain a sufficient buffer against insolvency by actively monitoring and managing their firms' capital and risk positions. When in the summer of 2007 that premise failed, I was deeply dismayed.

I still believe that self regulation is an essential tool for market effectiveness – a first line of defense. But, it is clear that the levels of complexity to which market practitioners, at the height of their euphoria, carried risk-management techniques and risk-product design were too much for even the most sophisticated market players to handle properly and prudently. Accordingly, I see no alternative to a set of heightened federal regulatory rules for banks and other financial institutions.

Even with the breakdown of self regulation, the financial system would have held together had the second bulwark against crisis—our existing regulatory system—functioned effectively. But, under crisis pressure, it too failed. Only a year earlier the FDIC had noted that "more than 99% of all insured institutions met or exceeded the requirements of the highest regulatory capital standards". Our banks are extensively regulated, and even though for years our largest 10 to 15 banking institutions have had permanently assigned on-site examiners to oversee daily operations, many of

these banks still were able to take on toxic assets that brought them to their knees. The heavily praised U.K. Financial Services Authority was unable to anticipate and prevent the bank run that threatened Northern Rock. The Basel Committee on Banking Supervision, representing regulatory authorities from the world's major financial systems, promulgated a set of capital rules that failed to foresee the need that arose in August 2007 for large capital buffers.

The real lesson here appears to be that bank regulators cannot fully or accurately forecast whether, for example, subprime mortgages will turn toxic, or whether a particular tranche of a collateralized debt obligation will default, or even if the financial system will seize up. A large fraction of such difficult forecasts will invariably be proved wrong.

What, in my experience, supervision and examination *can* do is set capital requirements and other rules that are preventative and do not require anticipating an uncertain future. Supervision can audit and enforce capital requirements. It can, and has, put limits or prohibitions on certain types of bank lending, for example, commercial real estate. But, it is incumbent on promulgators of new regulations that the regs improve the ability of financial institutions to effectively direct a nation's savings into the most productive capital investments, that is, those that enhance living standards. Much regulation fails that test, and is often costly and counterproductive.

A new and particularly difficult set of regulatory challenges arises because of financial markets' recently proved conclusion that certain financial institutions have become too big to fail, a description that give*s* them a highly market-distorting special competitive advantage in the pricing of their debt and equities.

In any event, we need not rush to reform. Private markets are imposing far greater restraint at the moment than would any of the current sets of new regulatory proposals.

Since the collapse of Lehman Brothers in September, we have been exposed to the most rapid and unremitting set of gloomy statistics that I have ever seen. In recent days, however, some of the data have turned mixed. January retail sales in the United States, for example, surprised on the upside.

However, I do not expect full economic stabilization and recovery until American home prices stop declining. Hopefully in the interim some of the darkest clouds on the forecast horizon will dissipate. [END]