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Program

GUEST OF HONOR

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Introductory Remarks

Glenn Hubbard Chairman, Economic Club of New York

Good afternoon everyone. If I could have your attention. It is my pleasure to welcome all of you to this 408th meeting of the Economic Club of New York, in our 103rd year. I am Glenn Hubbard, the Chairman of the Club. The Economic Club of New York is the nations leading nonpartisan forum for remarks about business or the economy. More than a thousand guest speakers have appeared before the Club over the past century and have established a strong tradition of excellence which, of course, we will continue this afternoon. Before we begin, I want to thank the members of the Club's Centennial Society. During the Club's centennial year, several dedicated Club members made personal contributions to insure the financial stability of the Club into the second century. Thus far, 132 members of the Centennial Society have joined us, and they are in the program. We are honored today, doubly, both because of the occasion of a distinguished, and because he is our trustee, Bill Dudley, the 10th President and CEO of the Federal Reserve Bank of New York. He was sworn in, in January 2009, and serves as the Vice-Chairman and a permanent member of the Federal open market committee, the group responsible for the formation of the nation's monetary policy. Mr. Dudley had been the Executive Vice President of the Market's Group at the New York Fed, where he also managed the system open market account for the FOMC. Prior to joining the bank in 2007, Bill was a partner and Managing Director at Goldman Sachs and was the firms Chief U.S. Economist. Having written with Bill, I join a chorus of people who is very pleased to praise both his intellect and his market

knowledge. After his remarks we will have two Club members, as is our custom, to ask questions. Bill thank you for coming, the floor is yours.

William C. Dudley

Thank you Glenn for that very fine introduction. Today I want to tackle a difficult subject, how should central bankers deal with potential asset bubbles. As always, my remarks do not necessarily reflect the views of the Federal Open Market Committee or the Federal Reserve System.

As I see it, we need to re-examine how central banks should respond to potential asset bubbles. After all, recent experience has underscored the fact that poorly regulated financial systems are prone to such bubbles and that the cost of waiting to respond to an asset bubble burst can be very high. Today I will try to define some of the important characteristics of asset price bubbles. I will argue that bubbles do exist. And that bubbles typically occur after innovation has created uncertainty about fundamental valuations. This has two important implications. First, a bubble is difficult to discern. And second, each bubble has unique characteristics. This implies that a rules based approach to bubbles is likely to be ineffective and that tackling bubbles to diminish their potential to stabilize the financial system will require judgement.

Despite the fact that it is hard to discern bubbles, especially in their early stages, I conclude that

uncertainty is not grounds for inaction. Instead the decision whether to act depends on whether appropriate tools can be deployed to limit the size of a bubble and whether the benefits of acting and deploying such tools are likely to exceed the costs. That cost benefit calculus in turn depends crucially on the tools that we can deploy to limit the growth of bubbles, and the consequences when they burst. In this respect, I will argue that in most cases, use of the bully pulpit and macro-prudential tools such as rules limiting loan to value ratios or leverage, are likely to prove superior to monetary policy.

Turning to the first issue of whether there are asset bubbles. I am going to be a bit of a heretic and argue that there is little doubt that asset bubbles exist, and that they occur fairly frequently. By an asset bubble I mean price increases or declines that become unmoored from fundamental valuations. I want to be clear here that I am distinguishing this from price movements that are tied to changes in fundamentals.

Now I know this runs afoul of the efficient market's hypothesis which in this context would argue that if a bubble were obvious, then people would take the other side and the bubble would not occur in the first place. There are several reasons why this argument does not hold in practice. First, it is not always easy to take the other side. There are many constraints on the ability to short the asset in question. Such limits on the ability to short sale can arise for many reasons. For some assets short selling in size might simply not be possible because the markets are not sufficiently developed. Also, even if there were instruments that could be used to go short, it may not be an easy trade to undertake. For example, if a bubble builds up over many

years and market participants compensation is based on year to year performance, there may be disincentives to take the short side. Compensation schemes and other practices that skew incentives, may create a bias to simply trade with the market.

Second, bubbles may simply emerge from the way that market participants process information and trade. Experimental work done by behavioral economists has shown that people often trade in ways that generate price bubbles. In many carefully controlled experiments in which the intrinsic value of the assets could be determined with certainty, participants still bid up prices far above fundamental evaluations with the bubbles being followed by sharp declines in prices.

Let me give you an example of one of the seminal studies of this type. In this experiment, all investors start with an identical asset that pays the same dividend, generated from a known probability distribution at the end of each trading period. What this means is that all participants know the expected value of the dividend stream with certainty. The participants are allowed to buy and sell these assets from one another. In this framework, if all of the participants were fully rational, then trading should occur only at intrinsic values based on the expected dividend stream. But this is not what happens in practice. In 14 of the 22 experimental runs undertaken in the study, prices rose significantly above fundamental evaluations. And these price bubbles were followed by crashes. When traders in these experimental runs were experienced, another words meaning that they had participated in the experiment before, the probability of a bubble was reduced, but not eliminated. The authors conclude, “what we learned from the particular experiments is that a common dividend and common knowledge thereof, is insufficient to induce

initial common expectations.” The lack of common initial expectations leads to a willingness to trade, to try and earn capital gains above fundamental value. Relaxing the conditions in these types of behavioral studies to emit more uncertainty about fundamental asset valuation works to enhance to propensity for bubbles by increasing the degree of divergence in participants initial expectations.

Lastly, over the past few decades, there has simply been too many episodes in which asset prices have dramatically overshot on the upside and then violently corrected to suggest that the behavioral studies conducted in the laboratory do not have real world counterparts. In the United States these include the runup in the value of the dollar in the mid 1980's, the stock market rise and crash in 1987, the compression of spreads due to convergence trades in the runup to the long-term capital management debacle in 1998, the technology stock market boom in the late 1990's, and of course the credit and the housing price bubble and crash of recent years. All these episodes were marked by a spectacular price boost followed by subsequent collapses.

Examination of some of these recent bubbles suggest that while asset bubbles are idiosyncratic in terms of their causes, institutional features, duration and severity, they often share several significant features. These shared features are important in assessing how policy might be used to temper bubbles in the future.

In my view asset bubbles often come about through a particular sequence of events. First, there is typically an innovation that changes the fundamental evaluation in a meaningful but uncertain

way. Asset valuations associated with the innovation change as they should, but there is significant uncertainty about how valuable the innovation will turn out to be. This leads to a divergence in expectations concerning how much the fair values of the assets should increase. I believe that this uncertainty about what constitutes fair value is important in fueling the bubble. For example, the technology stock market boom in the late 1990's coincided with the development of the Internet. Which fostered the reorganization of many business processes and generated significant productivity improvements. At the time it was unclear just how significant the innovation would be or how successful the companies would be that sought to take advantage of it. On the one hand there were companies such as Cisco which sold the shovels, the routers that enabled the Internet to work, that were very successful. On the other hand there were companies such as Webvan which sought to use the new technology to revolutionize the delivery of grocery supplies and services that failed miserably.

Similarly, the recent housing boom has been driven by two innovations. One in housing finance where subprime lending made mortgage credit available to households that were of lower income and less credit worthy. And two, in structured finance instruments such as collateralized debt obligations or CDO's. The first innovation significantly broadened the availability of mortgage credit to households. The second innovation reduced the cost of this credit. Cashflows from the underlying mortgage assets were apportioned among senior and junior tranches. These tranches which had been rated by the rating agencies were then distributed to a wide range of investors. This structured finance innovation in turn was supported by innovations in the shadow banking system. Security lenders, structured investment vehicles and conduits bought the highly

rated tranches of the structured finance products, and financed these assets in the wholesale short term funding markets.

The second element common to many asset bubbles is a surge in economic activity in the particular sector associated with the innovation. In the case of the technology stock market boom, there was a surge in business investment in technology goods and services. In the subprime structured finance boom, there was a surge in demand for housing as credit availability increased sharply. This surge in activity is important because it reinforces the notion that the innovation is indeed significant and that this time is different.

Third, there is often a positive feedback mechanism that tends to reinforce the belief system that underpins the extreme valuations associated with the boom. Without this feedback mechanism the boom isn't likely to persist for long or to push valuations far above what is justified by the fundamentals. Without the feedback loop, the asset priced movements are unlikely to be big enough or broad enough to threaten financial and macroeconomic stability.

During the technology stock market boom, there were a number of important reinforcing mechanisms. One was a strong notion that those who got to the market with their new Internet innovations would achieve large first mover advantages. This perception was due to the fact that successful Internet based models could expect to achieve strong network effects, which would create significant barriers to entry and the prospect of extraordinary profits. Amazon might be a good example of a company that eventually succeeded at this.

In this environment many firms, both well established companies and startups, invested heavily in the new technology. The ensuing sharp rise in investment in technology equipment and software led in turn to a rapid earnings growth, which helped for a time to sustain statuspheric valuations. In addition, the sharp rise in stock prices led to a reassessment of the appropriate equity risk premium. The higher the stock prices rose, the more people thought that equities had little risk. Everyone could become a millionaire with little risk or effort.

Similarly, in the subprime structured finance boom, there were several important positive feedback mechanisms. In particular the surge in credit availability drove up the demand for housing and pushed up housing prices. This increase in demand caused the default experience associated with such lending to be very low. And this reinforced the notion that subprime lending was not very risky. It also reinforced the demand for complex CDO's secured by such assets. During the boom structured finance models appeared to be sound because losses on the underlying subprime mortgage loans were low, and because the correlation rates in performance across different assets in the pools were low, just as the models had predicted.

Fourth. The proportion of market participants who believed that a particular episode of asset price increases are justified by the innovation tends to rise as the boom persists. Those that had doubts about the importance of the innovation or the persistence of the gain in asset prices lose confidence in their opinions as they underperform and lose business and market-share. Those

who believe that the large gains in asset prices were justified by the innovation and who benefitted from those beliefs become more dominant. Casual investors see the rise in prices and jump in. This shift is important because in markets, prices are driven by the marginal investor. As new and often less well informed investors plunge in to participate in the boom, they can overwhelm the so called smart money that gets frustrated after having lost repeatedly trying to take the other side. In this respect, a bias towards optimism may also play an important role. Studies have found that most people believe that they are above average in terms of the acumen, be it as investors, car drivers, or in other activities. This overconfidence may cause some people to keep investing in the asset even when they are skeptical about its valuation. Because they are overly confident that they will anticipate the end of the bubble earlier and be able to get out in time.

Fifth, asset bubbles occur more easily when it is difficult to short the assets. For example, the technology stocks associated with the initial public offerings were very difficult to short because the available supply or float was small. A high proportion of the shares in the companies were held by the original venture capital investors and subject to lockup periods before the shares could be lent out to short sellers or sold. Similarly, housing is notoriously difficult to short. The option of selling ones home in order to rent is expensive, both in terms of time and effort, but also in terms of transaction costs. Inserting complex structured finance products was difficult because there weren't any standardized instruments. The securities rarely traded and were very difficult to value. It was not until the development of the ABX indices which allowed investors to buy and sell credit default swaps on pools of structured finance obligations that investors had a

vehicle that allowed them to short subprime mortgage backed securities more easily.

Asset bubbles often come to an end when the basic belief system is contradicted by events. This can happen very naturally as a matter of course because economic fundamentals deteriorate. Or because there is a change in rules and regulations that disrupts the balance between supply and demand. In the technology boom this might occur because each company cannot get to the market first. So even if there is a first mover advantage, not everyone will be able to take advantage of it. Over time, the failure to achieve first mover status becomes evident and the valuations adjust to reflect this. Or, lockup provisions on Internet stocks expire, leading to a sharp increase in supply that leads to a large fall in prices.

In the housing boom the end came about for several reasons. One limiting factor was the rise in home prices outstripped income growth. Thus, for the boom to persist underwriting standards had to be continually relaxed. Only in this way could a new cohort of first time buyers that qualify for big enough mortgages to be able to afford to buy their homes. The difficulty in replenishing the pool of new buyers limited how fast demand could keep rising. In addition, the rise in home prices led to an explosion of supply. Especially in areas like Arizona, Florida, Nevada and inland California where buildable land was plentiful. As supply caught up to demand, this led to a downturn in prices. Once this occurred, the poor underwriting standards associated with subprime mortgage lending became apparent. Subprime borrowers could no longer easily refinance or sell the house at a higher price and repay the original mortgage. As Warren Buffet reportedly once quipped, “only when the tide goes out do you discover who has been swimming naked.”

So what does this analysis apply for a central bank that might want to limit the development of such bubbles. The first inclusion is assessing whether there is a bubble or not, or the size of the prospective bubble is going to be very challenging. Because there is an innovation, asset values should rise, but by how much? It is difficult to assess what the new appropriate valuation is after an important innovation. For example consider some of the questions that might have arisen relative to the technology bubble. What does the Internet mean for technology investment? How many of the new business startups will survive and prosper? Isn't Amazon rare? How fast will the volume of Internet traffic grow and for how long? Similar questions rose with respect to the recent housing bubble. How much will subprime lending increase the demand for housing? How will this increase in demand translate into prices? What will the default rate be on subprime mortgages once the demand growth slows? What is the appropriate correlation rate in terms of loss experience between different subprime and Alt-A mortgage pools that should be used in assessing the value of collateralized debt obligations? And how are such correlations likely to differ in the boom versus in the bust? This uncertainty means that policy makers can never be sure about the existence, size, or persistence of an incipient asset bubble. As a result this task of dealing proactively with bubbles will be very difficult.

So what should the policy maker do? I think the first step is for the policy maker to work hard to investigate what is generating the sharp rise in prices for the asset in question. Sustained price increases are a symptom of changes in demand and supply. The policy maker needs to develop a perspective about whether these demand and supply changes are realistically sustainable to the

extent implied by market prices. In particular, carefully analyzing the assumptions that underpin the sustained increases in asset prices which might be symptoms of a bubble, and considering the risks that these assumptions might be wrong, is very important. Also, looking carefully at the dynamics of the system on which the beliefs are based may be useful. In particular, are the dynamics of the system reinforcing or dampening. If the dynamics are reinforcing, then there is a greater likelihood of an asset bubble.

The next step is for the policy maker to evaluate what tools might be available to curve the imbalances that have been identified. The idiosyncratic nature of the innovations and belief systems associated with particular bubbles, implies that the tools used to respond to each bubble will likely have to be different and tailored to the features of the particular bubble in question.

Finally, the policy maker needs to conduct a careful cost/benefit analysis, weighing how successful a particular policy might be in restraining the rise in asset prices, versus how costly it would be to remain passive. Letting the bubble grow and then potentially bursting disruptively. Many factors will affect the outcome of this analysis including the magnitude of the potential asset bubble. And whether the potential asset bubble is occurring in the equity or debt markets.

In this analysis the policy maker is likely to find that compared with equity market bubbles, credit market bubbles are more prone to generate higher costs when they burst. Thus, the benefit of preventing credit bubbles from forming and collapsing are likely to be higher. Credit bubbles that burst threaten the stability of the financial system much more directly than equity bubbles.

That is because much of the debt is held by banks and security dealers that are highly leveraged. As a result, when the bubble deflates, it can take the financial system with it. In contrast, because most equities are held on an unleveraged basis by investors, such as pensions and mutual funds, the sharp decline in equity prices will not typically threaten the entire financial system. A comparison of the consequences of the technology stock market crash in equities versus the mortgage debt market crash, strongly supports this thesis. Although the wealth loss was roughly comparable, the bursting of the housing bubble had a much greater negative affect on the financial system and on the macro economy.

In this cost/benefit analysis the central bank must understand that it will make mistakes. On the one hand it may fail to temper bubbles that turn out to be disruptive when they collapse. Or, on the other hand, it may try to temper price movements that it thinks are bubbles, but that are not bubbles at all. The cost of these types of errors must be weighed against the potential benefits of tempering an asset bubble and limiting the damage from its subsequent collapse.

So what are the tools of which the policy maker should respond? As I see it, there are three broad sets of tools available. One, the bully pulpit, two, macro-prudential tools, and three, monetary policy. Let me now discuss each of these in turn. The first tool available is to simply lean against the wind of conventional wisdom by speaking out about the dangers associated with the incipient bubble. The policy maker could point out the assumptions embedded in the rapid rise in asset prices and question the accuracy of the assumptions. Obviously, the policy maker might be ridiculed by true believers about the lack of understanding about the important nature

of the innovation. But I suspect that over time a proactive central bank that laid out the risk clearly would gradually gain credibility with market participants. Use of the bully pulpit would allow the central bank to signal its concerns. This might be useful in shifting the risk/reward tradeoff by raising the risk that the talk might foreshadow more forceful action. That by itself could temper behavior. Announcement affects can be very powerful, especially when they can be followed by changes in policy.

The second set of tools include those that are macro-prudential in nature. I would define macro-prudential tools as regulatory and supervisory actions that are not applied on a firm specific basis. These include tools designed to temper demand or increase supply in the asset subject to the bubble. Or to increase the ability of skeptics to take the other side of the market in which the bubble may be occurring. For example, to counteract the housing bubble, tools available might include limiting loan to value ratios, limiting debt service to income ratios or increasing the taxes on housing transactions. Several Asian and some European countries have used such tools to limit speculative real estate activity. Apparently with some success, although, the counterfactual cannot be known by definition. To limit a subprime lending boom the authorities might wish to enforce strict underwriting practices. Including verifying purchasers incomes and enforcing rigorous appraisal valuations. Increasing the ability of investors to short the assets in question may also be helpful. In terms of macro-prudential tools I would also include tools that influence how the financial system operates and functions. Such tools might include supervisory measures that set liquidity and capital requirements for financial institutions and other intermediators. They might also include tools that try to limit the overall buildup of leverage in the financial

system. For the equity market, macro-prudential tools might include margin rules for cash, options, futures, and equity over-the-counter derivatives. For the fixed income market, such tools might include raising haircuts charged to dealers on their repo financing. Raising the haircuts that securities dealers assess against the collateralized borrowings of their customers as part of their prime brokerage businesses or raising initial margin requirements and OTC derivatives transactions. Macro-prudential tools are undoubtedly difficult to use effectively in practice. For example, it is difficult to judge their impact. If loan to value ratios for single family mortgages are lowered by five percentage points, how big of an impact will that have on housing demand. There is also a risk that the rules or regulations will simply be circumvented. For example, investors might move to instruments or to off-shore regimes with less stringent margin and leverage restrictions. Thus, it is important that the authorities have the ability to apply the macro-prudential tools broadly throughout the financial sector. None of this is going to be easing, a lot more work will be required to develop a portfolio of tools that could be used that would be effective and that would not be subject to significant evasion or unintended consequences. In terms of the use of macro-prudential tools, let me briefly take note of another issue that I think requires significant consideration. The issue of governance. Who controls all of these tools? Who decides when the tools will be deployed and how extensively or intensively? Having a sufficient tool kit seems like a good idea, but lodging all of this authority within a single entity or institution might not be practical or desirable.

The final tool available to the Central Bank is monetary policy. In my view this tool is not likely to work as well as macro-prudential tools because it is too broad. Typically monetary policy will

not address specifically the sources of the changes in supply and demand that are driving the bubble. And obviously, monetary policy will have big consequences elsewhere. Some argue that monetary policy should lean against incipient asset bubbles. The notion is that pursuing a slightly tighter monetary policy, the Central Bank would take out insurance against the risk that the rise in asset prices is a bubble and that its bursting would be disruptive. Although this sounds attractive in principle, it critically depends on how expensive the insurance is relative to the losses that the insurance protects against. It is not clear to me that a modest tightening in monetary policy beyond that needed to achieve full employment in price stability in the absence of a bubble, would represent a favorable cost/benefit tradeoff. The cost of the deviation from the optimal monetary policy in terms of lost output and employment might be high relative to the benefits of a somewhat smaller bubble. This seems likely to be the case in most instances. Historical experience does not suggest that bubbles are very sensitive to the level of short-term interest rates. That said, there is some evidence that a tighter monetary policy will reduce desired leverage in the financial system by flattening the yield curve, and reducing the profitability of maturity transformation activities. To the extent this is true, this may imply a somewhat more favorable tradeoff in leaning against a bubble. More research is needed on this subject. But for now at least monetary policy appears to be inferior to macro-prudential tools that seek either to limit the size of perspective bubbles or to strengthen the financial system so it is more resilient when asset prices fall sharply.

In conclusion, let me underscore the challenges that Central Bankers face in combating asset bubbles. Doing so effectively requires us to be successful both in identifying the incipient

bubble, and in developing and implementing a response that will limit bubble growth and avert a destructive asset price crash. This is not easy because asset bubbles are hard to recognize in real time, and each asset bubble is different. However, these challenges cannot be an excuse for inaction. Recent experience strongly suggests that asset bubbles exist and that their collapse can be very damaging to the financial system and to the macro economy. In my view a proactive approach is appropriate when three conditions are satisfied. First, circumstances should suggest that there is a meaningful risk of a future asset price crash that could threaten financial stability. Second, we have identified tools that might have a reasonable chance of success in averting such an outcome. And third, we are reasonably confident that the costs of using the tools are likely to be outweighed by the benefits from averting the prospective crash. When these three conditions are satisfied, we should be willing to act. Thank you for your kind attention.

Glenn Hubbard: Thank you very much Bill for those remarks. Our two questioners today are Roger Altman who is a Chairman of Evercore and Paul Calello the CEO of the Investment Bank of Credit Suisse. Depending on time, I also have some questions submitted in advance from Club members. But Roger... please begin.

Roger Altman: Well first of all Bill, thank you for that speech. I really think it is an important advance in thinking about policy responses to bubbles and I think all of us in this room would really commend you on making it. Having said that, in the spirit of this Club, none of my questions is going to address what you just said. (LAUGHTER)

William Dudley: And I didn't expect you to either.

Roger Altman: Here is the first one. Roughly two weeks ago the Congressional Budget Office released its latest outlook for the U.S. budget over the next ten years. And while of course it is very detailed, the most important single number probably is 90 percent which is the debt to GDP ratio, which the Congressional Budget Office projects we would reach at the end of the ten year window. And my question is, do you think the United States actually could reach a 90 percent debt to GDP ratio. Another words, would global financial markets accept that as compared to revolting against it and precipitating a different type of crisis, for example, a currency crisis.

William Dudley: Well I think you know, Roger, better than me that Central Bankers don't like to speculate about the future and what is possible and what is not possible. It is very clear to me that the fiscal path that the U.S. is on today is not sustainable over the long-term. Now, how far that you can go before it is unsustainable, I don't know. So what that tells me is that just as it is important for the Federal Reserve to have a viable exit strategy for monetary policy, we need a viable exit strategy for this period of fiscal policy stimulus that we have undertaken. What that means is not that we necessarily have to tighten fiscal policy today, that is probably not appropriate, given how weak the economy is. But what it does suggest is that it would be very, very helpful to have a credible plan of future fiscal policy consolidation over the longer term, so that the market participants are confident that when the time comes, the government will do what it needs to do to get the budget on a sustainable path.

Paul Calello: Thank you. Roger, maybe I will bring it back to today's topic, and the question

really is, should it be the Fed's role and is the Fed in a position to assess where fair value and where we may have bubbles. And don't you worry, you touched on it a bit, about the effort to control asset bubbles may in fact inhibit innovation which has been so critically important to the growth of the U.S. economy.

William Dudley: Well Paul, I think the answer there is we are not trying to target asset prices. There is no desire to sort of decide that asset prices should be at a particular value and hold them to them. Obviously, when innovations occur, asset prices should move. The issue is when the asset price movements are out of proportion to the value of the innovation. So to say that the Federal Reserve or other policy makers should not respond when asset price movements are extreme, I think, is inappropriate because we have just seen as we have gone through this crisis that the consequences of a bubble bursting can be extraordinarily destabilizing to the financial system and the macro economy. So, it is very, very important to underscore the fact that we are not talking about the Central Bank targeting asset prices, we are talking about the Central Bank and other policy makers thinking about what is the consequence when asset prices go up a lot, and when those asset priced movements may be unmoored from the fundamentals. And even then, we may not want to act because we may not have appropriate tools or we may decide that we are uncertain about whether it is a bubble or not, but my view is I think we need to be a little bit more proactive than we have been in this respect. And we should do the cost/benefit analysis and when the cost/benefit analysis comes down on the favorable side, then we should act.

Roger Altman: Bill, the Consensus Economic Forecast and I just looked it up again this morning,

and I looked at the Bloomberg Survey of 50 economists as most recently reported, envisions quite modest growth and a relatively high unemployment over the three year period covered by this particular forecast. Approximately three percent real growth over the period and unemployment rate reaching or descending only to 8 percent at the end of 2012. The question is, do you think it is possible for meaningful inflationary pressures, not a slight uptick, but meaningful inflationary pressures, to arise in this country in the face of such weak growth and employment markets?

William Dudley: I think the answer is, it is possible, because inflation is not just a consequence of how much slack there is in the economy but also it is a function of inflation expectations. So you could be perfectly comfortable in terms of the fact that you have plenty of excess slack in the economy but if inflation expectations became unmoored, then you could still have an inflation problem. That is one reason why the Federal Reserve has been trying to do a lot to communicate to market participants about our exit from our enlarged balance sheet. To reassure people that we have the tools in place to exit smoothly when the time comes. We do have those tools and the ability to pay interest on excess reserves. We do have the tools in terms of the ability to drain reserves through reverse repurchase operations, in turn with the positive accounts. And the reason why we are telling people that now is not because the exit is near at hand, but because we want people not to be worried about our ability to do so because we want to keep inflation expectations well anchored. Inflation expectations are well anchored. So that is a very good thing, but it is very important that we continue to work on that.

Paul Calello: Bill, you haven spoken previously about global harmonization of regulatory reform and today even touched on the importance of global coordination in regulatory matters.

Obviously there are efforts going on that U.S. policy makers are involved in, the G20, Financial Stability Board, and so on. To what extent is it likely that the Fed follow the deliberations of Basel 2.1 or Basel 3 as that gets introduced later on?

William Dudley: Well I think the Federal Reserve is very supportive of the notion of harmonization of regulatory regime across geographic jurisdictions because if you don't have harmonization of standards, that is going to lead to regulatory arbitrage and that is also going to lead to a race to the bottom as everybody starts to lower their standards because they need to help their institutions that are located in their jurisdiction. So I think we are very supportive of that. Now, obviously how supportive we are of particular proposals depend on what those proposals actually turn out to be. But there is a lot of involvement at the Federal Reserve on the Financial Stability Board. I am member of the Steering Committee, Vice-Chairman Cohen is a member of the Steering Committee. We spend a lot of time in Basel these days and we are spending it because we are trying to achieve those harmonized standards.

Roger Altman: The question about the banking system. The data shows, if mine is right, that total outstanding bank credit, at least as measured by so called CNI loans as reported by the Federal Reserve every month, continues to decline. And in fact, the total of such loans has declined every single month for the past year including last month. My question is, Bill, several fold. One, how important is this? Second, why is the credit continuing to shrink? Third, how

can we have a healthy recovery in the face of a shrinking banking system? And fourth, when might it stabilize and reverse itself? And I have a followup.

William Dudley: It seems like more than one question there, Roger. I think that there is no question that the decline in loans outstanding, at least to a degree, is a function of the tightening of credit standards that we have seen over the last year. And it is also a symptom of the fact that some banks, especially small and medium sized banks are still under a lot of duress, in part because they have large commercial real estate exposures and those exposures are going to take many, many years to work out. So I would view the decline in credit outstanding, as a symptom of the underlying tightness and credit availability. Now what I would expect will happen is that if the banking system gradually heals itself, we will start to see credit availability improve. And in fact the survey of Senior Loan Officers suggests that people are no longer tightening credit conditions, so we may be about to see a beginning of a loosening. Certainly the large banks are in much better shape than they were a year ago. Last year, the large banks that were subject to the supervisory capital assessment program raised almost \$200 billion of equity, \$100 billion in the market and nearly \$100 billion by converting preferred stock and asset sales. So they are in pretty good shape now. It is really the small and medium sized banks that have to get healthier. And I think that is just going to take time for that to take place. I think this is one reason why, if I come back to your first question, why people are seeing moderate growth over the next couple of years, as opposed to strong growth over the next couple of years, is the fact that the banking system is still not fully back to health.

Paul Calello: Bill, you have spoken about the importance of regulatory reform, and I will stick on that for another question. Including a wide range of financial intermediaries. And the question I have for you is do you believe that the current legislation before Congress today addresses that or does something more need to be done there?

William Dudley: Well first of all we don't know exactly what the legislation that is going to come forth from Congress, so I think it is a little premature to decide whether it is broad enough. But I certainly take the point of your question. It is very important that we don't just jack up the requirements a lot on commercial banks and then let all of their activity flow into the nonregulated sector. So it is very important that the regulation be applied broadly across the financial system. And I think people recognize that. But it is hard to do in practice. You know, I think the fact that the Congress is talking about systemic risk regulation is helpful in that regard. Because that implies that you are looking at risk horizontally across the financial system, not vertically in little silos, with each regulator worried about their particular set of financial institutions. So, I think that discussion makes me feel more comfortable. But I think you are raising a very, very important issue and it really is important that the regulation be broad because we don't want to just drive activity from the now very tightly regulated sector into the unregulated sector.

Glenn Hubbard: Roger, last question for the dais, and then I have a member question.

Roger Altman: Well let's move on to some tougher ones. Bill, everybody knows that one aspect

of the crisis that we just came through was a series of regulatory failures or enforcement failures. And the Federal Reserve wasn't exempted from that. The Federal Reserve, of course, did regulate bank holding companies, and we saw gigantic losses and government rescues and so forth in that sector which the Federal Reserve was responsible for supervising. So the question is, what steps has the Federal Reserve taken to ensure that the mistakes it made won't recur?

William Dudley: I think there is no question that the Federal Reserve and a lot of the other regulators could have done much better and so I stipulate that. And as a consequence of that, we recognize that. We have been doing a lot of work to try to figure out how we can do supervision better. We have done some studies at the Federal Reserve Bank of New York. The Board of Governors is involved in a very big effort system wide to revamp how we do supervision. And I think the changes that we are putting in place are designed to do a couple of different things. One, much more multidisciplinary. Not just bank examiners, but bank examiners, market people, researchers, economists, to get a sense of the whole landscape. I think one of the problems going into the crisis was everything was looked at on an individual, institution by institution basis, and you looked at the institution and you look at their capital and you looked at their earnings, and their capital was pretty good and their earnings was pretty high, so it looked pretty good. But, you weren't really capturing all of the linkages across the financial system. So the second thing we are doing is horizontal reviews. So best practices. Who is doing things well, who is doing things that are not that well, and basically bringing the people who aren't doing well up to snuff. So I think that is another important change that we are doing. And the third thing that I think we are doing is we are trying to develop a more challenging culture about

supervision, in terms of thinking about the bank as a business. How does the bank make money. How does it generate revenue. What risk does it take to generate that revenue. Rather than, checking the boxes in terms of is the bank conforming to every little piece of rule and regulation. If you don't get that big picture right, you are not going to do a very good job at supervision. So this is very important to us and we are definitely working on it.

Glenn Hubbard: I have one member question before we close that draws on a recent op-ed from Chuck Schwab in the Wall Street Journal on the subject of interest rates. That persistently low interest rates discourage savings in general and are seriously damaging to seniors living on a fixed income. Your thoughts?

William Dudley: I think Chuck Schwab's observation is correct that low interest rates are not attractive to savers and there is a consequence of that. But, at the end of the day the Federal Reserve had to set monetary policy for what is best to achieve its twin objective of full employment and price stability. And our view right now is that the Federal Funds rate needs to be exceptionally low for an extended period to contribute to easier financial conditions to support economic activity. The reality is, in the current environment, we are not getting the job gains that we would like to get. We would like to see employment gains much more substantial than what we have gotten. So what that tells us is that monetary policy needs to be on a very easy setting right now to stimulate the economy, to stimulate employment growth. That has to be our first priority.

Glenn Hubbard: Thank you very much. (APPLAUSE) Thank you very much Bill. While our affection for you is inestimable, we have a gift of modest monetary value that I am sure will not violate any Federal Reserve gift guidelines, but thank you. (APPLAUSE) Before we adjourn for the balance of lunch, I will just remind you that the next meeting of the Club, will be on April 22nd where we will have Governor Shirakawa of the Bank of Japan with us. Thank you and enjoy your lunch.

END OF MEETING