

THE BROOKINGS INSTITUTION

A FED DUET:
JANET YELLEN IN CONVERSATION WITH BEN BERNANKE

Washington, D.C.

Tuesday, February 27, 2018

Welcome and Introduction:

GLENN HUTCHINS
Vice Chair of the Board, The Brookings Institution
Co-Founder, Silver Lake

Discussion:

JANET YELLEN
Distinguished Fellow in Research, Economic Studies, The Brookings Institution
Former Fed Chair

BEN BERNANKE
Distinguished Fellow in Research, Economic Studies, The Brookings Institution
Former Fed Chair

DAVID WESSEL, Moderator
Director, Hutchins Center on Fiscal and Monetary Policy
Senior Fellow, Economic Studies
The Brookings Institution

* * * * *

P R O C E E D I N G S

MR. HUTCHINS: Good afternoon. My name's Glenn Hutchins and it's my pleasure not just to welcome all of you here, but notably to welcome Janet Yellen.

There's an old Fed saying that goes only hawks go to Central Bank heaven. In contrast to that conventional wisdom, Janet Yellen staked out a very different territory. For her maiden speech in Chicago, she appeared at a conference of neighborhood revitalization organizations and said, "Although we work through financial markets, our goal is to help Main Street, not Wall Street."

More than five years after the financial crisis, she spoke mainly about unemployment and told the stories of three blue collar Chicagoans, two black and one white, who'd lost their jobs in the recession. It became quickly clear that this was a Fed chairman well-suited for the time in which we live.

However, not everyone recognized that or her. Not long after she took office, somebody came up to her in an airport and said you look just like Janet Yellen. Shortly thereafter, Forbes magazine recognized her as the second most powerful person in the world -- most powerful woman in the world after Angela Merkel, a towering figure who measured in at 5 feet and 3 inches tall.

As the Fed's leader she leaves with roughly 4 percent unemployment, 1.5 percent inflation. She successfully raised interest rates off the zero bound, engineered a policy framework for reworking the size of the Fed's balance sheet, and overseen substantial increases in bank capital and liquidity.

It is noteworthy that she became one of the best forecasters on the Board of Governors during her tenure at the Fed. While David Wessel was at the Wall Street Journal, they examined more than 700 predictions made between 2009 and 2012 in speeches and congressional testimony by 14 policymakers at the Fed. Janet Yellen came in number one, trailed significantly by Ben Bernanke, who logged in at number five. (Laughter) Perhaps Ben would agree that it's time we upgraded our forecasting capabilities here at Brookings.

Now, according to her financial disclosure forms, Janet has a stamp collection that she inherited from her mother and claims is worth between 15- and \$50,000. That's what it says. We certainly hope she doesn't plan to spend much time on it in the near future because our nation and Brookings still expect much of her.

Welcome, Janet. (Applause)

MR. BERNANKE: Okay, I'm the second-best forecaster. (Laughter) I'm Ben Bernanke and I'm here to interview my new colleague at Brookings. Welcome to all of you, welcome to Janet. It's great to have you here at Hutchins/Brookings and I hope this is more pleasant than sitting in front of the House Financial Services Committee. (Laughter)

MS. YELLEN: Well, I watched my colleague do that this morning. But let me say thank you, Glenn, for those lovely welcoming remarks. And I just want to say I'm really thrilled and delighted to be at Brookings. I think the Hutchins Center that I'm affiliated with is doing terrific work on monetary and fiscal policy, and Brookings more generally I greatly respect for the quality of analysis of public policy issues. And I'm looking forward to being here and to contributing to discussions about good public policy.

MR. BERNANKE: Great. Okay, well, we have time for -- we're going to do about 45 minutes of conversation and we'll leave time for questions. I thought we could go a little bit chronologically and I would start off by just asking you to talk a bit about how you got interested in economics, and how you decided to make economics your profession.

MS. YELLEN: Well, I decided in college to major in economics and then stayed in economics from there. And I guess I didn't really know a lot about economics before college. I was very interested in math and enjoyed it, and I suppose when I went to college I would have written down that I thought math was my likely major. But when I was exposed to economics I was really impressed that this was a discipline that relies on logical thinking, mathematical thinking, and rigorous analysis, but is very much a discipline that's concerned with human welfare. And that was a combination that greatly appealed to me, and so I must admit, after my first economics course, that was kind of love at first sight and I stuck with it.

I also found macroeconomics early in my career. In my first courses, I was exposed to kind of what you'd call Keynesian thinking about the Great Depression, and was very impressed that capitalist economies were capable of occasional breakdowns in the functioning of labor markets that could result in such prolonged misery for such a large share of the population. And I was impressed that there did absolutely seem to be a great deal that had been learned about what could be done to address such episodes. And so that was my early interest and it's continued.

MR. BERNANKE: Do you remember who your professor was in the first class?

MS. YELLEN: Oh, Herschel Grossman was my first macroeconomics teacher.

MR. BERNANKE: And then in graduate school you were advised by James Tobin, right?

MS. YELLEN: Yes, I was.

MR. BERNANKE: How did he influence you?

MS. YELLEN: Well, Tobin was my teacher, but I will have to say he was more than my teacher. He was actually an inspiration to me. I think what impressed me was not only his analytic skills and his knowledge of macroeconomics and the work that he did, but also his very strong commitment to social justice and to the view that economics is magical and it's about making the world a better place.

And, you know, economists use more and more these days a great deal of math, and sometimes people joke or criticize economists for treating it like it's recreational math, and some of it, in some sense, really not being about very much. And I think for me what Tobin stood for was always doing work that was about something and that was devoted to advancing human welfare. So in that sense, he was very influential in terms of what I wanted to do and in terms of the subjects that I was interested in.

I worked very closely with him. I took courses from him. I was his teaching assistant in the core graduate macro class. We came close to writing up a book, but while we were doing it, the rational expectations revolution intervened and I think changed our thinking quite a bit about what should be in the core course.

He was my thesis advisor. In later years, when I was first a governor in the Fed and later at the Council of Economic Advisors, I looked to him for advice and stayed in touch with him while I had those posts.

MR. BERNANKE: He worked for Kennedy when he was younger.

MS. YELLEN: He worked for Kennedy. He was at the Council of Economic Advisors and was involved in the programs in the early and mid '60s that led to a long period of strong growth in the U.S. economy and low unemployment.

MR. BERNANKE: Now, I have to ask, I hope you don't mind me asking, you were maybe the only woman in the class in the graduate school. Is that true?

MS. YELLEN: I think I was one of two women in my class. There were not a lot of women at that time.

MR. BERNANKE: Was that a problem for you?

MS. YELLEN: It wasn't a problem for me. I mean, I think I was always treated fairly. Tobin and Stiglitz with whom I worked were always very strong mentors for me and I enjoyed the graduate program very much. But it is sometimes a problem, so I think I was lucky in that respect and I think it is sometimes a problem for women being in such a small minority.

MR. BERNANKE: So you went on, you were at the Fed, but you went on to mostly a research career.

MS. YELLEN: I did.

MR. BERNANKE: And looking back what was the most exciting work that you did, that you're the most proud of, that you still think about?

MS. YELLEN: So I held a number of academic jobs and then ended up at Berkeley. And I also ended up marrying somebody I met in the Fed cafeteria who --

MR. BERNANKE: Who was that?

MS. YELLEN: A guy by the name of George Akerlof, who shared my strong interest in the topic of unemployment and economic theory bearing on unemployment. And I'd say the most significant work that I did before becoming Fed governor was jointly with George, and our work was

both theoretical and empirical.

And on the theoretical front we were really concerned with what I think has for maybe 100 years been the core question in macroeconomics, what to me is a core question in macroeconomics, which is, can there be such a thing as involuntary unemployment? You know, this is an important strand of the real business cycle versus new Keynesian debate. And that debate of Keynes versus the classics goes back to Keynes, and it existed before Keynes.

And the key question there is, why on Earth if I say--"I'm involuntarily unemployed, I'd like to get a job," and go to a firm and say, "well, you have these workers here, and I have exactly the same skills, and I'm willing to work for less than you're paying them as an employer"--shouldn't I be able to get that job and bid away that job? And if I'm not willing to make that offer, am I not in essence saying I don't really want the job and, therefore, I'm voluntarily unemployed? But there's always been a puzzle in a market system: someone who's qualified for a job and willing to work at or below what others are getting, shouldn't they be able to bid for jobs?

So that was a theoretical puzzle that we attacked in our work. An important strand of theories we developed falls into a general class of theories I call "efficiency wage theories." And essentially, what these theories say is that when you come to the door and you say, "look, replace your existing workers with me, I'm willing to work for less," those firms have a set of very good reasons for turning you away and being unwilling to cut wages and replace their existing workers with you.

And there are a set of theories, some of which are based on information and turnover costs. What they all have in common is the idea that if they were take you up on your offer and cut wages for you and everyone else, their productivity or efficiency would suffer. And, therefore, it would not be a cost-saving move on the part of these firms.

And I think a lot of our contributions to that theory were in terms of the sociological models, violations of fairness, and the consequence of what happens in the firm to productivity and worker morale when an employer violates norms of fairness... sociological considerations. But there were also more neoclassical considerations.

And so these theories essentially explained why it is that wages may be set at levels above those consistent with market clearing. But this isn't necessarily an explanation of business cycles. An important question--and this existed at the time as it always has--is, is there anything monetary policy can do to combat unemployment?

The theory I just described to you actually doesn't automatically have any rule for monetary policy because this kind of wage setting is referred to as real wage rigidity. To explain why monetary policy might work, it was necessary to explain why money wages or nominal wages and prices might be sticky. We worked on a theory that we referred to as near rationality.

Essentially what we tried to show was that in a world where efficiency wage type considerations were prevalent, firms could follow rules of thumb in adjusting wages and prices that would lead to slow adjustment. And while these rules might not be exactly optimal or profit-maximizing from their point of view, the cost to them of following these rules would be second-order small or miniscule, but their consequences for the aggregate level of wages, prices, and adjustments would be substantial. Therefore, monetary policy could work.

So ideas like that. Greg Mankiw, who was also involved at the time in writing similar work, referred to it as "menu costs of changing prices." Those micro foundations became important in new Keynesian models.

But we also did empirical work. We wrote several papers. We contributed to the Brookings papers in the '90s, one documenting how strongly pro-cyclical quits are and employer-to-employment moves are, which is what you would expect in a world where there's involuntary unemployment. We documented the benefits. People knew about the costs of high turnover. We tried to document the benefits of greater turnover in a strong labor market.

We also did a paper looking when German unification took place. We were quite concerned that under the arrangements that were put in place, there would be very high unemployment in East Germany. We undertook research that documented why that would be true, and tried to suggest a scheme that of course wasn't adopted, that would be helpful in minimizing unemployment.

MR. BERNANKE: Yeah, for the non-aficionados, I have to emphasize how the work on rigidity--nominal and real wage rigidity--played into the new Keynesian revolution. You mentioned earlier when you were in graduate school how the rational expectations revolution has shaken things up. In particular, it had upended a lot of the traditional Keynesian approaches because, gosh, they're not rational, they can't be explained by any kind of reasonable behavior. These new Keynesian ideas that you contributed to were important for rebuilding that Keynesian framework.

MS. YELLEN: That's right. This was sort of rethinking the micro foundations of Keynesian economics to try to answer the objections of the rational expectations school.

MR. BERNANKE: So you were a successful academic, doing interesting research. And then suddenly, in the '90s, you find yourself on the Federal Reserve Board. How did that happen? (Laughter) I've heard it does happen, but it's an interesting transition.

MS. YELLEN: Well, that's a good question. I never had any policy experience, although I had a stint working as an economist at the International Finance Division of the Fed and had always been interested in holding a policy post of that sort. But one day the phone rang. I guess it was the spring of 1994. There were several open positions on the Board of Governors and there was someone from the Treasury asking me if I would be interested. I asked them to hold the phone for a couple minutes and decided maybe I should talk to my spouse and see how he would feel about moving to Washington, and my son. And he said, well, of course we'll make it work. This is something you'd probably liked to do.

And I got back on the phone and basically said if you offer me the job, I'd be delighted to take it. I waited a couple of months and, lo and behold, I was nominated along with Alan Blinder, who was nominated at the time as vice chair. And so I went to the Fed.

I thought that the research I'd done and the background I had were a reasonable basis to try to contribute to monetary policy. During the time I spent there, and I'm sure you've had this experience, as well, I learned a lot about other responsibilities of the Fed, including supervision and regulation and some of the operational responsibilities that the Fed has. But I was delighted to be offered the opportunity to do it and learned a lot when I actually assumed the job.

MR. BERNANKE: When you were there it was peak Greenspan, right? So what was it like working with Alan?

MS. YELLEN: It was peak Greenspan.

MR. BERNANKE: And what did you learn?

MS. YELLEN: So I did work with Alan. I went in '94 and then left and moved to the Council of Economic Advisors at the beginning of Clinton's second term in 1997. I didn't really know Alan before I went. I really was impressed with his intellectual strength, with his originality. No one knew the data and understood the idiosyncrasies of the data and could make better use of it to provide insights on the economy than Alan could. And I thought he was a very original thinker, I enjoyed talking to him, and I found him very open to debate. I didn't agree with him about everything, but I did agree with him about a lot of things.

I had the opportunity to debate with him the question of whether or not the Fed should adopt an inflation target, and, if so, what that target should be. And he let me do that in the context of an FOMC meeting, so it went into the permanent record. I was on record then as saying that I thought we should adopt a numerical inflation target, and that I thought it should be 2 percent. I think I articulated the reasons about the zero lower bound and nominal wage rigidity that later became central to our decisions.

Alan's view was that we should not adopt an inflation target at all. And, of course, he was successful in stopping that from happening until you and I worked together. I think it had long been your desire to see this happen as it had been mine, and I think you especially should feel proud that you were able to put in place what I think has been a successful framework.

Alan was also very focused on the stock market at the time. He gave his famous irrational exuberance speech--I believe it was the fall of '96. He showed it to me in advance, and he asked me my opinion, and I read this long, dry speech. I think it was something like page 26 of the speech he was going to give in the evening--I think it was at the American Enterprise Institute--and there was this reference to irrational exuberance. And I thought, nobody is going to be awake by the time he gets to this...this is really just deeply buried. (Laughter)

And I told him I thought this was simply too mild and nobody would get the point. That was an error in judgment on my part. (Laughter) He gave the speech and the stock market immediately swooned.

But after the stock market immediately tumbled, it regained all the ground it had lost and continued week after week to reach new heights. And Alan decided that maybe there was a good reason for the stock market to be that high. Now, I, frankly, never changed my opinion about that, but he did because he became very focused on productivity growth and the notion that although it was not apparent in the statistics at that time, we were really seeing a substantial pick-up in productivity growth.

And so for the last couple of years that I was at the Fed, unemployment was falling. It was falling below levels that were then thought to be the level of the longer, normal rate of unemployment—the NAIRU. Inflation was already running above 2 percent, but it had come down. And many of us, including Alan, were anxious to make sure that inflation did keep coming down gradually over time. Not raising rates when the unemployment rate was falling ever lower struck almost everyone on the FOMC as a mistake. And I will have to say that I fell into the same category. I too thought it was a mistake.

By the fall of 1996, I went to Alan and basically said, “I’m willing to support you in not raising rates at this meeting, but I doubt that I’m going to be able to support this very much longer. I think the case is there to raise rates.”

Well, again, I turned out to be wrong. There was perhaps one rate increase from then until late into the '90s. The unemployment rate continued to fall and inflation continued to be very low.

Alan was focused on productivity. He also thought workers felt very insecure because of technological change, and it was constraining wage bargaining. Those were some ideas I actually was pretty sympathetic to. And so he and I had very good discussions. I wrote something on that topic. It looked at things in a theoretical model that I think he wasn't that familiar with, and I think he valued that.

MR. BERNANKE: So you and I had the same path from academia to being a governor, then going to the CEA for a period.

MS. YELLEN: Yes.

MR. BERNANKE: That was a great job. I liked that job. Tell us about your experience with CEA.

MS. YELLEN: Well, the CEA was a fascinating job, and you're involved with every aspect of economic policy. With respect to the performance of the macroeconomy, it was a wonderful time. By the end of the '90s, I think the final month of 1999, the unemployment rate had fallen to 4 percent and inflation was running around 2 percent, so inflation hadn't picked up.

MR. BERNANKE: Sounds familiar.

MS. YELLEN: It was terrific and we were certainly celebrating in the White House. We worked a lot on the budget and I participated in an event in which we were able to announce that at long last the budget was balanced. We were very concerned. I remain at least as concerned now or more so about the longer run trajectory for the federal debt. I worked hard on devising a plan by which as the budget went into surplus, we would take those surpluses and pay down the debt. This would create some additional fiscal space that wouldn't be all that would be needed to address long-term fiscal issues, but it would be a down payment, and we worked on that.

I suppose more than any other topic, I spent a great deal of time on climate change. I was there during the run-up to Kyoto and after Kyoto, and the Council of Economic Advisors was deeply involved in working on climate change policy.

MR. BERNANKE: I remember the Fed was planning for what would happen when all the Treasury debt was paid back, and how were they going to run monetary policy.

MS. YELLEN: Yeah, that was really a --

MR. BERNANKE: Yeah.

MS. YELLEN: -- serious concern.

MR. BERNANKE: So you were in these two important positions in the '90s and then you wrote a book with Alan Blinder about the '90s, as I recall.

MS. YELLEN: Right.

MR. BERNANKE: What lessons did you take from that decade? Is it repeatable?

(Laughter)

MS. YELLEN: So perhaps we're repeating it, but I guess I took away two lessons, or that we expounded two particular lessons in that book. One is that Clinton's first steps, first economic policies, put in place a plan that would lower budget deficits. There had been great concern about out-of-control budget deficits, and it was reflected in high long-term interest rates. But the Clinton administration was, rightly I think, very concerned that tightening fiscal policy when we had an economy that was just recovering. Unemployment remained high, and they were worried about the negative impacts of fiscal tightening on the economy.

So let me just say at the outset: in general, the view that tight fiscal policy tends to depress employment and economic activity—I believe to be correct, and I'm not questioning that. But the Clinton policy was one that phased in very slowly over time a tightening of fiscal policy, so it wasn't a tightening in day one or year one that was dramatic. I believe it was a very credible multi-year commitment, which served to quickly bring down long-term interest rates dramatically.

So in point of fact, I think for at least some several years this was a fiscal tightening that actually was expansionary because the decline in spending or increase in taxes didn't occur immediately and long-term rates came down very quickly. The economy continued to recover. So the notion that a very well-designed fiscal tightening policy need not have adverse impact on economic activity was one lesson we took away.

Another lesson: we looked at why was it possible for unemployment to decline to as low as 4 percent and for inflation to stay so very low? Again, we have a similar situation with inflation that isn't even yet up to the Fed's 2 percent target. I think our conclusion was that that good experience reflected a set of favorable of supply shocks, the most important of which was what Alan had pinpointed--that productivity was really increasing dramatically; unfortunately, temporarily, but dramatically. And that was holding down prices.

In addition to that, and, not one of the things that is currently operative, there was a

strong dollar. The appreciation of the dollar was holding inflation down. Oil prices also plummeted at that time.

Finally, on top of that, we pinpointed a decline in the pace of healthcare cost increases. This was a period in which there was a restructuring: many people were moving from fee-for-service to managed care-type plans. At least for a period, it held down the growth of healthcare costs significantly. We also concluded that all of these were supply shocks, and we concluded that it was important. In the present situation, some of those things are still present as well.

MR. BERNANKE: So you went back to academia. Then in 2004 you became president of the San Francisco Fed?

MS. YELLEN: Yes.

MR. BERNANKE: What was it like being a president? This is one experience you've had. You've had more experience in the Fed than almost anybody, maybe literally anybody except perhaps Greenspan. I was never a Reserve Bank president. You had some time at that job. What is that like? How is it different from being a governor?

MS. YELLEN: So a variety of ways. One way is that an important job of a Reserve Bank president is to collect information that can be helpful and bearing on monetary policy and understanding what's happening in the economy. The Reserve Banks are structured. They're a quasi-public/quasi-private kind of entity. They were chartered to serve a public purpose, but structured like banking organizations with private sector boards of directors.

And those directors, a president meets with regularly. An important role that they have is to provide information on what they're seeing in the economy. More broadly, Reserve Bank presidents are expected to interact with all significant groups in the areas that they serve, both business leaders, also members of community groups and labor groups, to try to understand what's happening in the economy.

So due to I suppose historical accident, the 12 regions of the Federal Reserve, the 12 districts, aren't of equal size. The San Francisco region, back in 1913 there wasn't all that much

out West. But there got to be quite a bit, and so my district represented 20 percent of the national economy and covered 9 states. So I traveled all over our district meeting with people and trying to understand what was happening, and to distill all that I heard into something that could be relevant input for monetary policy.

We also had a lot of operational responsibilities. Of course, supervision is something that's important and you oversee the supervisory staff, but we also had operational responsibilities for check and cash and other things. And on some of these things, like check-- they're businesses, and under U.S. law, they have to, when there's competition with the private sector, cover their costs. When I got to the San Francisco Fed, check volumes were declining at an astonishingly rapid rate, so it was clear that check was going to be a contracting business. You can imagine that with substantial fixed costs and huge declines in check volumes, covering costs was an extraordinarily difficult task.

And so for my first couple of years there, I was involved in essentially having to shrink the operation. My first week in the job, I had to send out pink slips to employees in two of our branches who were involved in check, that we were going to close. And I'd really never been involved in that, and had to go and talk to them and explain why it was that they were going to be losing their jobs, and try to help them adjust to what that was going to mean, which was, for me, a very different kind of experience.

It was no surprise to them. They could see that every day the volume of work coming into their operation was plummeting. You know, the Fed during that time, during those years, went from something like 52 places in which we processed checks down to 1. It was a substantial cut.

We also were very active in community development. The Community Reinvestment Act is something that's designed to ensure that the banks serve the needs of their communities, including low- and moderate-income areas. The Fed was active in doing research and provided a forum to figure out what would be helpful. I became quite involved in the community development work that we did.

MR. BERNANKE: A part of it is talking, though, to your board and to community leaders and to business leaders, and trying to get intelligence for the monetary policy process.

MS. YELLEN: Yes, trying to get that intelligence.

MR. BERNANKE: And you were pretty early in identifying problems in housing and banking. Tell us about how you saw those issues from your place in San Francisco.

MS. YELLEN: Well, I was in San Francisco starting in 2004, and then came and joined you in Washington in 2010. So I was out in an area that was the center of these problems, which were developing. And I have to say, I saw a lot and reported on a lot that was very worrisome.

From day one when I walked into the bank, I met with our banking supervision folks and they told me how concerned they were about commercial real estate lending. We had booming housing markets. We supervised many small community banks, and their commercial real estate lending, especially for land acquisition and development, was growing at a very rapid pace. Their lending was growing more rapidly than their deposits. They were beginning to rely heavily on brokered deposits. They had very high concentrations, often in small lending and small geographic areas that were the center of what became the housing boom and bust. And quite a few of them ended up failing later on. My staff was very worried about that. That concerned me.

I had many directors and other business contacts who were involved in housing. Of course, in San Francisco, you couldn't go to a cocktail party without people telling eye-popping tales about deals that had been struck on houses and which house prices were going up. And so I heard all of that and my contacts were quite concerned.

Our supervisory folks that I met with were alerting me to underwriting practices that were a huge concern. They were telling me about low-doc and no-doc loans, about the rising prevalence of ninja loans, no income/no jobs/no asset-type loans. We supervised Countrywide for a while and looked at their mortgage business which was growing enormously. I met pretty regularly with Angelo Mozilo. And the San Francisco Fed was quite concerned about what was going on. We tried to insist on tighter risk controls.

And one day Angelo came up and we had our regular quarterly meeting and he said to me, Janet, I have to tell you, it's been terrific to be supervised by you. You guys are really on top of your game and we really appreciate all of the valuable advice that you've given us. But, you know, we've realized that we don't actually need to be a bank holding company. We realized it would be okay to be a thrift holding company. And so we're changing our charter.

And indeed they did so and decided it would be nice to be supervised by the Office of Thrift Supervision that is no more. So that kind of gave me a sense of what was happening.

Beyond housing, which I was concerned about, I have to say as we got closer to 2007, 2005 and '06, I had directors who were simply telling me about broad-based financial excess. And the way one person put it was, you know, the banks and financial institutions are just absolutely throwing money at us, never seen anything like it and, you know, for anything.

And one day I met with my advisory council who was a principal in a major private equity fund and he told me a story that simply I found terrifying, and I'll tell you how it goes. So he says, you know, there's a well-known company I won't mention the name of, there are many big private equity companies that are competing to take this company private. We've looked at this firm and my partners and I just don't see any way in which we can possibly win this. He said, but the head of our firm really encouraged us to see if we could put together a bid.

He said, "We sat down. We looked at what on Earth would it take in order to win a bid to take this company private. We would have to get the most incredible financing terms from a bank. Not only would the rate have to be low, but even if the economy stumbles we might be unable to make the interest payments on our loan. And, therefore, we would have to have a deal by which if we can't make the interest payment on our loan, we would just be able to add that unpaid interest to the principal balance and automatically borrow to get through these hard times." He said, "And no bank's going to give us a deal like that."

Well, lo and behold, the head of the firm said, "Well, why don't you just try it?" So they went to a bank and the bank just fell all over itself and was delighted to agree to these terms. And this type of arrangement became known as a PIK toggle, or a payment-in-kind toggle.

I heard about this and I thought, you know, this is just really broad-based financial excess. So I was quite concerned about it. I think what I failed to appreciate was, what if housing prices began to fall? I just really did not understand how vulnerable the financial system and particularly the shadow banking system was, how leveraged it was, how much maturity transformation there was, how much of this risk that we thought was being disbursed through the economy was really remaining on the books of these institutions.

So I wrongly thought if housing prices fell a medium amount it would do damage to the economy and the outlook, but it would not destroy the core of the financial system. And I think that was a failure to appreciate the weaknesses.

MR. BERNANKE: And yet, I think, frankly, the reason that your forecasting rating is so good is that in '08, when oil prices had gone to \$150 and a number of your colleagues in FOMC were still worried about inflation, you were already very much looking towards the real side and worried about the recession. So you were extrapolating from housing through the financial system to the economy. What was your thinking at that point?

MS. YELLEN: Well, I think that you and I were probably looking at things very much alike. I think by the summer of 2007, before we ever really encountered the problems with Lehman or Bear Sterns or any of that, house prices were already falling. And I think it was becoming clear that credit was growing quite tight. And while the unemployment rate was very low and we had tightened monetary policy, inflation had risen a little bit above 2 percent, I thought downside risks to the economy and to the labor market were beginning to dominate the outlook.

And certainly, by 2008 and after Lehman, even though later on there was another surge in oil prices that took inflation up, we had a real economic situation that was simply becoming so dire that to my mind there was no question that that as the dominant matter of concern. And that if unemployment rose to the levels it looked likely to rise to, and I think we're lucky it rose no higher than 10 percent, I think if you hadn't done all of the interventions that you supported, god knows what would have happened to unemployment. But I had no doubt that that was what our primary focus had to be and that inflation surely would come down in that kind of context.

MR. BERNANKE: Well, after those interventions and trying to stabilize the financial system, we then had to turn to monetary policy. And with the zero lower bound being effective we did quantitative easing, we did forward guidance, we did a variety of other new tools, or at least new for the United States.

What's your retrospective? I mean, there was a conference on Friday where there was a paper which argued quantitative easing wasn't particularly effective. And what's your thinking on the whole suite of tools at this point.

MS. YELLEN: I thought it was an all-hands-on-deck-type of situation, and we should do everything that we could plausibly think of to try to help. And it's a time when, I think 2009 and '10, when short-term interest rates were effectively at 0; long-term rates were still over 3 percent. It seemed clear to me, and I think to you, as well, that there was plenty of scope to bring long-term rates down.

So the two major obvious things that we did were communications to try to shape market thinking about what the likely path of short-term interest rates would be, that would then have bearing on longer-term interest rates and asset purchases.

So I think my read, there are a lot of papers, people will study it for a long time. I know the paper that was presented at the U.S. Monetary Policy Forum cast doubt on the effectiveness of asset purchases. But I think my reading of the literature on this, I think the overwhelming set of studies to my mind, document that large-scale asset purchases were effective in lowering the term premium and longer-term rates and bringing it down. Exactly how much, you know, I'm not sure and it's hard to tell. There's very limited evidence.

And the event studies that people typically do, they capture some of what happens, but I think some of what we did was anticipated. Maybe people didn't know the exact quantities that we would do or how long a program might last, but it was expected that the Fed would do something more. So I think it's event studies have problems in capturing what happened.

I think that the forward guidance that we gave was also quite effective in lowering expectations about the path of short-term interest rates. Many people I think, including people in the

FOMC, when we lowered rates to zero thought this would be a situation that would last for a short time, not a year or two, not terribly long. You know, it was seven years that we held rates at zero and people didn't expect that.

And there's a big debate about whether forward guidance can be effective if it's so-called Delphic rather than Odyssean. Namely it's just conveying the committee's expectations as opposed to a specific commitment, and a lot of the guidance we gave was Delphic. But nevertheless, I think it did influence market expectations that rates would stay low for long.

And the general policy of when you're against the zero bound, holding rates at zero for a longer time than would otherwise be called for I think is a generally sound approach to policy. People came to understand.

MR. BERNANKE: Let me ask one more question. I just wanted to ask you, we didn't get too far--we're just getting into your chairmanship and I'm sure the questions will come up, but let me ask you one thing just to finish this part of it.

MS. YELLEN: Sure.

MR. BERNANKE: Which is, tell us about your leadership style. I mean, how did you manage the committee? How did you think about working with up to 19 people around the FOMC table?

MS. YELLEN: Well, my style, I think, was very similar to yours, which I would describe as collegial rather than dictatorial. I wanted, especially for policies like running down our balance sheet, something that would take place over many years with changing representation for voting on the committee. I thought it's important to have a program that's understood by the public, that will get broad-based support when the voting members of the committee changed. There shouldn't be a change in this aspect of policy.

There were other things we did, as well. Operational decisions about how to manage interest rates and the general notion that raising rates to a normal level--the new normal, lower than in the past-- but that we should do that gradually, I wanted broad-based committee agreement. And to try to generate that I let a lot of time for committee discussion. At many

meetings we would try to develop a plan for how we will run down our balance sheet.

And initially, at meetings we would have a lot of options on the table and there would be go-arounds and people would express their views. The options--there were people who would favor options that didn't get a lot of support and they would tend to see that. You know, I love Option Number 9, but I was pretty much alone in doing that.

And what I found was it was great. Over time people who favored options for which there wasn't a lot of support tended to shift their support to options where there was greater support. And gradually, we narrowed things down to one and got complete agreement.

So I guess what I do is I often compare the job of managing the committee to the issue a designer would have to face who is trying to decide what's the right color to paint a room. You have 19 people around the table, and you want to come up with a decision we can all live with on what color to paint the room. And we'd go around the table. Ben, what would you like? You think baby blue is just absolutely ideal. David, what do you think? Chartreuse you think is a lovely color. (Laughter) And we go around the room like that.

And the question is, are we ever going to converge? I would feel my job is get everybody to see that off-white is not a bad alternative. (Laughter) As brilliant as your choice was, maybe you could live with off-white, and it's not so bad. And we can converge on that and it's going to function just fine and maybe we can agree.

So I felt I was often trying to get the committee to coalesce and decide. We'd come up with a good option that we could all agree on.

MR. BERNANKE: Very good. David.

MR. WESSEL: Thank you. I'm David Wessel. I'm director of the Hutchins Center. Thank you all for coming, those online, and also to Ben Bernanke and Janet Yellen. I want to also thank Glenn Hutchins for his generous support of our program here.

I want to ask one follow-up question and then I'm going to take some questions from the audience. When you were arguing with Alan Greenspan about an inflation target, part of the argument was some people thought that if there was going to be a target, it should be zero. Today

there is some thinking that maybe 2 percent made sense then, but people worry that the unconventional policy tools that you talked about -- quantitative easing and forward guidance -- might not be sufficient the next time we get a recession. And so there's a lot of talk about an alternative framework, maybe a higher inflation target, maybe something called price level targeting, and stuff.

And now that what you say no longer matters to the markets, I want to know what you really think about those alternatives. (Laughter)

MS. YELLEN: Well, let me first say there is a problem and it's a problem that I think I didn't recognize when we chose 2 percent as a target, how serious it would be. There had been only one country at that time, Japan, that hit the zero lower bound. That seemed like a rare circumstance. And since then, many advanced countries have faced the zero lower bound.

There's now growing agreement that somehow the new normal going forward is a world where productivity growth has been low. Perhaps we'll be lucky and it'll rise, but it has been low. We have aging populations and a strong demand for safe assets. It looks like interest rates, long and short, had generally been trending down among advanced countries even before the financial crisis. And I think there is now reason to believe that the new normal for the U.S. and many advanced economies will be on a lower average level of short-term rates.

The FOMC in their December projections projected the longer than normal level of the fund's rate at 2.75, which is just three-quarters of a percent in real terms. And if that's right and there are estimates of the equilibrium real rate that are even lower than that, zero bound episodes can be much more frequent.

This means that for monetary policy, at least short-term rates have much less scope to be used to stabilize the economy. And I think the first thing is to recognize is that this really is a problem. It behooves policymakers and researchers more generally to think about are there changes we can make to the monetary policy framework that would be helpful in dealing with that?

So, what I've said as chair is that the tools that we discussed that we used during the crisis--forward guidance and asset purchases--I think for this reason should stay part of the

toolkit. If you agree that they were effective, even if it's hard to quantify how effective, we should keep those things in the arsenal and have them available to be used. I'm not saying that that is a full solution and there can still be situations.

So what more could you do? You said you could raise the inflation target, and I suppose that with the type of reasoning that led us to the 2 percent inflation target--which was partly based on estimates of how often you'd hit the zero lower bound--we probably would come out with a higher inflation target now if we were starting from scratch. But moving to a higher inflation target is a tricky business.

I'm not sure that Congress would regard it as consistent with their mandate of price stability. I think the transition from a lower to a higher inflation target would be a difficult one and could succeed in unanchoring inflation expectations that I interpret as reasonably well anchored around 2 percent. And that's been a tremendous advantage to monetary policy. There are some costs of having inflation running generally at that level.

So that to me is not -- it's certainly worth considering the costs and benefits, but it's not a clear, "yes, we should have a higher target." That takes you to other systems, like nominal GDP targeting that has some interesting advantages, or price level targeting. And I think these things are worth considering.

I think of Ben's suggestion for essentially making it clear that the Fed would resort to price level targeting in situations where the zero lower bound is binding. That's a type of lower for longer approach that you would codify in advance of a zero lower bound episode. Absolutely they have some attractive features. I think they're worth studying, debating, because this is an important issue.

Is there a silver bullet there? Something that just obviously is going to work and make a huge difference? I will admit to a little bit of skepticism about that. I think these systems would have to be very well understood by the public, and I think explaining how any of these systems would work to the public is a difficult task.

What's the right time to phase it in if you were to try to phase in price level targeting

at a time when you'd had a prolonged shortfall of inflation? I think you would face the Japanese situation. Where if inflation has been for years below your target, and now you say you've not been able to use your tools to achieve the target, and now you say, "you know what, I want you to believe that we're going to run above the target for as long as it takes to eradicate the cumulative shortfall," I'm not sure that that's an effective way, that it will be credible policy.

Some of these policies require a degree of commitment that's, I think, difficult to achieve given the governance arrangements that most central banks have. It's not impossible for committees to make sort of long-term commitments with some credibility. I would say our plan to shrink our balance sheet is a commitment that got great support in the committee. We think it is something that will hold over for many years. But the governance arrangement is challenging.

So I think these things need to be studied. I would be myself quite open to considering different approaches, and I think it's real problem.

Finally, let me just say that I really think monetary policy should not be...that it's not a healthy situation for monetary policy to be the only game in town. I would like to see a situation in which fiscal policy was in a better position to make a contribution on the kinds of occasions and situations we're talking about. And that's one reason that our current fiscal situation concerns me as much as it does.

MR. WESSEL: Thank you. So I want to take two or three questions and give the audience a chance to ask questions. There's a guy right here in the pink shirt.

MR. POPICK: Hi. Thank you for being here.

MR. WESSEL: Why don't you tell us who you are? And keep the questions short and remember that questions end in a question mark.

MR. POPICK: Hi. My name is Steve Popick. I'm an economist with the Federal Deposit Insurance Corporation. My question is not related to monetary policy. It's about the research that the Fed has done. In 2015 and 2016, there were a number of papers talking about the issue of replicability --

MS. YELLEN: Of what?

MR. POPICK: Of replicability in our economic studies. It's something that we've been dealing with as a professional group for a number of years now. We've had some conversations around the AEA's (American Economics Association), about the inability for economic studies to be replicated by other authors. And so I wanted to know if you had any thoughts or suggestions, either of you, for ways that we can move forward as a discipline on that.

MR. WESSEL: Okay, thank you. The woman in the front in the red cape.

MS. ZENTNER: Thank you. Ellen Zentner, Morgan Stanley. Thank you for your service and thank you for progressing women in economics.

MS. YELLEN: Thanks so much.

MS. ZENTNER: I hope that continues. David stole my first question, so I'll ask you my backup question, which is, productivity does appear to be rising. The unemployment rate is low. Inflation looks like it's rising gradually toward the 2 percent goal. Do you still believe that r -star, the real equilibrium rate of interest, is about flat or do you see it rising now?

MR. WESSEL: Okay. One more in the back. Rich, can you stand up?

MR. MILLER: Thank you very much for doing this. Rich Miller of Bloomberg.

Janet, you likened the period now a little bit to the late 1990s. You said there were some similarities. Are there any lessons you draw from the way that period ended with the recession and the popping of the tech NASDAQ bubble that could -- you know, have lessons we could draw from for now? Thank you.

MR. WESSEL: Okay, replicability, r -star, and are we going to relive the '90s?
(Laughter) You get to pick.

MR. BERNANKE: Real quickly on replicability, I'm now part of the American Economic Association leadership. And I think replicability...in other words, what that means is, can they [our economics studies] be replicated by another scholar, or can the data and the programs be shown to be clean, and could anybody else do the same study and get the same results, or even do a related study and get related results? So I think it's really important, obviously.

And the American Economic Association is trying -- and Olivier Blanchard here is

the current president of the AEA. We're working to greatly step up our game on that. The journals are greatly increasing the requirements for demonstrating replicability, by providing the data, by providing the software source code with all accepted studies.

So I think there's a ways to go, but this is something that's really become a center of attention at the AEA, which has broad influence in the whole range of journals, of course, that the AEA manages.

MR. WESSEL: Thank you. Take one of the other ones?

MS. YELLEN: Okay. The r -star, is it possible the equilibrium real Federal Funds Rate is rising? So let me first say that there is uncertainty about what r -star is. And I think I and some of the my colleagues, and we're not alone--many analysts, have amassed a lot of data suggesting that there is a long-run trend toward lower real rates. I think that's been important in shaping the markets and our own understanding of what monetary policy should be.

But this is a matter that's uncertain and I think people don't always appreciate the uncertainty around that. So I don't know that I know the answer on what the long run r -star is going to be and the estimates are quite uncertain.

You mentioned that productivity is picking up, but it's still at a very low level. I mean, estimates of the economy's long run growth potential, the FOMC's last estimate -- the median was 1.8 percent. That assumed the pick-up in productivity would be above the abysmal levels it had achieved previously.

So I can't say that I'm really impressed with the pick-up in productivity as being something that would boost it. But, you know, we do have -- things like fiscal policy that are relevant to it. You know, a more expansionary fiscal policy, if it's long lasting, has the potential of boosting r -star somewhat.

There were always questions about that. And initially, I'd say my own thinking was that the reason r -star seemed to be so very low was partly because of headwinds from the financial crisis that I thought would dissipate over time. I changed my view on that and became more convinced that it was productivity, demographics, and other things that were more secular and

longer lasting that were driving it. But it is conceivable that there could be some pick-up and there was something to that earlier explanation.

But I don't really have a strong view on this. I think this is a matter about which there is uncertainty, and we'll learn something over time.

MR. WESSEL: And the other question was what lessons did we learn from the '90s, which ended with a recession and a bursting tech stock bubble?

MS. YELLEN: So, I mean, we certainly had a stock market bubble. It burst and, when it burst, it caused a recession. It did not cause a financial crisis. There were people who lost money. There were macro consequences from it. The economy recovered reasonably well from that recession. It wasn't that deep, you know. It was an event that had a sufficient macro consequence, and it caused a recession.

And at the moment, I think there's general agreement that asset prices are elevated. That certainly was the conclusion incorporated in the Fed's monetary policy report. An important question now, as it was then, would be if asset prices were to fall, what would that mean about the economy and the financial system?

And I guess I would agree with the general conclusion that's incorporated in last week's monetary policy report, which is that we have a much stronger financial system. It's well capitalized, has a lot of liquidity, has relatively little exposure to declining equity prices. We stress test -- we do regular stress testing and look, for example, in that stress test for what the consequence would be of sharp declines in commercial real estate prices.

And I think I would generally conclude that, as that report does, that overall risks to financial stability are moderate. They're not elevated at this point. Leverage is very much lower. The financial system is stronger. In some nonfinancial corporations, we've seen a notable increase in leverage, especially among riskier corporations, lower rated corporations. But household debt has gone down relative to income since the crisis substantially.

So in that sense, if there were to be an adjustment in asset prices, I think this economy is better able to absorb it than it would be were the financial system less sound.

MR. WESSEL: We'll take a few more questions, but, if you have a question for Ben Bernanke, you're allowed to ask it. So just think about that for a minute.

There's a guy in the back there standing up, and then why don't you go over here to the guy against the window?

SPEAKER: Hi. My name's Dimitri. Chairman Bernanke, Chairman Yellen, thank you very much for this and for your service. My question is for both of you.

During your time the economy became ever more global and other financial markets became more important around the world. I'm just wondering what challenges and opportunities that presents for your roles. And for me, the Central Bank swaps that were implemented in 2008 were a great example of the cooperation that's possible, so just anything along those lines. Thank you very much.

MR. WESSEL: Thank you. Over here.

MR. WEATHERHEAD: Yeah. Tim Weatherhead, editor at The Hill, Economics. I wanted to ask about deficits and debt. I'm sure you both expressed concerns over outsized debt, but I was wondering specifically what those concerns are and sort of how those will become realized, and what the timeframe for that would be.

MR. WESSEL: Two o'clock Friday afternoon. (Laughter) Anton?

MR. VAN AGTMAEL: Antoine van Agtmael, Brookings trustee. A lot of attention has been given to relatively slow growth, and some people think slow growth of the economy is from the supply side. I wonder about the demand side, and particularly whether growing inequality kind of puts a ceiling on demand growth.

MR. WESSEL: Thank you. Do you want to take the global question?

MR. BERNANKE: Sure. So, yes, the global financial system has become much more integrated. It is very challenging for central banks, first of all, because our regulatory systems are national, not international. There's a lot of coordination and cooperation and conversation, but there's nothing that a U.S. bank regulator can do directly to deal with a problem bank in another country.

Likewise, the U.S. has a special role because the dollar is so important in financial transactions. You mentioned the swap agreements during the crisis, which some of the swap agreements are still in place. They were ratified yet again in the January meeting. That provides a way for the Fed to get dollars into the system where there's a shortage of dollars in different contexts via other central banks.

And finally, monitoring. Since the crisis, we did a lot to get regular monitoring of financial stability risks throughout the system. Again, this is much more difficult if some of the institutions, some of the borrowers, et cetera, are outside of your borders.

So it is harder, but the good news is that there is a lot of cooperation. Janet and I regularly met with our colleagues in Basel, Switzerland, with regulators and central bankers at the G-20, and in other contexts. They do sort of scenario planning where we talk about what would happen if a major institution were to fail or if some other problem were to emerge--role-playing kinds of exercises.

So there's a lot of effort to coordinate and, indeed, there's a lot of cooperation in general. But certainly, the mismatch between the global system and the national borders, which are where the laws and regulations are set, does provide an ongoing challenge there.

MR. WESSEL: And inequality and is it a constraint on aggregate demand?

MS. YELLEN: I'm not sure I would say it's a constraint on aggregate demand, but I think it is an influence that such a large share of income gains have gone to high-income consumers, probably with lower marginal propensities to consume. We have had very healthy, in spite of that, growth in consumer spending. It is something that's been driving the economy this year and for several years, so I'm not sure I see it as a constraint. But it certainly is something that's a significant influence, has been and probably will continue to be, on consumer spending.

MR. WESSEL: Do either of you want to give a quick answer to why should we worry about the debt and the federal deficit given that interest rates, although they've risen, remain relatively low--10-year at 2.9--and the rest of the world seems willing to lend us unbelievable amounts of money? What is it that makes you think we should worry about the debt and the deficit?

MR. BERNANKE: I would worry about the flexibility, the fiscal flexibility. Now with low interest rates, despite the fact the GDP ratio is higher, the share of our budget which is paid in current interest is actually not unusually high. But if interest rates rise or if debt continues to grow relative to GDP, which seems very likely under current scenarios, the share of our government budget which is devoted to paying interest is going to get higher and higher, reducing the possibility for flexibility in a future recession or future war or to deal with long-term trends, like the aging population.

I'm not particularly alarmist about this. I don't think we're looking to some kind of near-term crisis because of the federal debt. I just worry a bit about the medium-term to long-term loss of fiscal space, fiscal flexibility, which will come in handy when inevitably there will be some kind of challenge that we want fiscal policy to respond to.

MR. WESSEL: And a couple more. There's a gentleman here and a woman over here. Can you stand up?

MR. MUEHRING: Hi. This is Kevin Muehring from SGH Macro for Janet. I just wondered if you could touch again on the mystery of inflation, low inflation. There's an assumption out there that inflation is returning soon or even quickly, but how certain can we be that our hope for wage increases or wage growth this year automatically translates into corporate pricing power?

MR. WESSEL: Okay, thank you. Ylan?

MS. MUI: Chairman Bernanke, you helped --

MR. WESSEL: Tell us who you are.

MS. MUI: I'm sorry? Oh, Ylan from CNBC. Chairman Bernanke, you helped pioneer more transparent communications. Chair Yellen, you continued that commitment, as well. But when you look at the recent volatility in the marketplace, do you guys question the progress or success you've made in communications? Are the markets still misinterpreting the Fed?

MR. BERNANKE: Are markets still?

MS. MUI: Misinterpreting.

MR. WESSEL: Misinterpreting the Fed. You want to take the inflation question?

Are we ever going to get inflation?

MS. YELLEN: So, my view has been that the shortfall of inflation from 2 percent is something that's likely transitory now with unemployment as low as it is, and having fallen below more estimates of its longer run natural rate, with neither the dollar nor oil prices holding inflation down. The central -- the median of the SEP in December expected that in 2018 inflation would move up to 1.9 and reach 2 in 2019.

So although we've had a shortfall--and I think the most recent 12-month change in the core is still running at 1-1/2 percent--I do believe that it's going to move up in the coming months. As some outsized declines in inflation that occurred a year ago were associated with plummeting mobile phone prices and some other idiosyncratic declines in prices, as they drop out of the index, I expect that this spring inflation will move up not to 2, but a little bit closer to 2.

So I guess what I've said is that I see the standard framework that sees inflation as being largely determined by inflation expectations, slack in the labor market, and slack in a variety of supply shocks, as a reasonably sound framework for thinking about inflation. And I don't think that it's exhibited massive failures in recent years.

So, yes, inflation has been now for many years below 2 percent. Such a framework would have attributed that to, first, a lot of slack in the labor market, plus plummeting oil prices and an appreciation of the dollar. So for many years, low inflation has not been mysterious in terms of its causes.

In 2017, the model saw no reason for inflation to be as low as it was, so that was a negative error term. In 2016, exactly the opposite was true: inflation hit 2 percent, the model didn't expect it to be at 2 percent. Of course, there are errors. I'm not saying that we have a perfect understanding of inflation. There are a whole variety of shocks that cause actual inflation in any year to depart from the predictions of the model. But it's not as though the errors have all been one-sided in a way that would cause you to say this model just isn't working, we really need to rethink it.

So my scenario--but while having a very open mind and knowing that perhaps this framework needs to be amended in some critical way--my baseline assumption is that the shocks

that held down inflation last year are likely to prove transitory, and I would see inflation as moving up. You should never make too much of any month or two of data on either prices or wages, but I see incoming data as not inconsistent with inflation moving in line with the committee's assessment that it's going to go back up to 2 percent.

Wages, to my mind--if you look broadly, most wage series have been gradually edging up their rates of increase. And the relationship between wages and prices is not tight.

MR. WESSEL: And does the recent volatility in the market have anything to do with the degree of transparency from the Fed? I think that was Ylan's question. Is that right? Should we welcome or fear this recent volatility?

MR. BERNANKE: So the recent volatility is nothing exceptional in a historical basis, as the veterans here are quite aware. The purpose of Fed communication is not to eliminate or suppress volatility. The purpose is to eliminate unnecessary misunderstandings--unnecessary communications problems that lead to extra volatility more than otherwise would be coming from the fundamental economy.

So I think that communication's come a very long way. It's only been a quarter century since the Fed even began issuing a statement after its meetings, and now we have far more information provided about the outlook for the economy, about even what the Fed thinks or the FOMC members think are going to be the path of interest rates.

So obviously, you know, it's a work in progress. I would compare Janet's handling of the balance sheet with my handling of the balance sheet as an example of how technological progress exists even in central banking. (Laughter) I think there's still a lot to be learned there. But I do feel that transparency in communications have been very positive and it's continuing to improve.

And I would just note, you know, we're meeting this afternoon instead of this morning because Chairman Powell's inaugural testimony was this morning. He emphasized very strongly his commitment to expanding transparency and explaining what the Fed does, which I think is good not only from a policy point of view and a markets point of view, but also good from a democratic accountability point of view.

MR. WESSEL: I want to ask you one question before we have to close. I'm looking for short answers here.

So the economy's in good shape. GDP is growing, not as fast as we'd like. The unemployment rate is at a 17-year low. Inflation is gradually moving up to target if you're right. What is it that we should worry about most that might bring an end to this remarkable expansion?

MR. BERNANKE: I think there are-- I would call them, broadly speaking, international political or geopolitical risks in terms of the international geopolitical situation, concerns about trade, concerns about international cooperation, and the like. I think the economy, as you say, is growing in a pretty healthy way, but I don't know if markets are fully incorporating the risks that might exist in the global system.

MS. YELLEN: I would certainly agree that those are significant risks that could cause a future downturn. I guess as Chair Powell mentioned this morning in his testimony, what the Fed needs to do at this point is guard against the risk of overheating while recognizing that inflation continues to run below 2 percent. We have an economy that's operating below estimates of its normal longer run unemployment rate. Job growth has been running at about 175,000 a month.

It's important to stay on a path where the economy doesn't overheat to the point that the Fed is forced into a rapid increase in interest rates that could cause a recession. And I don't expect that to happen. There's no reason why it should happen, but it is important to guard against overheating the economy.

MR. WESSEL: Thank you, Janet Yellen and Ben Bernanke. Thank you all for coming. (Applause) If you want to relive this experience, the video will be posted online. You can critique the answers or the questions. And please, if there are papers or coffee cups at your feet, take them with you and put them in the trash in the back. Thank you again.

* * * * *

CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

Notary Public in and for the Commonwealth of Virginia

Commission No. 351998

Expires: November 30, 2020