

Ben Bernanke

Ben Bernanke was raised in Dillon, SC, entered Harvard College in 1971, and graduated in 1975 summa cum laude. After Harvard, Dr. Bernanke went on to graduate school at MIT, and completed his Ph.D. in 1979. His first job was at the Stanford Graduate School of Business. In 1985 he accepted a tenured professorship in the Woodrow Wilson School at Princeton University. He was Howard Harrison and Gabrielle Snyder Beck Professor of Economics and the Chairman of the department of economics at Princeton University when he was appointed by President Bush to the Federal Reserve Board of Governors in 2002. Thereafter, he was appointed Chairman of the Council of Economics Advisers from June 21, 2005 until January 31, 2006. He assumed the duties of Chairman of the Federal Reserve Board of Governors on February 1, 2006.

I spoke with then Governor Bernanke in his office at the Federal Reserve Board of Governors building in Washington, D.C. on May 9, 2005. Given the enormous workload that Dr. Bernanke has always maintained, I was given one hour of his time and I had no intentions of abusing his kindness. One hour, to the minute, with Chairman Bernanke begins now ...

You once told me that you thought macroeconomists had two sides to their brains. One side was for modern macro and the other side was for the Great Depression. Do you still feel that way?

I think to some extent that's true. But there has been a lot of interest among macroeconomists in looking back at the 1930s. There has been work in the context of modern macro models by people from different parts of the profession, for example, work by Cole and Ohanian (2004a) on the National Recovery Act period which applied modern calibration models. There has been work by Christiano, Motto and Rostagno (2003) that tries to look at the monetary policy implications of the 1930s in a modern dynamic stochastic general equilibrium type model. There has certainly been considerable interest among international economists in looking at the effects of fixed exchange rates and their implications for domestic and financial stability. So, I think there is still some divide, but I think there is an increased interest and ability of people to use both sides of the brain simultaneously.

Have your views on the importance of debt deflation as a transmission mechanism changed or been modified at all over the last 22 years? Do you

give it any more or less weight than you did before?

I have always thought and I still think that it was part of the story. I don't think it is the entire mechanism by any means. But we have seen similar mechanisms taking place in Japan for example. The deflationary period contributed to the stress of the banking system with the implications that had for the real economy. There have been periods also in China where deflation has proved to be a problem for the financial system.

Recently?

Not so recently, but a few years back. So, I think there is some evidence both from the 1930s and the present that debt deflation can be damaging. We had concerns about deflation risk in the United States as well in recent years and clearly one of the concerns was that falling prices would increase pressure in financial markets. So I think debt deflation is an important channel. I have never thought it was the only channel. But it does have a role to play.

Have the literature and the profession finally acknowledged that the financial effects of deflation are not simply redistributive? I have read it in your Federal Reserve Bank of New York Quarterly Review article (Bernanke, 1993a). You bring it up again in your book Essays on the Great Depression that Fisher had a hard time when he came out with his debt deflation hypothesis convincing people in academic circles. Does the profession recognize that it is not simply a redistribution of wealth?

I have done an extensive amount of work with Mark Gertler and others exploring how shocks to the economy working through the financial system can have amplified effects on real activity, the so-called financial accelerator. One mechanism is price changes but other mechanisms are affected as well. For example, if there are shocks to productivity that in a purely frictionless world might have very modest effects, when the shocks are combined with concerns about financial stability the effects can be magnified. So I think if you construe these financial models to be broader to include real-side effects as well as deflation or inflation effects, there is increasing interest in the idea that financial conditions play a semi-independent role in the transmission of shocks to the economy.

Do you think we can go as far as to say that we have our hands around "the holy grail of macroeconomics"? Eichengreen and Temin (1997) have said "the modern literature can be regarded as having substantially solved the riddle of the Great Depression" and it is the gold standard explanation. Is that so?

I think Barry Eichengreen, Peter Temin, Jeffrey Sachs and others who introduced the gold standard into the analysis made a very important contribution. I think we will never have the full story. There are many issues associated with why wages, for example, didn't adjust more quickly in the face

of large pressures from the monetary system. There are issues about the role of financial crises, banking crises, exchange rate crises and the like, independent of changes in the money stock. But I do think that the only theory that explains the timing and the widespread nature of the Great Depression has to involve, broadly speaking, monetary and financial issues which in turn are intimately connected to the gold standard.

If I may, I'll break the Depression down into several different questions. What started it? Why was it so deep? Why did it last so long? Why did it spread so completely? Why did recovery come when it did? Is there any one of those segregating questions that you think remains a mystery today?

I don't think of any of them as a complete mystery. I think we have ideas about all of them. I think we still may be missing some complete explanations in terms of the quantitative magnitudes. For example, there's a good monetary story that explains why the initial downturn occurred and secondly why the decline in the early 1930s was severe. We are only beginning to get a sense of what we would need to understand and see why these effects were as large as they were quantitatively in an economy that was presumably more flexible than the one we have today. With respect to the recovery, the gold standard had a lot to say about that. We know from Eichengreen and Sachs (1985) that leaving the gold standard was very strongly correlated with the recovery process. But once again, there is quite a bit of variation across countries in the speed of recovery. We need to better understand why, once the monetary contractionary forces were removed, the recovery was not more powerful than it was. In the case of the United States some scholars like Cole and Ohanian (2004a) and others have argued that the National Industrial Recovery Act, which reduced the flexibility of wages and prices, was a significant contributor. That may be true, but the question remains as to whether or not that theory can explain the sluggishness of the recovery, the extent of unemployment during that period and more seriously, can it explain the similar performance in other countries that did not have the same type of program but may have had other interventions in wage-price movements.

Different institutional arrangements as well.

Different institutional arrangements, different political forces and the like.

You have said before that the aggregate supply puzzle remains the biggest unexplained part of the whole story of the Great Depression. How close do you think Cole and Ohanian's (2004a) piece comes to accounting for the post-1934 US experience?

I think it would be hard to deny that on net the NIRA policies promulgated after 1933 slowed the recovery by reducing the speed with which wages and prices adjusted. Again, I have some concern as to whether or not we can fully explain the slowness of the recovery. Certainly some other types of inertia may

have been at work such as a lack of confidence or the slow recovery of the financial system. I think we haven't yet parsed that 1933–37 period into monetary–financial, real, and wage–price components, so I think that remains a challenge. And again I would reiterate that we are at an extremely early stage in understanding why similar slow recoveries were seen in a number of other countries that, at least as far as we know, didn't have the same kinds of interventions. Nevertheless, the work by Cole and Ohanian (2004a), which follows up on earlier narrative analyses by Michael Weinstein (1980, 1981), is a very important element and is certainly worth pursuing further. But we still have some way to go before we completely understand that recovery period.

Perhaps it's related to ask then what's your view regarding consensus in the literature on the Great Depression? Eichengreen's paper "Still fettered after all these years" seems to me to say there that there is a role for both domestic policy mistakes and the gold standard and Romer has for some years admitted that the gold standard plays a prominent role in understanding the spread and nature of the Great Depression. Is there really much debate left?

I think there are debates about details, about the role of individual central banks and other policy makers in initiating and propagating the Depression. But there currently is a pretty broad consensus about the monetary–financial underpinnings. The main resistance to that still comes from some people, but not all, of the Minnesota persuasion like Cole and Ohanian who are arguing that productivity shocks and other real side factors may have contributed to the decline. I don't think that view is plausible for describing the overall decline in the world economy and the close correlation of those declines across countries. But I think it may be of some interest in explaining some of the differences across countries in terms of the timing and severity.

But to go back, I think broadly speaking there is a lot of agreement now on the broad framework in which the Depression is analyzed, with a lot of details yet to be filled in. It doesn't mean the debate is forever closed. I'm sure that new generations will have other issues to raise (*both chuckle lightly*).

Do you know anything about the Einzig (1937) data that have been used by yourself and also Hsieh and Romer (2004) to try and measure the forward premium on the dollar? This is something about which Eichengreen (2002) has expressed some doubt. If there was more information on how the Einzig data were constructed, maybe that would provide part of the answer.

I don't recall the details of how they were constructed. I think they must have been taken from quotes in financial newspapers that had some kind of prices for forward exchange rates. The problem with those forward quotes is that except for periods of extraordinary stress they usually tend to follow interest rate differentials and the like. That is, since you have covered interest parity there is not going to be a great deal to explain there. So, I think they are useful in the same way, for example, that Hamilton's (1992) commodity price data

are useful. But they are only loosely connected to the phenomenon you are trying to understand.

Something you just brought up, what is your take on the recent flurry of real business cycle papers on the Depression? I observe you were on the discussion panel for the Cole and Ohanian (2000) paper in the NBER Annual. If we thought we had the Depression explained before, they present a whole new set of questions. Ohanian has indicated the whole line of research basically addresses the question “what is preventing people from working and producing more?” What are we learning?

There may be a point, as I mentioned earlier, that we don't have the supply side completely nailed down. We've seen how monetary and financial disturbances created massive changes in aggregate demand and prices. The question is how do those changes manifest themselves in terms of real output and employment? A Keynesian view is that wages were sufficiently sticky that they couldn't keep up with the downward movement in prices. So wages adjusted too slowly and you had real wages that were higher than market-clearing levels that created unemployment and reduced output. A response to that which I don't think is entirely compelling but needs to be taken into account is that we don't really have very good data on actual paid wages as opposed to contracted wages or reported wages which may have been somewhat different from actual wages. So that remains a somewhat incomplete story.

The other general approach, which we talked about already, is the possibility that declining prices and panicky capital flows generate financial instability which in turn has real effects via financial markets. Again, I think it is part of the story, but it is not a story that we have modeled in detail. I think there is a lot more to understand about that. So I think that Cole and Ohanian raise some interesting questions that deserve to be looked at, but I don't think that they have presented a viable alternative to explaining why both output and prices fell so sharply in so many countries between 1929 and 1933. For example, productivity shocks would generate movements of output and prices in opposite directions rather than the same direction.

And they would reduce real wages and not raise them.

They would reduce real wages. Also, it might be worth mentioning that Alexander Field published a paper in the *American Economic Review* in 2003 which argues that rather than being a period of technological decline and productivity decline, the 1930s was in fact a very technologically progressive and creative period. Technological progress and inventions were endogenously prevented from being taken into the economy because of the fall in output and employment that was making it unprofitable to start new businesses in that environment. A similar story has been told by Michael Bernstein in his 1987 book. So, it is very difficult to point to productivity shocks that could either

explain the severity of the Depression or account for the broad movements of prices and output in the world as a whole. I think it is useful to try and think harder about how markets adjusted to these shocks. But I don't think that the broad monetary–financial perspective is going to be overturned in the near future.

You said in your 1996 paper with Carey that the real business cycle models really do not have an explanation of why these shocks hit everyone around the world at virtually the same time and yet they were more persistent in the gold standard countries. They do not really address this point.

That's right. I think one of the things that I found very stimulating and got me working on the international Depression, as opposed to my earlier work focusing on the US, was precisely this set of facts presented by Eichengreen and Sachs (1985).

And Choudhri and Kochin (1980).

And before that Choudhri and Kochin (1980), exactly. These facts increasingly showed how the cross-sectional pattern of recovery was very closely tied to exchange rate regimes and monetary policy. My own work with Harold James tried to extend those results to a larger number of countries and a larger number of variables and we found exactly the same types of cross-sectional differences that can be accounted for by purely monetary influences. I think that is a very important fact and one that any successful theory of the Depression has to account for.

Isn't that one of the strongest historical macroeconomic relationships we have? The relation between when recovery commenced and when countries left the gold standard?

Well, when you are trying to identify the sources of the Depression it's useful to have some kind of cross-sectional variation in policy so that you can identify differences in response. All the countries in the world essentially declined in about the period 1928–29, which can be explained by the monetary collapse and the contraction of the gold standard. But it is not inconceivable that some other factor could explain the worldwide decline in output. Temin (1976a) in his earlier work, for example, tried to do that. The abandonment of the gold standard though took place in a staggered way which depended very substantially on politics, on previous institutions in history, and on a variety of factors that were not endogenous to the degree of output and price declines. Therefore it provides something similar to the natural experiment talked about by Friedman and Schwartz (1963). It's a quasi-natural experiment where you have differences in policy choices which arise at least in part from factors outside the current evolution of the economy. Those differences give you some ability to identify the effects of these movements because by looking across different countries you can see the differences in responses in relation to the

differences in the policies followed in those countries. In this case you get a very clear relationship not only between the abandonment of the gold standard and economic recovery, but many other variables such as wages, interest rates, exchange rates and prices all moving the way we would have predicted if the abandonment of the gold standard amounted to a monetary expansion and a reflation.

Romer (in Snowdon, 2002) has called the US decision to stay on the gold standard "perhaps the biggest policy error of the Depression" and labels the Depression a result of failed policy. On the other hand, Peter Temin told me after 1931 the Fed had "picked their side" and thus their actions should not be construed as policy failures. Their behavior was not a "shock" or "inept" but was a continuation of the path they had chosen to defend the exchange value of the dollar. What do you have to say about this? Was it a failure of policy or not?

I think the distinction is not a fundamental one from the point of view of explaining the Depression. Romer may be thinking of a policy failure as a point-in-time decision, perhaps within a general framework for policy, whereas Temin in a lot of his work has emphasized the idea of regime choice. The idea that, for example, the devaluation of the dollar in 1933 was a regime change that generated new expectations and a new policy regime in general. I don't see a fundamental contradiction. It's clear that the theories and policy frameworks of the time suggested that sticking to gold and maintaining the gold value of the currency was the only way for long-run stability. The problem was they had reached a new environment where the political calculations were different, for example the power of domestic constituencies vis-a-vis the orthodoxy of currency stabilization had grown more powerful. The institutional structures supporting the gold standard, for example the use of key currencies in place of gold as a reserve, reduced the stability of financial markets compared to the classic period. And as Eichengreen (1992) pointed out, the degree of cooperation among central banks had been reduced by World War I and the "peace" that followed. So, what had been a successful policy regime in the nineteenth century turned into a very dangerous policy regime in the twentieth century. Policy makers didn't understand or know how to respond to that. They went with what they had, which is understandable. I agree with Temin, it was something bigger than a policy choice. It was really an attempt to stay within an existing framework and an existing regime. But nevertheless, some policy makers like Takahashi in Japan, for example, understood that the gold standard was causing trouble and he abandoned the gold standard very quickly. So, I think a better organized, intellectually more cogent approach might have led the US to abandon gold earlier on and therefore would have avoided some of the severities of the Depression.

So why do you suppose the gold standard was not suspended nor was deposit

convertibility during this time? Moreover, why didn't the US follow the lead of the UK in 1931 and leave gold? Eichengreen and Temin (1997) have said "that the solution to the Depression might lie in rejecting gold was beyond the pale."

Well again, I don't really disagree with him. I think the kind of errors people made were much more serious than, say, the Fed raising interest rates by 25 basis points when they should have cut interest rates by 25 basis points. They were of the form where we have this framework for policy and we don't have the ability to look beyond it and see the alternatives. When the British went off gold in 1931 the story is that the Chancellor of the Exchequer, while taking a bath, was informed of the abandonment of gold and he said something to the effect "I didn't know we could do that." Of course he could do that. The United States didn't have to do that because the US, like France, had accumulated large gold reserves during the interwar period, and even prior to that in the case of the US. As a result, the pressure on the dollar never reached the stage where essentially there was no choice but to abandon the gold standard. All the countries in the early stages with very few exceptions, like Japan, did their best to stay on gold as long as they could and only when institutional factors like financial crises, banking problems or just the pressure of the external drain became severe enough they found themselves forced to abandon the gold standard. So, I guess I agree with Temin in the sense that it was a problem of paradigm and not a problem of decisions within a paradigm.

Let me just complete it then: do you think Temin is correct that it was the resumption of the gold standard and the status quo ante and the attempt to preserve it that gave us the Depression? After the War the world had changed and trying to put the pieces back together, particularly with the gold standard and its mentalité, led the world economy down the wrong path.

Yes, I agree with that. It is understandable that people like Montagu Norman, Benjamin Strong and Emile Moreau would be attempting, from their perspective, to re-normalize the financial system. For them that meant going back to the gold standard. The British for example had been on the gold standard for several hundred years and had only abandoned it periodically during wars. They always returned but they always returned to the original parity because they felt to return at a different parity was to lose faith with the bond holders and others who counted on price stability. The British were unfortunate in a sense in that it was remotely feasible that they could actually go back on the pre-war parity because it required only perhaps 10 to 20 percent deflation to get back there. So it seemed feasible to do and they did it in 1925. But the effect was deflationary pressure which meant that Britain suffered substantial output and employment losses even prior to the actual 1929 debacle. The French had the good fortune that their inflation during the War had been so great that it was simply impossible for them to consider returning

at the pre-war parity. So they chose a parity which turned out in fact to be quite favorable to them relative to the British and allowed them to stay on the gold standard for a longer period. Also the nature of the gold standard changed in the 1920s. There was the issue of trying to provide enough reserves, which led to a pyramiding of reserves using key currencies. And again, I talked about some of the other reasons why the gold standard was inherently less stable in the 1920s and 1930s than it had been in the nineteenth century. Perhaps a wise monetary economist could have predicted those things. Keynes to some extent did. He was very much against the 1925 resumption. But from the perspective of the central bankers, they were not economic theorists, they were not, most of them, economists, although economists didn't generally disagree with them. Their view was that this was part of the necessary reconstruction of the international system. That's why they undertook these actions even though the environment had changed enough that what had been stabilizing in the nineteenth century was potentially destabilizing in the twentieth century.

Do you see the evils of deflation, whether it was anticipated or unanticipated, as the greatest villain in the story of the Depression? And given the ruinous inflation of the 1970s, is not then price instability, either up or down, one of the greatest sources of economic instability in the last century?

That's true and I think that's why both conservative and liberal economists are generally agreed that price stability, certainly in the medium and long term, is the most important objective for modern central banks. In some cases, central banks have codified that objective in terms of an inflation target. In others, like the Federal Reserve, it remains more implicit. But nevertheless, there is a strong commitment to maintaining price stability in both directions. I think it is interesting that the Federal Reserve in its May 2003 statement indicated for the first time the concern that inflation may be too low as well as too high, thereby essentially making clear that the Fed has a range for inflation that's considered consistent with a dual mandate.

Deflation and inflation are destructive perhaps in different ways. For example, deflation has particularly insidious effects on debtors whereas inflation perhaps robs more from creditors. The adjustment of wages may be different in the two circumstances. The inflation of the 1970s was primarily monetary but it had other factors as well such as the oil price shocks and so on. There are some differences but I think the broad conclusion that the policy for a central bank is to maintain medium-term price stability is widely accepted. In many ways this is a return to the gold standard in the sense that they too valued long-run price stability and put the highest value on long-run price stability and thought the gold standard was the way to get there. What they didn't fully appreciate was the potential for collapse of money supplies in the context of the gold standard that could generate major price instability. Likewise, Milton Friedman in evaluating the Depression came to the conclusion that monetary stability was the key. So he suggested stable money

growth as being the primary objective. Both the price of gold and the quantity of money though turn out to have somewhat loose relationships to the ultimate price level. And so where we are today is central banks are stepping away from intermediate targets like the money supply or the price of gold and looking directly at inflation as an objective of monetary policy. Ultimately that's achieving what these other systems were trying to achieve, but more directly.

Looking at Figure 2 in Cecchetti's 1998 paper "Understanding the Great Depression" which shows Fed discounting behavior from 1919 to 1934, does this not show the failure of the Fed to be the lender of last resort? Eichengreen has argued that, since we were on the gold standard, if the Fed had provided liquidity it would have called into question our commitment to gold. But even though they were on the gold standard, the graph shows little was done before Britain left gold, when all agree the Fed had some room to do something, and the first and second banking panics pass with discounting barely even registering a pulse. I saw that graph and was somewhat taken aback by it and I'd like to know what your impression is.

Well, I was aware that the Fed was not very aggressive in rediscounting loans in order to support the banking system. There are two alternative explanations for that and I think both have some validity. One is that at various times they were concerned that increasing the money supply would accentuate the external drain. This goes back to Walter Bagehot who talked about the dilemma of trying to deal simultaneously with an internal and an external drain. Essentially that easy money and lower interest rates could help support the liquidity of the banking system but increase the pressure on the gold standard. I think it was Wigmore (1987) who talked about the final crisis in the 1933 banking crisis, which eventually led to the bank holiday and the abandonment of the gold standard, having been driven very directly by a run on the dollar which not only affected gold stocks but precipitated withdrawals from banks. A lot of other countries like Germany simultaneously experienced exchange rate crises and banking crises as hot money flowed out of the banking system as foreigners tried to escape from the domestic currency. So, at least in principle the Federal Reserve policy makers would have seen the potential contradiction between internal and external drains and it may have been on their mind at certain junctures. But Friedman and Schwartz (1963) suggest that there was more to it than that. To some extent the Fed may have agreed with Andrew Mellon that liquidation was the prelude to a healthy recovery, that you had to get rid of the dead wood and the excesses of the 1920s.

"Purge the rottenness from the system."

Purge the rottenness from the system, especially since small banks were particularly vulnerable to runs. Indeed there was some correlation between financial weakness prior to the Depression and the tendency to fail, as current

scholars have found. There clearly was some view that it was good for the system in the long run to allow the weaker banks to fail. Friedman and Schwartz (1963) also commented on the fact that after the Federal Reserve Act was enacted the informal clearing houses within cities that had acted de facto as lenders of last resort during nineteenth century banking crises were essentially prohibited from acting in that role. So when the Fed failed to provide liquidity there really was no other substitute to help provide support for the banking system.

Temin told me that the Fed didn't think that saving banks was their business back then.

Well that's very odd because if you look at the reasons for the Federal Reserve Act in the beginning, one reason was to provide an elastic currency. The main purpose of an elastic currency was to provide extra money as needed during periods of harvest or planting which in turn was intended to keep short-term interest rates more stable. And the evidence suggests, Mankiw, Miron and Weil (1987) for example, that the seasonality in interest rates declined significantly after the founding of the Federal Reserve. So the Federal Reserve was performing that function. Why do we care about seasonality in interest rates? Well, the high short-term interest rates during the fall and the spring created a shortage of liquidity and often provided the backdrop in which banking panics would take place. Classically, October has always been the month for financial problems. Moreover, politically the Federal Reserve Act follows the 1907 crisis where there had been actions taken by clearing houses and I think by J. P. Morgan to try to avert the crisis but Congress was very dissatisfied with the results in terms of the length of time it took to end the crisis. Also there were concerns about whether or not J.P. Morgan and others had turned the situation to their own financial advantage by cornering the money market. So, the rationale for the founding of the Federal Reserve was to provide an elastic currency to avoid these liquidity shortages and to support the banking system. Moreover, classic central banking theory, such as Bagehot's book *Lombard Street*, talked about the responsibility of central banks to accommodate internal drains. So the Federal Reserve should have been cognizant of these responsibilities.

I would be surprised if it was a general disdain for the banking system. It was probably more so the case that they were concerned about what I mentioned before. Either that supporting the banking system was potentially a risk to the maintenance of the gold standard or, probably more importantly, that some purging of the banking system was a necessary prelude to full recovery.

You once said to me that counterfactual historical experiments make no sense if you ask questions like "How would US history be different if Robert E. Lee had an F4 fighter jet?" Do you think it is ahistorical and hindsight to ask how

things would be different if the Fed had increased the money supply by what was necessary to keep money growing on its 1920s growth path? I'm thinking here of McCallum (1990), my paper with Fackler (1994) and Bordo, Choudhri and Schwartz (1995). Did the endogenous nature of the money supply under the gold standard and the gold standard mentality of the time make this unfeasible?

What I meant by that earlier comment was that an interesting counterfactual needs to be something which is plausibly within the range of what might have happened. While the Federal Reserve could not have waded into existence a modern financial system or a modern monetary system, it was within their powers to make monetary policy different from what it was, to change their views or theories about what the appropriate approach to monetary policy was, and even to abandon the gold standard in the extremis, as a few countries did. So I think it is meaningful to think about alternative policy paths in that sense. Indeed, in blaming the Federal Reserve for its role in the Depression what you are implicitly saying is that you think a feasible alternative policy path would have had better outcomes.

I said in Reflections on the Great Depression that it took Hamilton's 1987 Journal of Monetary Economics piece for the profession at large to acknowledge that money really was tight during the Depression. Is that too harsh a view?

I think that there is a remarkable amount of prescience in the Friedman and Schwartz (1963) description of the Great Depression. They were focused primarily on the United States and so their emphasis on the international factors was less than what subsequent work placed. But they pinpointed back in 1963 the general point that monetary policy had become tighter in the late 1920s. For example, they emphasized the Fed's attempt to prick the stock market bubble by raising interest rates quite significantly during that period. And they talk in various places about the effects of that on the operation of the gold standard and the money supplies of other countries. Peter Temin in his work talked about the interaction among major industrial countries operating through the gold standard in the late 1920s. I think that some of the contributions that have come from him and others are to note that the United States was not the only source of contraction. France was an important source of contraction and there were also developments in Germany and the UK as well that contributed to the overall crisis. So I don't think it's quite fair to say that no one was aware of the fact that there was a significant contraction in the late 1920s. But I think what Hamilton (1987) did to some extent was address the quantitative question, which is was the contraction large enough and widespread enough to help to account for the beginning of the great contraction? I think his work added to that understanding. Eichengreen (1992) also contributed to that point by noting that the gold standard promulgated tight money to other countries which then fed back on the United States. So the

effect was multiplied via the international monetary system.

Christiano, Motto and Rostagno (2003) again raise the phoenix of a constant real money supply in their paper and claim “to the extent that there was some tightness in monetary policy, it was relatively small, certainly by historical standards of the time.” If the nominal money supply and prices both fell by 50 percent, the real money supply would be constant and thus would be evidence that there was no money supply shock. Is it me or is this a new source of confusion?

I don't want to be too hard on Christiano because I know he has done some very interesting work subsequently which actually shows monetary forces to have been fairly important in the 1930s. But with the argument above what I would emphasize is that with nominal debt contracts and nominal wages that are less than perfectly flexible, a decline in prices that is proportional to a decline in money can be very contractionary (a through the debt deflation mechanism and (b) by raising real wages above the equilibrium level. So I don't see any inconsistency between the monetary story and the observation that real money stocks didn't fall.

One of the lessons of the Great Depression you have pointed out is that fixed exchange rate regimes can be dangerous and destabilizing (Bernanke, 1993b). You wrote that before the Asian crisis of the late 1990s. You still feel that way, do you not?

Yes I do. I tend to agree with the so-called bi-polar view of exchange rates. Exchange rates should either be flexible or they should be extremely hard pegs, preferably a currency union among countries that share a common currency because they are essentially part of an optimal currency area. I think the experience with pegged rates which are pegged but adjustable shows that they are not able to withstand the pressure of capital flows under crisis situations. They were an important contributor to the disequilibria and the crises that occurred in the 1990s in east Asia and elsewhere.

How might you imagine the Great Depression era unfolding if there had been an inflation targeting regime in place to guide the actions of the Federal Reserve?

Well, now we're getting really counterfactual. I do think, and I think Friedman and Schwartz would agree, that monetary instability exhibited itself primarily through deflation. A price target that avoided deflation would have de facto forced abandonment of the gold standard and would have eliminated a major channel of depression emanating from the monetary system and also would have broken the international links that created this contagion among countries. So I do agree that stabilizing prices is the ultimate lesson of the Great Depression and also of the 1970s. There really is nothing more a central bank can do for domestic economic stability than make sure that inflation remains

low and stable over long periods.

Cecchetti and Karras (1994) present an argument describing the decapitalization of the economy, high real rates, portfolio shifts that occur as the nature of money changes, the value of in-place capital falls, deflation and currency holdings place a real, after-tax, riskless floor on expected returns, investment falls and indeed becomes negative, and demand for current output falls. What are your views on this explanation of the forces at work that brought the Great Depression?

Well, the zero bound adds an additional power to the debt deflation argument. If there were no zero bound and if debt contracts were sufficiently short term, then adjustments in nominal interest rates would eliminate significant redistribution between creditors and debtors. So the fact that there is a zero bound, which prohibits full adjustment of nominal interest rates, exacerbates the problem through two mechanisms. One is that, from an ex ante perspective, to the extent that deflation is expected, it puts a floor on the real interest rate which is the negative of the expected deflation rate. Second, from a debt deflation perspective, whether deflation is expected or unexpected, because nominal interest rates can't adjust fully, if debt contracts are of any length, then there is no mechanism to prevent deflation from redistributing huge amounts of wealth from debtors to creditors. So I agree the zero bound is very important. In recent history Japan had trouble with deflation and the United States was concerned about deflation in 2003. The concern about deflation, which after all in the case of Japan was relatively mild in terms of percentage rate per year, was the problem with the zero bound which in the presence of deflation would have prevented the central bank from creating a negative real interest rate as a means of stimulating the economy. The interaction of a zero lower bound on interest rates and deflation, even moderate deflation, can be a very negative force to the economy. So I think that the Cecchetti and Karras argument is quite compatible with debt deflation and financial crisis views and I agree that the zero lower bound is a critical element in explaining why deflation is perhaps an even more serious problem than inflation.

Are there any lessons from the Great Depression that need to be relearned?

As I said before, the two main lessons which I think have been learned to a large extent, but always can be re-emphasized, are first that a central bank's primary responsibility is the maintenance of price stability, to provide low and stable inflation in the medium term, to avoid sharp inflations or deflations and particularly to avoid the instability of expectations associated with an unanchored price level. The second lesson is that the financial industry is a special industry in terms of its role in macroeconomic stability. Major upheavals in the financial system can be extremely disruptive to the economy as a whole and therefore the central bank and other government institutions have a particular obligation to make sure that financial stability is preserved,

that banks and other financial institutions are well capitalized and well managed and that there exists a mechanism for responding in the event of crisis, such as the discount window or a deposit insurance system or whatever you need to make sure that the financial system will remain whole even under a great deal of stress.

I always ask everyone at the end two questions. What ended the Great Depression?

We could turn it around and ask why didn't the Depression end quicker than it did? Once the gold standard was removed, and the banking system was stabilized by the banking holiday and the subsequent actions that Roosevelt took, the two main impediments to recovery were removed and there was evidently some natural tendency of the economy to begin to right itself. Indeed, 1933 and 1934 were years of rapid gains in the stock market and even reasonably good economic growth. So the question is perhaps not what ended the Depression but what thwarted the recovery in the mid and late 1930s? Again I think that the wage and price controls of the NIRA and other interventions that tried artificially to reflate through fiat rather than through monetary forces were a major factor. There may have been some elements of hysteresis in that once the unemployment rate had gotten to such a high level, people had lost skills or firms were slow to recover and re-employ workers. But, again, broadly speaking, putting the puzzle the other way, why didn't the economy recover more quickly? Particularly in the early stages after Roosevelt became president it appeared as if things were turning around pretty quickly.

Could it happen again?

Probably not in the same way. But there certainly are risks to international financial markets that could produce very serious instabilities. One scenario that is occasionally described by some economists is a hard landing scenario for the dollar associated with the US current account deficit. I don't particularly find that persuasive, which means it probably will happen by the time this book is published. So there are stories that one can tell where the financial system comes under an enormous amount of stress due to some sort of shock be it monetary, financial or real, and the financial system is so complex and so inter-related that one can't rule out the kinds of contagion that were seen in the 1930s. I do hope that central banks have learned enough in the ensuing years to understand the importance of maintaining price stability and of reacting quickly and effectively to shorten the effects of financial instability. I optimistically think that while we could still have financial crises and bad outcomes in the world economy, policy makers know enough now to short circuit the impact before it becomes anything like the severity of the 1930s. Certainly that's the hope anyway.

My 60 minutes are up. Thank you so much.