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SHOULD THE FED STICK WITH THE 2 PERCENT INFLATION TARGET OR RETHINK IT?

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The Options: Keep It, Tweak It, or Replace It:

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P R O C E E D I N G S

MR. WESSEL: Good afternoon, and welcome. I'm David Wessel. I'm director of the Hutchins Center on Fiscal and Monetary Policy here at Brookings. I want to thank you all to coming today and for people who are joining us online, I bring greetings from Glenn Hutchins who's the benefactor of the Hutchins Center who charted a plane from somewhere, it was canceled so he can't be here with us today, but he's probably watching on his phone and will undoubtedly be weighing in on everything I did wrong in the first opening segment of this thing, but that's the fun.

When we think that the question of rethinking the 2 percent inflation target is one of the most important questions facing monetary policymakers at the moment. You might say that the backward-looking question that we need to think about and which we, at the Hutchins Center, are thinking about is how did unconventional policy really work and should unconventional policy really be considered conventional policy. But when you look forward I think one of the -- you'd have to argue that one of the biggest questions now is whether, given everything we know, whether a 2 percent inflation target framework is the right one for monetary policy. After all, when it was conceived nobody anticipated we'd have so many years of trying to get inflation up to 2 percent and nor did we think that the long-run equilibrium interest rate would be so low that in the last Federal Open Market Committee survey of economic projections the members said that they expect a long-run rate to be a nominal 2.8 to 3 percent, which just means that there's not a lot room to lower real rates below zero as we usually do in a recession.

Now, when we first conceived this event, one of the reasons we did it is we felt that this was a discussion that was really important but hard for the members of the FOMC to have because if you start talking about this you frighten the markets and bad things would happen, so you just don't talk about it in public. I think we were right that this is an important issue. We were wrong that FOMC members are afraid to talk about it. The minutes of the meetings suggest that it's been discussed and a number of regional Fed banks and Chair Yellen, herself, have raised it. But I think that this is not a decision that can be left to Federal Reserve policymakers or the economists who spend time thinking about monetary policy. This is too important a decision to be left to the Fed and the economics profession itself. It has to involve a broader array of people, a broader discussion in our society.

So, this is our attempt to try and explain what the issues are, what the choices are, what the pros and cons are for that broader audience, and I'm hoping that we can do that. We'll try and synthesize this at the end. We have a very crowded schedule which were extremely pleased about it's hard to imagine you could have assembled a better group of people to discuss these issues than the ones we have. So, I'm just making a public plea to our speakers that I made in private, which is try and to stick to our time schedule so everybody can get a fair shot.

We're going to start with a conversation with Larry Summers the former Treasury secretary who has raised this issue in public and is going to set the scene for us, and then my colleague Louise Sheiner will come up here and introduce a panel that we're going to have to discuss the alternatives. So, Larry Summers.

MR. SUMMERS: My job at a conference like this at a moment when I am not in government is to surely be provocative and hopefully be sound. My propositions are at root, two.

First proposition: Our current framework is likely to involve unnecessary costs in lost output on the order of a trillion dollars a decade or a hundred billion dollars a year relative to what otherwise would be possible. And, two, a proper better framework, which we shouldn't necessarily move to immediately, but we should ultimately aspire to, would involve normal nominal interest rates in the 4 to 5 percent range. Let me develop these arguments in several stages.

First proposition: Within the current policy framework we are likely to have, by historical standards, very low rates for a very large fraction of the time going forward even in good economic times. David just shared the Fed's view which is that the neutral real rate is in the neighborhood of 1 percent. We're at more risk, at least, currently of falling short of the 2 percent inflation target than we are of exceeding the 2 percent inflation target. It's a good rule with official projections, think about the weather bureau, that when they keep being revised in one direction there's positive serial correlation in the revisions.

So, it would be my judgment that further reductions in the real predictions of the neutral real rate are more likely than further increases. The market essentially shares this view. The long-run LIBOR forecast is 2.3 percent; 2.3 is less than 2.8, but the market is projecting the expected value, the Fed is projecting the mode. That is a reason for some discrepancy. On the other hand, the markets forecast builds in a term premium whereas the Feds forecast doesn't build in a term premium. Reasonable judgment, then, if we continue to operate in our current framework it's a reasonable expectation that in good times rates will be in the 2 to 3 percent range, typically. And it seems to me (hard). Obviously, that's a projection made with substantial error, but I cannot see good reasons for thinking that the Fed in the markets estimates are massive underestimates.

Second proposition: Recessions will come. What is the likelihood of recession? My reading suggests that the best thinking is that recoveries, unlike people, do not die of old age. That the probability of recession, once one is significantly advanced into a recovery, is essentially independent of the length of the recovery. And that that probability, depending upon just how far back one looks, is something in the neighborhood of 15 to 20 percent on an annual basis. That's a historical reading looking back through 50-odd years of U.S business cycle history. Is it the right view going forward? You can make a case that it's an understatement of the risks going forward. That case would emphasize that normal growth is now 2 percent rather than 3.5 percent, and so you have to slip less far to fall into recession. It would emphasize a higher degree of geopolitical risk now than in the past. It would emphasize that we have a more financialized, more levered economy with higher ratios of wealth to income that's, therefore, more at risk of financial disturbance. A case for more optimism would -- that the past probability is an overestimate, would emphasize lower inflation, and less risk of inflation getting out of control forcing the Fed to hit the brakes hard. It would emphasize smaller inventory cycles in a less tangible and physical economy. I'm not compelled that one of those sets of considerations is far more important than the other. So, I think 15 percent annually is a reasonable estimate of the probability of a downturn.

Third observation: Monetary policy of the standard form will lack room to do what it usually does. On average the rates are reduced nominally by 5 percentage points in order to combat recessions. The low numbers are at the beginning of the period when there were very substantial credit rationing effects that were important in understanding how the economy functioned. So, 5 percent strikes me as, if anything, slightly on the low side. If you look at nominal rates you conclude a 5 percent reduction is necessary. If you look at real rates you similarly conclude that about a 5 percent reduction in rates is necessary. You can see where this is going. Five is substantially more than two to three. So, the likelihood, I would argue the overwhelming likelihood, is that when recession comes policy will not have sufficient room to cut rates as much as it would like to within the current framework. If one believes that neutral real rates will decline further or that there's a risk that they will decline further, this effect is, of course, magnified.

These conclusions are not very far from those reached in a much more elaborate way by Kiley and Roberts. Kiley and Roberts conclude that there's a 30 to 40 percent chance -- that 30 or 40 percent of the time we will be at the zero lower bound. If you assume that once every seven years we'll be in recession and you assume that once we get into recession rates will be constrained by the zero lower bound for three years, one gets that will be at the zero lower bound about 30 percent of the time given our current framework.

Observation four: If, within this framework, the expected output losses are large, Kiley and Roberts estimate an output loss above 1 percent of GDP on average. That would be at current magnitudes over the next decade about $200 billion dollars a year. I think it's plausible to suppose that their estimates are too high. I have a much more of a back-of-the-envelope approach. I said, "Suppose when we get into one of these episodes and we're constrained for three years, about forty percent as long as we were constrained after the 2008 crisis, that we'll lose one percent of GDP the first year relative to where we would've been, two percent of GDP the next year, and one percent of GDP in the last year." If you take that number you get a loss of about 4 percent of GDP once a decade. That works out to about a trillion dollars over the next decade or a hundred billion dollars a year. The calculation could, obviously, be wrong if recessions were more frequent or they were long-lasting or a negative spiral developed, or there were hysteresis effects, you can imagine reasons why the calculation would be an overstatement. But it seems to me hard to argue that what I have said is way off as an estimate of the cost of the insufficient ability to adjust monetary policy.

How could this calculation be way off? I might -- I've addressed the question of whether I'm way off on the frequency of recessions or way off on the amount of interest rate cut that is necessary when you have a recession. The main challenge to this type of calculation, it seems to me, is the suggestion that alternative forms of stimulus can be provided, and so the zero lower bound is not an important constraint because monetary stimulus can be provided nonetheless. That's what Janet Yellen tried to argue in her Jackson Hole speech in 2016. I am far from convinced, and I would make these points: First, starting at two and a half percent, ten-year rates if you simply imagine that the economy goes into recession and then you imagine that the Fed cuts rates four or five times to a 25 basis point Fed funds rate and nobody does anything else, the ten-year rate will find its way down to 1.5 or in that range. And it seems to me quite questionable how much extra stimulus would be developed by any further reduction below 1.5 percentage points. That's possible, and that applies with respect to any monetary -- that argument applies with respect to any monetary device that might be developed.

With respect to quantitative easing, I would note that there's less room now than there was previously, that it is far from clear in retrospect that it is as effective, once periods of major illiquidity are removed, as is often supposed. As Ben has acknowledged, it doesn't really work in theory. And I think the evidence now is much less clear than it once appeared, that it works in practice, especially in light of the awkward fact, which most discussions of QE pass over, that the quantity of U.S. public debt that markets have to absorb has increased rather than decreased during the QE period given the activities of the Treasury and given the further observation that the swap spread is negative, somewhat inconsistent with the suggestion that there's an induced short supply of Treasury debt. So, I am completely unconvinced that QE can be our salvation next time round.

What about forward guidance? The fact that the Fed is moving with some vigor towards tightening while inflation is, at this moment, well short of 2 percent. The fact that the Fed is not willing to predict inflation above 2 percent at any moment, even a hypothetical moment, of the 10th year of recovery with an unemployment rate of 4 percent, must be undercutting whatever credibility might previously have attached to the idea that a Federal Reserve would be willing to live with substantially super 2 percent inflation rates.

Finally, there is the possibility of fiscal policy. I would only note that growing levels of the debt to GDP ratio coupled with readings of the political process and the way the political process responded to the aftermath of the Recovery Act, suggests little basis for serenity that substantial fiscal policy will be quickly entered into the next time the economy goes into recession.

My conclusion, therefore, is that we are living in our current framework in a singularly brittle context in which we do not have a basis for assuming that monetary policy will be able, as rapidly as possible, to lift us out of the next recession and, therefore, that a criterion for choosing a monetary framework, when we next choose a framework, should be that it is a framework that contemplates enough room to respond to a recession. Meaning, nominal interest rates in the range of 5 percent in normal times. Whether that is achieved through changing conventions on how one permits above target inflation, providing for adjustment to changes in -- based on the price level rather than the rate of inflation or whether that is done in the context of relying on nominal GDP seems to me to be a question of second-order importance. What is of primary importance is that we establish a framework in which our best guess is that we will have room rather than that we won't have room to respond to the next recession. And so, I would suggest, as a design criterion, that an appropriate framework allows for a 5 percent nominal interest rate in normal times.

I would just conclude by observing that if I am wrong, and we assume I am right, we will live with marginally, perhaps slightly more than marginally, higher inflation, but if I am right, or if the trend towards a declining neutral real rate continues and we ignore it, we will put ourselves at risk of very substantially exacerbating the next recession and that the consequences for welfare, not to mention political economy, I would suggest dwarf those of marginally higher inflation. So, I would hope that all consideration of monetary frameworks emphasized centrally the need to provide for adequate response to the next recession.

Thank you very much.

MR. WESSEL: Thank you, Larry. I'm going to ask you one question, then we'll take a few questions from the audience. And then Larry will be around and might be able to respond in the next session as well. So, if you had to decide today what the new framework should be without regard to the difficulties of changing it, do you have a horse in this fight -- a horse in this race? Which one would you choose?

MR. SUMMER: I really wanted to emphasize that something that would have a normal nominal GDP -- normal interest rate of 5 percent is much more important to me than the tactical choices. If I had to choose one I would choose a nominal GDP target of 5 to 6 percent. And I would make that choice because it would attenuate the issues around explicitly announcing a higher inflation target, which I think are a little bit problematic on political economy grounds, and because it would build in the property, which I think is desirable, that the slower the underlying growth rate and, therefore, the less it's likely to mean lower neutral real rate and is likely to mean less normal productivity growth which is relevant for the zero floor on wages. And so, a nominal GDP target has that as an advantage. That would be my bold, big step.

My smaller, I think more practical, step would be an explicit acknowledgment by the Central Bank of an objective of super 2 percent inflation in the late stage of an expansion based on the confidence that a recession would come at some point and would provide for some further disinflation. And by setting it -- and by doing that one could preserve the 2 percent inflation target, justify a more expansionary policy today and, it seems to me, be entirely responsible. I don't think it is possible to reconcile the forecasts of 2 percent inflation with not a single dot above 2 percent inflation on forecasts that assume continued expansion with the claim of being symmetric about the 2 percent inflation mandated.

MR. WESSEL: Thank you. I should've noted, people are welcome to stand in the back if you like, but in the room just across the hallway we have a big screen and you can sit down if you like. So, anybody who wants to seat you to it. I want to take a couple of questions, and then we'll let Larry respond and we'll move on, if anybody has one. Yeah, Roberto. There's a mic coming. And if you would tell us who you are, and please make it a question, which has a question mark at the end.

MR. PERLI: I'll try to. Roberto Perli, Cornerstone Macro. So, all this discussion assumes that the neutral rates are going to stay low. Is there anything in your view that can -- any realistic policy that can be implemented that changes that?

MR. WESSEL: Okay. Thank you. Take another one. Yeah, Steve.

MR. LIESMAN: Larry, do you envision any fiscal response to this next recession as in would you then -- I know the horse has left the barn with this particular year, but envision creating fiscal capacity right now in order to let fiscal play a part and not put all of the recession response on the monetary side?

MR. WESSEL: Okay. One more. Yeah, the gentleman here. Wait for the mic, and please tell us who you are. I should've asked. That was Roberto Perli, Steve Liesman, and you are?

MR. LAWLER: Patrick Lawler. Our experience with inflation in the, I'm guessing, 3 to 4 percent range, which might be consistent with your target nominal rates, our history doesn't show any ability to keep a rate in any kind of narrow band at that point. Are you at all concerned that raising inflation that much might engender much wilder swings? And what kinds of things monetary policy is expected to respond to?

MR. WESSEL: Okay, Larry. Three good questions. Answer them in the order you like.

MR. SUMMER: All questions to the forum, am I at all concerned? The answer is yes. I do not share your reading of the 1980s, for example, when inflation was in the 3 to 4 percent range, and seemed to me to remain in control. Furthermore, I think that there is a natural corrective in the form of intermittent recessions which would tend to bring inflation down. I could conceive that this would become a problem, but I guess as more and more time passes I come to see the 1970s more as the world's first experiment with pure fiat money from which it learned painful lessons, and less as a prototypical event that characterizes what's going to take place going forward. So, I don't have that as a concern at the level of the trillion dollars a decade, at least that I think we're putting at risk from this brittleness problem.

Steve, if we really could work counter-cyclical stabilization policy well in our political system, that would attenuate somewhat these arguments, but it's actually a pretty complicated business even if you leave aside the infirmities of our political system. What's the instrument of the counter-cyclical stabilization going to be? It just turns out to have it be I live this designing the -- helping to design the Economic Recovery Act. It just turns out to be very difficult to turn spending on and off on the spending side. If you insist on developing backlogs of infrastructure projects, you'll get projects delayed to wait for your stimulus program just at the moment that you want them. It turns out just to be very hard. You know, I spent the better part of an afternoon trying to figure out how to give money to the NIH in a useful way, which they could only spend in the next two to three years, and it turned out to be very, very hard to do. And if you rely on the tax side there's a question as to just how high the marginal propensity to spend out of anything you do temporarily on the tax side is. And so, even before you get to the political problems I think fiscal policy is a somewhat problematic instrument.

On the question of neutral real rate, look, my view is that the neutral real rate is being shaped by some very profound structural things that I would call the demassification of the economy. Law firms used to need 1200 square feet of space per lawyer, now they need 600 square feet of space per lawyer. Nobody wants malls anymore because there's eShopping. Start-ups used to require $5 million dollars of capital, now they require $500,000 of capital. Our canonical technology companies Apple and Google, have as their central business problem, what to do with all of their cash and how to disperse all their cash. An environment of that kind, it seems to me, is an environment that's going to have structurally low real interest rates. And, you know, look, here's a basic problem: How do you extrapolate the time series 3-2-1? Like one answer is you extrapolate it to zero. Another answer is you extrapolate it to 1 because stuff is a random walk. Another answer is you extrapolate it to 2 because stuff mean reverts. And another answer is you extrapolate it to 3 because stuff mean reverts sort of fast. And it's very hard to know what the answer is. But I look at the downwards trend in almost any proxy for the real interest rate in almost any country over 25 years, and I'm at least as worried that the neutral real rate is going to fall as I am of the belief that it is going to rise. And I think you have to take the fact that if you look at the index bond market it is telling you that in neither the United States nor Europe nor Japan is there an expectation that the two percent inflation target will be attained over a decade as suggesting that there is substantial doubt about the capacity of policy to generate adequate stimulus. And so, it seems to me that, if anything, the Kiley-Roberts assumption of a 1 percent neutral real rate is way too high as a certainty equivalent estimate of A) what the real rate actually is, and B) how you should calculate it, recognizing that if you're too high that's a really serious problem and if you're too low that's a much less serious problem.

MR. WESSEL: Thank you very much, Larry, and thank all of you. And I want to introduce Lee Sheiner who's the Policy Director of the Hutchins Center who came to us from the Federal Reserve and has spent much of her time here, A) teaching me, and B) learning what the hell they do at the Federal Reserve on monetary policy anyways.

MS. SHEINER: That is true. So, Larry gave us a great introduction to this next panel actually. Really making the case for why we're now talking about alternatives. And in this panel, we're kind of going to get into the nitty gritty, not just the big picture, but kind of like if you want to do something, what would you do and why. So, what we've done is we've actually asked people, we've assigned them tasks and said please tell us the pros and cons of each of the following.

Now, we have this amazing panel. They don't need an introduction which is great because I don't really have time to introduce everybody but let me just tell you who is coming, what the order. The first one is Olivier Blanchard from Peterson is going to talk about the pros and cons of raising the inflation target. Then Jeff Frankel from Harvard is going to talk about the case for nominal GDP targeting. John Williams, President and CEO of Federal Reserve Bank of San Francisco is going to talk about the advantages and disadvantages of a price level target. And then finally, Rick Mishkin is going to talk about why we might want to stick with our current framework, perhaps tweak it a bit. And then Ben Bernanke is going to respond to all of them.

So, here's what we're going to do. I'm going to go sit down, they're going to come up and do their thing, go sit back down and then when they're all finished, we're going to sit up here and have a conversation. Thank you very much.

MR. BLANCHARD: So, given the task of defending the case for higher inflation target rate, that's what I'm going to try to do. I'm going to make six points. The first one, is that the 2 percent target is a precise estimate. It comes out of nowhere in terms of at least coming out of a (inaudible) computative exercise. It is a very nice survey by somebody called Deerks who has looked at 161 papers on the optimal inflation rate. Of 106 which have the guts to actually give a number, 33 give a negative number. These are the ones which typically go over Freidman route and ignore nominal rigidities. 15 say 0 to 2 and 9 say 2 to 6. That gives a sense of what you get when you try to do it.

If you look, I haven't looked at the 161 studies, but if you look, it looks like none of them comes close to capturing what we think of many benefits in cost of inflation. If you take the Fisher (inaudible) list which is kind of a classic in that respect, it is very hard to formalize them and most of the formal studies really don't do that. The worst one is probably the so-called New Keynesian model in which the welfare cost of inflation, I think, is just not what it is about in reality. So, I think we have to keep this in mind. 2 percent is a political number, it's an important number but it is not the result of the consistent set of studies.

The second point is a point that Larry made which is whatever rate you thought was optimal in 2006, you have to revise it up for two reasons. The first one is that the neutral rate has decreased and again, we just had the discussion as to whether it will stay or not. There is a possibility that it stays very low or even goes lower and that's the branch of the fork that we have to care about. The other is that we basically know that that can be very large in deep recessions and then you really need to use something very strongly. So, for both reasons, whatever, even if the 2 percent was exactly the right number based on what we knew in 2006, it cannot be the right number today, it has to be a higher number.

So, the question is what do you do next? So, it seems to be from a conceptual view, the right answer is negative nominal rates. I think in that respect, conceptually can (inaudible) is completely right. I think it will come. I think we're moving to electronic money and it will make it much easier to actually have and cash is going to largely disappear. You might still be able to keep cash but it is going to become less and less convenient, less and less used and therefore it will eventually, I think, be the solution if I were to think about where we are in ten years. I suspect that that's the right way to do it and will be the feasible way to do it but not yet. So, we have to think about what we do before.

So, the next step is to say well, yes, sometimes we need inflation because we need large negative real rates and the nominal rate is at zero so let's try to generate inflation when we need it rather than all the time. All the time, to me, is distortions all the time where if you just have it when you need it, then clearly it is much better if you can. So, these are the valued schemes which try to convince people that when inflation is low, a recession is there than you basically are going to have more inflation later. So, it can be price level targeting, it can be a valuation that then has developed at the conference a few months ago which can be thought at AC metric price level targeting. It does it when it is really needed on one side but not on the other. And, I think, like Larry, rather negative, rather pessimistic about the ability of moving expectations in that way when you need them. The way I read the Japanese experience is that it is very hard to meet expectations in this way just when you need them. If you could, that would be a solution but I don't think it is.

So, this was the fourth way. The fifth point is, well what's next and what's next is higher permanent inflation. I have no doubt that we can get there, we just have to (inaudible) the economy enough and we'll get to whatever number, 4 percent if we want or 5 percent. What are the costs of 4 percent? I really don't see the cost of 4 percent as being much higher than the cost of 2 percent. Most of the cost in practice have to do with distortions from the fact that the tax system and the transfer system is not indexed. I think indexing many of the aspects of a tax system would get rid of most of the distortions. One distortion which, I think, is money illusion and people are subject to money illusion and it would be difficult and some of them would get confused.

Now, whether it is good or bad from a welfare point of view, money illusion, in a way, makes people happier because they think they are getting a nominal rate, they think of it as a real rate and they feel happier. But then they make mistakes in choosing portfolios. So, this is an issue which I think we have to think about but I'm not sure that 4 percent is really the end of the world. This was the fifth point.

The sixth point I'm going to shoot myself in the foot by basically taking the position that there is a good reason not to want to go to 4 percent. This is something I believe. I think one of the great advantages of what we've had until now is that inflation is no longer salient. Inflation was on our mind when we had to take mortgages and inflation was 5, 10 percent and we really had to think about it and everybody had to think about it in some ways. I think most of us as individuals, not as professional economists, have not thought much about inflation in the last few years. It is just very low and that's exactly why Greenspan wanted basically a level of inflation which is sufficiently low but nobody cares.

Now, why is this good? Because in terms of Phillips curve, it basically means that the expectations of inflation don't move. So, what you have, as long as you don't abuse it, is a downward sloping Phillips curve that you can use. You have a tradeoff between inflation and unemployment. It is much easier to do much with policy with sticky expectations than with expectations which move. I think if we move to 4 percent, I don't know exactly what the limit is. But I suspect if we move to 4 percent, then people will be more aware of movements in inflation and then we get into what we've seen in the past which is expectations of inflation adjusting to movements in inflation faster and making the job of the Central Bank not difficult.

On that, I've made six points, five in favor, one not and I shall stop here.

MR. FRANKEL: So, my job is to make the case for nominal GDP targeting and also to point out drawbacks against. Like Olivier, I have six points. Broadly, I'm going to state a principle, I'm going to make a proposal, I'm going to make the case for and as assigned, I will duly make some drawbacks.

Just to start on a basic principle and I'm going to try to bridge so I'm not out here all on my own, about nominal GDP, a bridge to the rest of the discussion this afternoon. And actually, Larry did it already in his answer to David Wessel's question about if you were to do nominal GDP targeting, how would it be? What he said, is very succinctly what I'm going to say. But to build on the bridge to the rest of the remarks that everyone else is going to make, let me start with a basic principle. What is the point of announcing a target or if it is not a target, for forward guidance or communication. It is credibility. And the target, therefore, is less useful if it is something that the authorities are chronically unable to achieve and that you can predict ahead of time that they're going to be unable to achieve. Then you don't get the credibility.

So, I'm going to be a little negative here on inflation targeting. The main point when Ben set a goal, 2 percent inflation and when some other Central Banks did it as well, was to get the economy back to full employment. That has failed. We haven't hit the 2 percent goal. Neither has the Bank of England or the ECB or Japan. So, I'm a little surprised when I hear, how should we think five years later about this? We set a target, we failed to achieve it, so the response is to set a more aggressive target. New Year's resolutions, I'm going to lose five pounds or I guess in this case, gain five pounds. You miss the target so you say next time I'm going resolve to gain ten pounds. If the first one wasn't credible, the second one will be less credible. That applies to raising the target. I think it also, in my view, with respect to the people speaking both before me and after me, I think it applies to a price level target. Very elegant, people have to believe it. They're not going to believe it after the failure to hit the inflation target.

Fortunately, we have achieved what we really were interested in which is getting back to full employment, that's the good news. I will say, that if the question is, if inflation targeting means central banks should be transparent about what it sees the inflation rate of being in the long term and say that that's 2 percent. Like in the summary of economic projections, you say what you think the long rate unemployment rate is, long rate grow rate, that's fine I'm all in favor of that but you're not really staking credibility on it.

Point number two and this is a more important question. Not the really long term but if the Central Bank wants to signal its intentions at a horizon of one to two years either through a formal target or forward guidance or a threshold like the Fed did with unemployment and the Bank of England some years back. What is the best economic variable to use to signal your intentions? Inflation, (inaudible) exchange rate, price of gold, short term interest rates, unemployment rate, so on. My claim is and my assignment before you today is to defend the proposition that if central banks want to communicate their intentions at a one to two year horizon. It would be more effective if they traced that commitment or that communication or that guidance in terms of nominal GDP rather than in terms of CPI inflation.

Of course, you can't hit it exactly. About as far as you could go would be to say that the mandate of the Central Bank is to do everything it possibly can to get as close as possible and then if the governor fails than he or she is fired. That was like the fantasy we all had about New Zealand in the 90s. I don't think they ever actually did that.

That would be like the most extreme. I think such a level of a commitment, whether it's inflation or nominal GDP or anything else is not credible.

I'm going to make a very non-threatening, very mild proposal. The FOMC releases its summary of economic projections I think every six weeks. It is submitted by the governors and the bank presidents. I propose adding nominal GDP as a row in that table. My first choice is that it be the first row of the table before real growth, unemployment, CPI, Feds rate. So, if you're not familiar with it, and it gets much less attention than the Dots Plot, here is the most recent one from December. First row is projected change in real GDP, second row is unemployment rate, third is PC inflation and core inflation, interest rates. I propose we add a row for nominal GDP. And even if the members initially just have the rate of growth of nominal GDP, they just construct it by adding together their forecast for the real growth rate and the inflation rate, I'll go along with that. I'd prefer that it would be the first row and that it get a little attention and that the Fed be signaling that they're starting to pay attention to it.

Now the main point, was the case for nominal GDP. I'm going to give a little bit of a historical background in case people aren't familiar with it. What the case was when it was first proposed in the 1980s before getting to my main point, what's the case for it lately. It was originally proposed at a time when the target to beat was M1. Milton Freidman's monetarism has triumphed, the Fed and the Bundesbank and the Bank of Japan and the Bank of England were setting M1 targets. And a number of economists pointed out that these were not robust. The first two were noble prize winners, James Meade and James Tobin. But lots of other people, including some people in this room, and I, had a paper and did some analysis to make the point. At that time, the point was that nominal GDP is robust with respect to velocity shocks. The alternative to beat was an M1 target. An M1 target was needlessly destabilizing if there were shifts in velocity, the demand for money, and nominal GDP target automatically by definition offset that. So, that was a strong case, lots of us were in favor of it, nobody ever did it, not sure why.

Now, fast forward. Nominal GDP targeting underwent a revival around 2011 and 2012. Circumstances were quite different. Once again, a whole array of people coming out in favor of it. There was Mark Harney that got a certain amount of attention then around the time he was taking office as governor of the Bank of England. There were academic articles, it was big in the blogosphere. There were a bunch of bloggers on it. Here is just a partial list of people who have written on the case for nominal GDP targeting over the last seven years.

Now, things are quite different. The alternative to beat, of course, is not M1, the alternative to beat is the CPI target. Either core or headline or change or whatever. The case in favor of nominal GDP targeting is still that it is more robust with respect to shocks. You're more likely to be able to live with it ex post than I CPI target. You are less likely to regret, why did I ever say that, now I'm going have trouble fulfilling it. But now its robustness with respect to aggregate supply shocks that are the point because the alternative to beat is CPI target. By aggregate supply shocks I mean productivity shocks, commodity shocks, natural disasters. I've written that these are particularly relevant in developing countries. That is kind of my little slice of it.

In the presence of an adverse supply shock, an inflation target implies needlessly tight monetary policy. Inflation targeting says that you have to take the entire shock in terms of lost output and you can't let it show up at all in terms of high inflation. The main point, big argument in favor or nominal GDP targeting is it allows the impact of the shift to be automatically divided between some loss of price stability and some loss on the output objective. This surely comes much closer to what is the ultimate objective function, the loss function that we're seeking.

Let me give you an example of how the inflation target can get you into trouble. How it can push the authorities to tighten in the face of an adverse shock, thereby needlessly worsening the fall and output. The best example, I think, is July 2008. The U.S. has already gone into recession, the world is sliding into what will be the great recession. All the forecasts on MF, everyone was marking down estimates of growth. What does the ECB do in July 2008, they raised interest rates. Why did they raise interest rates? I think because there was a spike in oil prices and they were concerned about the CPI target. So, this is an example where actually the movement was in the wrong direction and the nominal GDP target would have given you the right answer.

Here is my graph to illustrate the central point. Horizontal axis is real economic activity, vertical axis is price level or inflation. The aggregate supply curve slopes up. If prices go up, firms produce more and have higher profit margins. Aggregate demand curve slopes down. We expect to be at point A and in normal times we're around point A. But we have a supply shock and this is a negative adverse supply shock. An oil price increase, adverse productivity shock, a natural disaster, a flood, whatever. That shift if a curve up. Inflation targeting, if it means something, if you take it literally or think it has an effect, that means we have to go to point B. We have to constrict demand, constrict monetary policy, constrict demand so much that the CPI doesn't rise at all and the entire adverse impact is felt in terms of GDP which is not good, not what we want. Point C is where we want to be or somewhere close to that. That's a nominal GDP target automatically it's the monetary policy that it's called for, divides the adverse supply shock equally into an increase in the price level and a loss in output.

Okay, to complete my assignment, last point, I'm supposed to also mention the drawbacks. It does have drawbacks so I'm going to name three. Maybe the one you hear most often is that Central Bank can't hit nominal GDP targets. Well, of course, but you also can't hit CPI targets, you also can't hit M1 targets and I would argue it is more likely that you could hit your nominal GDP target because it is something that you could live with. Whereas the others, M1 target would have had disastrous implications if we had stuck with it in 1982 and so on, inflation targets when there is an adverse supply shock.

Objection number two. The person in the street does not understand nominal GDP, how it breaks down into real GDP versus price level. I think that's true. But to my mind, that's all the more reason to avoid setting a CPI target where after the shock occurs, you have to explain to people with these kind of pitiful sounding excuses, why you're going to miss it. Oh, don't worry, it's only an increase in the cost of filling up your tank of gas and buying your groceries, don't worry about that. It is really hard to explain it away ex post. All the more reason to build it in ex ante with a nominal GDP target that you can live with.

Finally, it is pointed out that nominal GDP targets are revised ex post and that kind of complicates it and that seems to me a valid drawback but not fatal. It's the same as the point that of course we can't hit our targets exactly. Thank you.

MR. WILLIAMS: Great. My assignment is to talk about price level targeting which is actually very, very close to nominal GDP targeting. But I'm going to step back and kind of pick up on the starting point, I think, for this whole conversation that Larry Summers highlighted. That is, the issue of why is this issue such a very real concern. So, these are some estimates that we have of the neutral or natural or equilibrium short term real interest rate. The blue line shows estimates for the United States. This is an average or three estimates that do come out of the San Francisco Fed. There are a couple that I have worked on with Thomas Loubaugh and Catherine Holston. Also, estimates that come from colleagues Yen Christensen and Glen Rudabush who are just using data from financial markets trying to infer from the tips market, what do market participants think the short term real interest rate is going to be six to ten years from now.

As you can see here, Larry talked about a number of like 1 percent. You can see based on our estimates, the current estimates are running around a quarter percent today. The red line shows our estimates from our model for three other economies. It is a GDP weighted average of the Euro area economies, Canada and the United Kingdom. Those estimates are averaging around half a percent.

So, two points I just make is starting in this debate around a 1 percent equilibrium where normal real interest rate I think is actually higher than many of the estimates. There are other estimates that are higher but at least these estimates are quite low. The second and more important point is they haven't moved back up. They wiggle around a little bit but as you see in the United States, this is again picking up again on Larry's point. The trend, if anything, is downward. Even as the United States economy for example, this goes through 2017 Q3, as unemployment has come down to close to 4 percent, the economy has gotten back to full employment, we still see no signs that this neutral interest rate is moving back up.

I think there is a reason for that. I think these movements in the natural rate of interest, not only in the United States but in all other advanced economies and we didn't study Japan but colleagues of mine have also found for Japan, the natural rate is very low. These are driven by, what I think of as global factors, primarily demographics. People are living longer in general, population growth has shrunken dramatically in these economies. Second is lower productivity trends, maybe changes in technology and third is this increased demand for safe assets. So, these are long term sustained fundamental changes in the global economy that I think will likely be with us.

As Larry said in his opening remarks, this just means that central banks, whether in the U.S., in Europe or in Japan or around the world, have far less room to cut interest rates when that next recession comes and that surely will happen at some point. So, to me the question really is what to do about this new reality. Again, I'm going to talk a little bit about price level targeting. I want to just get people to maybe not be quite so afraid of price level targeting. It sounds radicle, it sounds very different but really it is a very modest difference from historically what we think of as inflation targeting. Instead of thinking about the Central Bank trying to get inflation back to 2 percent over the next few years, you're really thinking about trying to keep the price level, for example, growing 2 percent a year. So, it is not a radicle shift in framework or objectives, it is really just a matter of defining what we think about in terms of price stability.

I think an important reason that in price level targeting, advantage price level targeting has is really in the context of this issue of the very low neutral rate. Let's just do some what I think of as some unpleasant arithmetic around inflation targeting. So, in good times like we're having today, we'll get our goal in the Fed and in other countries is to move inflation back to our 2 percent goal. And in good times, half the time we'll be above 2 percent, half the time we'll be below 2 percent and that's all good. But as was pointed out already by Larry, once in a while, maybe once a decade or a little more frequently, we'll have a recession. If that recession is severe enough, the fact that we hit the zero lower bound, despite the best efforts of conventional or unconventional policy, will probably struggle with getting inflation back to the 2 percent or it will take longer to get there. So, now you have this asymmetric behavior of inflation over history. During good times, on average, you're trying to keep it at 2 percent. During bad recessions, you get long periods where inflation is missing the target. Of course, we've been experiencing that in the U.S. and quite honestly, across almost all advanced economies over the last seven or eight years.

So, when you do that arithmetic what you find is that on average, inflation is well below the 2 percent target. This is just the combination of trying to hit 2 percent in good times and the fact that in bad times, there is a biased towards being under the target. In the Kiley Roberts paper that Larry Summers mentioned, in their model, they found that the average inflation rate under a standard kind of policy rule would be 8/10's of a percentage point below the target, meaning the average inflation rate would be about 1.2 percent. I actually agree that that's probably an over estimate of the effects but if you look at a lot of other papers including work I've done with Dave Rivschinder and others, a generic finding of this literature is, if you're at the lower bound 10, 20, maybe 30 percent of the time, you're going to have a bias of inflation on average being below your target.

What that means is two things. First of all, you have this issue that Jeff brought up of the credibility that you're missing your target a lot and it sounds like the Central Bank is not committed to achieving its goals despite doing its best to achieve them. But the second is actually something, I think, that is under appreciated in the discussion. That is, is that once people, once the market participants and people in the economy, people in business and households realize that inflation on average is probably going to be below the 2 percent target, that gets into inflation expectations and actually makes it harder to achieve the 2 percent objective even in good times.

So, the two challenges with inflation targeting in a normal procedure where you just basically say, I want to inflation back to the target appropriately, is that on average, inflation will be below that target just because of the zero lower bound. The second is, that spills over into inflation expectations making the job even harder.

So, what is the solution to this problem? The solution to this problem is to get the average inflation rate back to 2 percent over long periods of time. So, meaning to undo this bias or asymmetry in the behavior of inflation that comes from the zero lower bound constraining the ability to add stimulus during recessions especially severe recessions. Now, price level targeting actually mathematically and formally and technically, I think someone described it as beautiful, is exactly designed for that. Basically, what you're saying is, I want the price level to grow by 2 percent. For example, you could have a 3 percent target or a 1 percent target but choosing a target that grows 2 percent a year over the next 30 years. If you have a period of a severe recession where inflation averages less than 2 percent, for example, like we've had in the U.S. over the last decade, then you would be promising to have somewhat above 2 percent inflation for the next decade to get this average right, to cement the inflation expectations at your target and basically undo this problem, the zero lower bound and the very low are start is creating.

There are various variations on this. Ben will, I'm sure, talk about his variation. Actually, nominal income targeting has this flavor too. I think these are all different ways to try to achieve this goal and I'm not really going to say, well I think one is absolutely better than the other. I will say that this notion of assuring people that when they're planning for the future, if you're buying a car, buying a house, saving for your retirement or your kids' education, that you have this notion that inflation, I understand what inflation on average will be over the next 10, 20, 30 years. The kind of horizons that households and businesses often think about. I think that's one of the real strengths of a price level target over this issue with an inflation target where you're going to be missing your goal for long periods of time.

Now, in terms of counter arguments and kind of thinking about this, it does sound a little scary. Typically, what I hear is, you're going to create a recession because you have a run up in inflation and you have to reverse that, that's one counter argument. The other is it's hard to explain. I want everyone to take a deep breath, feel comfortable because I'm going to show you it's not nearly as scary as you might think. I have a second chart and this is a simple calculation. I don't want you to take it too seriously but this is from 2005 to the third quarter of 2017. The black line is the federal funds rate target, short term interest rate. The red line is Taylor Rule and here I'm just using a very stylized example. I'm not arguing the price level targeting. You'd have to think about this in this particular way. I'm just trying to illustrate the idea. If you look at the red line, that would show you what a Taylor Rule where interest rates move up and down, depending on the unemployment rate and the inflation rate. The blue line is exactly the same Taylor Rule that John Taylor laid out using the unemployment rate, however, as a measure of economic activity. But here I've replaced the inflation gap, the inflation term on the right hand side in terms of the deviation from the target where the price level target starts in 2005.

Now, I only want to make two points on this. One is, we did have an overshoot of inflation in the mid-2000s before the recession. Both the Taylor Rule and the Price Level Targeting Rule have interest rates going up a bit. But as you can see, this Price Level Targeting Rule has interest rates move up roughly like they did, what the Federal Reserve actually did. Both of these rules cut interest rates dramatically when the recession hit because unemployment skyrocketed, inflation came down. So, again these policies, and I'm not putting a zero lower bound, that's why it is going negative. Both of these policies are doing basically the same thing.

This is the last point I'll end with. What is critical is, the Price Level Targeting Rule, notices that we're missing on our inflation target roughly year after year and therefore keeps interest rates lower for longer after a very severe recession where inflation was very low. It's basically promises extra stimulus to help guide the economy, guide the economic expansion higher and also bring inflation back. And as you can see in this particular example, it actually traces out at least above the zero lower bound roughly the path that the (inaudible) has taken. So, again I don't see the Price Level Targeting as really scary when you have high inflation or the normal, in the 2005 period or even particularly now.

The last thing I will say on this credibility issue, this kind of change and strategy only works if it's a commitment to a long term change (inaudible). This is not something you do opportunistically and say, well we're going to have a price level target for the next few years and then after that, change strategy. I think what we do need it to say is, whatever strategy we do, whether it is temporary, price level targeting like Ben or nominal income targeting or maybe just standard price level targeting, it is a commitment to follow that strategy or framework for year after year so that people see that we're following it and that expectations were aligned with it. I think that is just an important concern with any shift in framework is for it to really work as effectively as we hope. There has to be a commitment to stay on that for a number of years. Thank you.

MR. MISHKIN: So, I'm actually going to talk a lot about a lot of comments that have already been made, anticipating I didn't see theirs beforehand. The first that we want to do is look back and say why are we here, why do we have to think about rethinking the inflation target and it's the key lessons from recent years and I want to draw two of them.

The first is that that zero lower bound constraint on monetary policy binds much more often than we expect it before the crisis occurred and there are three reasons which have been mentioned earlier on. First, is that the economy can be very non-linear. So, the way of thinking of this is, we entered a Wiley Coyote situation starting in 2007, 2008 where the economy went into a financial crisis and Wiley Coyote went over the canyon and then realized that there was a problem and fell down and crashed. So, this fact that the economy is non-linear is one that can actually lead to more frequent hit of the zero lower bound.

The second is that financial disruptions can actually have much bigger affects that we expected, unfortunately that happened to us. And the third, which has been emphasized by John and Larry and so forth, is that the natural rate of interest has fallen. So, as a result, you're more likely to hit this zero lower bound.

The other problem is that once a zero lower bound constrain occurs, it is much harder to stimulate the economy and raise inflation. Again, this is a point that has been made. Non-conventional tools are less effective than we had hoped. If you think about what the key problem for central banks right now is that it is very hard to get inflation up to the levels we'd like them to be. So, this zero lower bound problem is actually worse than we expected.

So, as a result, that means that we have to rethink the inflation target and one approach which Olivier mentioned which is that the inflation target should be raised and raised to something like the 4 percent level. The theoretical argument for this, is by the way, very strong. So, this is the pros. With a higher target, you have a basically a higher natural rate of the nominal interest rates. So, you're going to have the zero lower bound occur less frequently. And basically, with the higher target for inflation, conventional monetary policy is actually going to have more room in order to stimulate the economy when you get a big negative hit as we've had recently.

But there are some serious cons here and so I want to discuss these because you're going to see that I'm not going to advocate that we raise the inflation target to 4 percent. The first is, that it is really more difficult to stabilize inflation at the 4 percent level rather than the 2 percent level. There are a whole bunch of reasons why I think this is the case. The first is that Greenspan had this beautiful definition of price stability which is sort of similar to the definition of what the Supreme Court defined pornography, you sort of know when you see it. Well, in this case, he basically said that price stability is when economic agents are not spending a lot of time worrying about inflation in terms of what they're doing. That is actually something very positive for the economy in terms of getting people to focus on what they really should do which is produce goods with very low cost rather than worrying about financial transactions and dealing with inflation.

The problem here is, that once you get above to something like 4 percent, I don't think that's consistent with the Greenspan definition. And then if it is 4 percent, why not 6, why not 8 and you can get a spiral where, in fact, the commitment to keep inflation low is disappearing. In fact, we went through that situation in the 1970s. So, when we think about this, how do we get into a situation like this? Well, think about what happened in the 1960s. There was a view that you could tolerate 4 to 5 percent inflation. This is famous paper by Samuelson and Solo. What happened, we got to 4 but then why not 6 and then what we had was the great inflation which was a very bad period in terms of monetary policy. And, in fact, another key lesson that we learned from the last 20 years is how valuable it is to anchor inflation expectations at a particular number. And indeed, this case the central banks have been successful anchoring at 2 percent. That was extremely important in terms of both limiting the variability of inflation but also allowing central banks like the Federal Reserve, to be extremely aggressive during the crisis in terms of actually pursuing very expansionary monetary policy in order to get out of the crisis and not worry that inflation expectations were going to spiral out of control and that you'd get into a problem. So, it actually gave more flexibility to the Federal Reserve.

The other issues are, there are problems in the long run that you have to worry about. Even though having higher inflation may have some welfare costs, if you think in the short run well, that's not a big deal. But think that this happens continually, there is welfare costs actually start building up and become serious numbers. So, that they may be small in any given year but actually over time, they become very substantial. So, when I look at this, my view is should we raise the inflation target above 2 percent and I think the answer is no. This is a cost benefit calculation. The cost of raising inflation target to 4 percent outweighs the benefits.

So, how might we tweak the inflation target and I would argue that monetary policy should, at times, and now is the time, should at times think about overshooting the 2 percent inflation goal. So, the key problem here is that inflation targeting, this is something that John mentioned, is not what we call, history dependent. It treats bygones as bygones. If you have been undershooting, it doesn't matter, you keep on shooting for 2 percent. There is a compelling theoretical argument, this is Woodford's famous tome that, in fact, you want to have history dependent policy in which when you have undershoots of the target you want to have overshoots of the target so that on average, inflation is going to be a level which is consistent with your goals. This is something that John just mentioned.

So, if you think about this, price level targeting is exactly one of these forms of history dependent policy and it actually produces less output variance. So, the way to think about why it works well is that when you get a negative demand shot which results in the price level falling below the target path which you say is 2 percent growth of the price level at a steady rate. Then what happens is because you're undershooting, you now have to get back up to the target, the price level target and that means that, in fact, you're temporarily going to have higher inflation. That higher inflation than feeds into expectations which lowers the real interest rate if you're at the zero lower bound and provides exactly the stimulus you want in that particular kind of situation. So, really what you've done is put an automatic stabilizer into monetary policy is the way to think of this. This is really very important when you hit the zero lower bound situation but actually is valuable even when you don't.

Another similar policy is the nominal GDP target which Jeff is talking about. It actually in a sense has even more desirable characteristics. If you look at (inaudible) work, what they do is they say the target criterion should not just be in terms of the price level but also should it be in terms of where you relative to the natural rate of output. So, what that does is output adjusted price level target turns out to be not too far away from a nominal GDP target and so has even more desirable characteristics.

But, I want to argue that there are some real big challenges to both the price level targeting and nominal GDP targets. In fact, John Murray may talk about this. I think it is one of the reasons that Canada, even though they sort of liked price level targets, didn't go to it. I think it is really much harder to explain that you're aiming for a target that is moving because we don't think that you should have the price level target just at the same level, that it always has an upward path. It is harder to shoot for a moving target and explaining it. So, one is a communications challenge.

The second issue is, that because it is harder to explain, when inflation temporarily rises above 2 percent, people may start to worry that you're not really living with the 2 percent inflation goal. That could unhinge inflation expectations. The nominal GDP target has one of the problems that Jeff mentioned. Jeff mentioned that it had a problem in terms of people might not know what nominal GDP is, that's an issue. But I think more important, it is really hard to know what that nominal GDP level should be. There is a lot of debate about what potential GDP should be or what the natural rate of unemployment is. We really don’t know. In fact, we know that in fact that when periods where there were mistakes made on this there were big mistakes made in terms of monetary policy. The 1970s are the classic example where there was a view that the natural rate of unemployment was around 4 percent when it was closer to 6 and monetary policy was much too expansionary and we got the great inflation. So, I think this is one of the reasons that we haven't see adoption of this kind of target.

So, how do you skin the cat? My view is, how do we basically still have this 2 percent accurate inflation expectations but have this history dependence. I would argue that the way we should think about doing this is think about inflation targets, not in terms of shooting for 2 percent two years from now, but the average inflation rate should be 2 percent over a period. In fact, Ben actually just made a proposal about this. I actually made this proposal a year ago, didn't know about Ben, Ben hadn't seen it. So, great minds think alike but sometimes I wonder maybe it's not such great minds, we just work together too much so that could be a problem as well. The idea here is, you have a 2 percent target over a particular period. So, say 5 years is one example but, in fact, I think Ben's suggestion that you do it since the zero lower bound hit is actually very much in this kind of framework. There are some subtleties about whether you want to do one or the other and we can talk about that later.

So, what does this do for you? Inflation running at about 1.5 percent and you have a 2 percent target, that means that you have to do 2.5 percent for a while. So, the desirability of this is that you get exactly the kind of history dependence we want which is that inflation expectations would rise for a temporary period of time which would actually made the zero lower bound have more expansionary affects. Even if you worry about what Jeff is worried that you might not actually have an expectations channel, which I'm not going to agree with but I think is a serious issue. One of the key points here is that no matter what, even if that didn't work, it's still telling you, you want to be more expansionary than you otherwise would be which is the right policy. So, in that sense I think it has these desirable characteristics.

Is this pie in the sky stuff, no it isn't. The Reserve Bank of Australia, I'm very partial to them, I visit them all the time and Sydney is my favorite city in the world so I'm a little partial to them. In fact, this kind of policy is exactly the kind of policy that the Reserve Bank of Australia has done. By the way, knowing the history of this it was actually sort of an accident but I don't want to go into that. I was there when they were formulating this. What they've done is they have a target which is 2 to 3 percent and they interpret that as shooting for 2.5 percent on average over the business cycle and they've had very, very good performance. I should mention as my mother always said to me, it's better to be lucky than good. They have an element of that as well. What we've seen is that Australia has had an average inflation rate over the last 25 years of 2.7 versus 2.5, pretty good, and they haven't had a recession in 25 years. And indeed, if you actually take this kind of approach that I've mentioned which is very similar to what Curtia looked at who is somebody who is at John Williams shop. What he did is he actually looked at a case of what you would if you, in fact, you were doing something like this, and had a 2.5 percent inflation goal for a short period of time, you actually would have produced much better outcomes in the U.S. using the standard models.

So, what's my bottom line? My bottom line is that the Fed and other central banks should commit to an average inflation rate of 2 percent but they do it over a fixed period of years, say five years. It could be over a business cycle. Another approach would be Ben's that you do it since the zero lower bound has started and you actually commit to doing that as a modification of the long inflation goals of the Federal Reserve. However, it is extremely important that when you do this, you make it very clear that what you're really shooting for is a 2 percent long run target so that you keep on anchoring those expectations. To me, this is a way of getting the best of all worlds, getting to a lot of the issues that Larry, Jeff and John have raised but doing it in a way that I think is actually practically more practical and also something that would have very good outcomes. Thank you very much.

MR. BERNANKE: I'm going to put this all in context. First, thanks to David Wessel and the Hutchins Center for organizing this. I want to first say that I agree entirely with Larry Summers initial comments that thinking now about how monetary policy may respond to the next recession is very important. I know the Federal Reserve, we can tell from the minutes and from the speeches that they are thinking about it. So, I strongly support the general effort to do that. I think as we do that though, we do have to keep in mind, it's like the joke about how do you get to Tiapride, you don't start from here. We're not starting with a blank slate, we do have a system, a framework, a 2 percent target in which there is a tremendous amount of investment in the sense of communication, of years of experience and anchoring of expectations around 2 percent inflation targets. I think the argument that says, well what would we do if we start from scratch, is interesting for academics but maybe not the most relevant question starting from where we are. In particular, yes it may be the case that the optimal inflation target might be higher than two given what we know now, but if it is 2.2, I don't think that justifies a big change in framework. We have some fixed costs here and as we look forward, we have to think about the benefits of changing and we have to think about also if we go to a new approach, suppose it could happen in ten years that nominal interest rates will be higher. Maybe productivity will pick up, artificial intelligence will finally start having the benefits we hope for. If we are locked into a higher inflation target in perpetuity, how would we respond to the next change in the environment?

We're going to hear from the Bank of Canada about their five year process of reviewing and I've noticed also, which is very good and has gotten a lot of praise from American policy makers. I noticed that they haven't actually changed their framework. It is costly to change your framework and so you need to make that case very strong.

In terms of the individual approaches that have been suggested, I think the one that, I'll just make a bold prediction. The Federal Reserve is not going to adopt the 4 percent inflation target, it's just not going to happen. From a theoretical perspective, first of all, I think, Woodford and others have shown it's a very inefficient way to deal with this problem. It is inefficient first because it gives you high inflation all the time, whether you are close to the zero lower bound or not. And secondly, when you're at the zero lower bound, it doesn't give you any particular additional push to get out of the COB situation. So, it's not a very efficient approach, that's the theoretical objection. The political objection is that the U.S. public is not going to be very open to a 4 percent or 5 percent inflation target. In particular, I do worry that some of the people who are pushing this, so many of them are pro expansionists. They might find if they open this up too much, they're going to end up with a change in the law that eliminates the employment goal rather than reasserts the price stability goal rather than what they're hoping for.

In terms of the options on the table, my own preference, I think at least tentatively like John Williams, is to look at some variant of price level targeting. It has the advantage that it maintains price stability, it's consistent with 2 percent inflation over time. In fact, with lower variance over time we have more information about where inflation will be or prices will be in ten years under a price level target than you do under an inflation target. I think it's, in many ways, similar to the current framework. You just talk about average inflation rates over a period rather than inflation period by period.

I do think that there are problems associated with undoing price level shocks away from the zero lower bound. An oil price you could do core inflation, that's true. I guess my own preference as has already been eluded to would be to apply this primarily at the zero lower bound, specifically when there is a deficit of inflation over a period where interest rates are at or close to zero then that deficit becomes an additional input into the policy debate, policy discussion which leads all else equal to a tendency to over shoot inflation coming out of the zero lower bound. To the extent that that is anticipated and understood in advance, that gives you greater policy stimulus and greater impact even going in to the zero lower bound period.

Now, one objection, it is sort of a generic objection that changes from inflation target is, well we don't really believe that we can change expectations. That we can get people to believe some kind of policy process. I realize it is difficult and we've seen, for example, in the case of Japan that is hard to get expectations changed which is the reason why any change from the current system is going to be complicated. But I think that with the PLT, Price Level Targeting or Temporary Price Level Targeting approaches, your focus is not necessarily on getting the average person on the street to expect higher inflation coming out of a recession. Rather your main audience is the financial markets. We've seen from the recent experience with forward guidance that when the Fed announces they're going to keep rates lower for longer, the bond market reacts to that. Again, it may not be something the average person or firm will respond to but if the bond market reacts to it you get additional policy stimulus, I think it could be affective.

On nominal GDP targeting, let me first reject two arguments for it and then explain why I think it is still worth talking about. One argument which we heard from Larry is if you raise your nominal GDP target it will disguise the fact that you're actually raising the inflation target, that's not going to work, people will notice that. The second argument, I think, came from Jeff that he compared nominal GDP targeting to rigid or strict inflation targeting. In fact, inflation targeting is "flexible" which means that as stated in the Fed's policy principle, the time that it takes to return to the inflation target depends on the state of the economy. So, in fact, if inflation targeting can accommodate a supply shock, in fact, typically you look through a temporary supply shock as you move back to target.

Now, I think the recent nominal GDP target is worth looking at is because it actually, despite the differences in appearance, is actually very similar to price level targeting as John mentioned. In particular, let me make the comparison. Growth level, the targeting of the nominal GDP growth rate is actually very similar to inflation targeting and targeting the level of the nominal GDP is very similar to price level targeting. Let me talk about the relationship between growth targeting and inflation targeting. Targeting nominal GDP growth is basically targeting the sum of real growth and inflation. So, it's like flexible inflation targeting that you're targeting inflation but because you're also looking at GDP growth, you're allowing for easier policy when GDPs below trend and tighter policy when it is above trend.

So, what are the advantages and disadvantages of GDP targeting relative to inflation targeting. One argument that is made is that nominal GDP targeting requires less information. You don't have to know, for example, what the nature rate of unemployment is to do a nominal GDP target. On the other hand, you have to know what the nominal GDP is and that is produced only with a lag and in a noisy way so that is a balance you have to make.

Another argument is that nominal GDP targeting is less judgmental in the sense that it sort of builds in what your flexible response is to changes in GDP, whereas inflation targeting is not quite so clear how the Fed will respond. Again, it depends on the costs and benefits of both approaches. I think one interesting aspect of nominal GDP targeting which I'll just mention quickly, is that as Larry mentioned, if you have a fixed 6 percent nominal GDP target, if real GDP growth, potential GDP growth goes to two, that automatically raises your inflation target to four, is that good or bad. Well, to the extent that nominal interest rates and nominal GDP growth tend to be similar, that has a tendency to kind of offset the problem of low nominal rates. The one problem with that though is that you could get into a situation of very low growth and then the Fed would be essentially targeting high inflation, that's not going to popular and may not be sustainable.

So, anyway my bottom line is that of the various things suggested, I think variance of price level targeting are the most appealing to me. I recognize and I would recommend to the Fed that they continue to look at nominal GDP measures because they are closely related to the price level targeting.

Let me conclude by putting out what I consider to be a minimum requirement here at this point. I think you can make the case, I'm making this hypothetical case and I'm not saying it is absolutely correct. You could make the case that with the cost of changing, and I think that Larry may have overstated a bit the severity of the cost of the zero low bound where it is. Let me make a couple of points on that. One is, that it has been pointed out in a paper by Frenauld and others here at Brookings, that the unemployment rate in the last recession came down about as quickly as normal. That is your best measurement of cyclical slack. The Fed did get cyclical slack down in a reasonable amount of time given how deep the recession was. Moreover, despite the fact that people think zero lower bound may occur again, long run estimates of inflation from forecasters and from inflation swaps and so on are still pretty close to 2 percent which is suggesting that the markets don't expect long periods of very low inflation because of the zero lower bound.

So, maybe what I'm arguing is that maybe the situation even in the current status quo isn't possibly as dire as was portrayed. And, indeed, I guess the other argument I would make is that we've learned a lot from the recent experience. Not only in the United States but in Europe and elsewhere on how to use unconventional policies, how to signal more effectively, how to coordinate QE and signaling et cetera. So, let's say for the sake of argument that the Fed decides that given the cost of the transition that none of these alternatives are attractive. I think what they ought to do in that case though is add to their statement of policy, strategy and principles, a statement about how they're going to attack the next zero lower bound period and be explicit about, at least in general terms, about how they would use forward guidance, quantitative easing and what combination and what criteria. To provide not only some clarity but also to maybe even be effective.

One of the benefits of these frameworks is that markets anticipate how the Fed will react even before you actually his the zero lower bound. Possibly if the Fed laid out in some kind of formal way how it expects to respond to the next COB, zero lower bound, that might actually make the probability of hitting that zero lower bound lower. Thanks.

MS. SHEINER: I'm just going to tell all of you that we need to put the mic on when you speak and it's that think in the middle that looks like a person talking with things coming out of their mouth. Thank you all, that was so interesting. I'm going to start off just with a clarification before we get into the meat of it. When people talk about these different targets or different framework, sometimes I get confused. We are talking if you go for the price level or the higher inflation to something that keeps the dual mandate and just affects the price piece of it but keeps the unemployment piece, is that right, but the nominal GDP would sort of combine them, is that the right way to think about it? So, we're not giving up on the unemployment piece.

MR. WILLIAMS: I think that's a very important point. I think a number of people when they hear of price level targeting, they think of the first generation of inflation targeting where there is a unit or one goal of inflation. The way I described it in my picture was one, we have a dual mandate goal as a maximum employment and the price stability. So, you're managing both of those. Of course, the nominal GDP target also does that as well. It puts both of those goals on equal standing.

MR. MISHKIN: Let me just add to this. I think a key here is the word flexible inflation targeting. And this is why I agreed very strongly with Ben. The characterization of how to deal with supply shocks that Jeff pointed out is not the way that sensible inflation targeting is done. If you think about it, the way of thinking about what an approach is, we're basically trying to optimize by minimizing output gaps and inflation gaps. And indeed, a way of talking about this, communicating it is with a flexible inflation targeting framework. It is basically another way of saying the same thing.

MS. SHEINER: I actually had a question for you, Jeff. So, and Ben mentioned this a little. I was not sure when you were talking about the nominal GDP targeting if we were talking growth rates or levels. Those are very different.

MR. FRANKEL: Well, I'm with Ben here. The questions are sort of orthogonal. It is an elegant argument in favor of the level, there is a more practical argument in favor of the rate of change and then there is nominal GDP versus inflation. There is a two by two choice to be made and I think the issues are kind of orthogonal. I'm making the case for nominal GDP whether you're doing it in terms of levels or in terms of rates of change. I understand the argument is in favor of the level which is it has its elegant way of working in your favor of self-stabilizing. But the disadvantage is, except what if nobody actually believes it so I'm sort of orthogonal to that.

If I could add a point. A number of people have said, well there is no big difference really. Call it flexible inflation targeting, call it a Taylor Rule, whatever. They are in favor of it, I'm in favor of it, which is you're clear about what the long run target of inflation is which is currently 2 percent and we've had this whole discussion about whether to raise it or lower it. And then at a shorter horizon like one to two years, most central banks still, even after all the troubles, want to be more transparent, want to signal their intentions even if it is just through forward guidance or a threshold or whatever rather than setting a formal target. So, they say flexible inflation targeting says you're allowed to take into account output or unemployment. My answer is, fine I agree with that, let's put it in the summary of economic projections. The summary of economic projections has real GDP inflation, unemployment, short term interest rate, it doesn't have nominal GDP. I want to put nominal GDP, at least give it that level of salience to let people know how the Fed is thinking at the one to two year horizon.

MS. SHEINER: So, I'm going to bring back something you started to mention which is let's talk about the role of expectation. So, all of you wanted to give us some new rule that will help us give more room, as Larry said, we desperately need the next time we hit the zero lower bound. There was sort of two ways. The direct way is to say, let's just raise inflation and make it simple. We're just going to change the target and then we're going to be less likely to hit the zero lower bound and we're back to the way we used to operate. And then this other way is to say well, that's too costly and we can do something more subtle. Which is to say we're not going to raise the long run target but we're going to change inflation expectations over time depending on conditions. I guess also the way that this would help with the zero lower bound is not to say that we're going to start off necessarily with a higher nominal interest rate but that somehow because of changes in expectations, the lower bound wouldn't hurt as much, we'd get out of it as fast. Is that the right way to think about these differences? One is that you would get out of the zero lower bound and two, someone you would manage the benefits of having higher inflation target without the costs.

MR. BLANCHARD: Many of the papers which were written to try to derive how worried we should be about the zero lower bound basically were done on the rational expectations. So, it was fairly easy to get out. You basically announced there was going to be more inflation and low and behold you did. What we've learned is does it work, how does it work. Not at all does it work and I don't know. That's why, yes I would much prefer to have inflation just when we need it but I'm a bit skeptical that it can be done.

MR. MISHKIN: So, that's right. So, the difference between having high inflation all the time and then having when you need it, for example, exiting from a zero lower bound period. If people think you're going to overshoot in that exit, has two benefits. One is that it makes the market more accommodative because interest rates, monetary policy can be easier for longer so rates are lower. Secondly, higher expected inflation lowers the real interest rate as well. Olivier raises a totally legitimate question in which I think is one that will be central to the FOCs debate is, can this more subtle way of causing inflation expectations that change over time, is that really feasible. I guess my answer is that while it may not be the case that again, as I said in my remarks, that the average person will understand these subtleties and factor them into their decision making. I suspect the bond market will. At least initially, that would be enough, I think, to get some benefit from this approach.

MR. BLANCHARD: Can I go back given that Larry is gone. Make a point that Larry made earlier and will probably make again which is yes, you get two effects. You get hopefully high (inaudible) expectations, that's good. But even if you don't you actually get low nominal interest rates for longer. What they argue is that the room to do that is actually quite limited starting from the kind of low nominal rates that we have. They're not going to make a whole lot of difference when the long rate is already very low and will go down even more just because (inaudible). So, yes (inaudible) channels and even the expectation channel doesn't work but the other one is very weak.

MR. MISHKIN: A question just briefly. Suppose you have even, I don't know, so you get a couple of points that you can reduce on the short rate and then his argument was you then have a 150 basis points in the long rate. The usual rule of thumb for the Fed is that it takes 75 basis points of Fed funds cuts to get a 25 basis point reduction in a 10 year yield. So, we're inverting that, a 100 basis points on the 10 year yield is worth 300 basis points on the Fed funds rate. It all adds up, I think, to the about the amount of total reduction that you need. If you can get the 10 year rate from 150 basis points down to 50, that's quite a bit of additional stimulus.

MR. BLANCHARD: Now I have to speak for him. My sense was that you were arguing that you were getting most of your fact on the long rate without that. And then that additional commitment would not buy much. To cut the short rate will have an effect on the long rate. The additional commitment to do it for another five years after this doesn't value much more.

MS. SHEINER: All right thanks. Let me keep on the question of this promise to raise inflation. Is this something that is a change? So, people sometimes describe this as an adician (phonetic) rule which would say, you're going to commit yourself to doing something that you might not want to do. Or is this something that you think you were changing the reaction function and people would be happy to do it. One of the things that Larry, who is not here now said, is somehow that by raising rates right now, the Fed has shown that what they'd really like to do is not to keep to a commitment, I would say we're going to overshoot. Now maybe that's just because that's their current framework. John, what do you think?

MR. WILLIAMS: I mean, I think, that last thing you just said was absolutely critical. Our current framework as described by the committee's document which we review every January, is that is basically a flexible inflation targeting framework that states very explicitly that our goal is to obviously balance the two dual mandate objections but specifically bring inflation over time back to its target. So, what we're carrying out in my view is a policy that the goal of which is to get inflation back to 2 percent over the next couple of years while managing the dual mandate objectives. I think this is actually a critical issue in terms of thinking about the current situation versus maybe more like what's the long term framework.

Let me give you an example and I'd be happy to hear Ben add his views on this example. One of the challenges that FOMC faced in my view in 2009/10 and the first half of 2011, is that market participants were basically at sea about how the Feds reaction function works when you are at the zero lower bound. In my interpretation, they looked at history and said well, the economy generally recovers in a certain way and the Fed generally lowers rates for a certain period of time and then over the next couple of years it will raise back to normal levels.

So, throughout that period, all the way through August 2011, market participants really were struggling with understanding how we're behaving in the circumstance. They were expecting us to raise rates basically starting in 12 to 18 months. Despite lots of language in our statements and in speeches that we were going to keep interest rates low for quite some time. It was only in the August 2011 meeting where explicit date based forward guidance, one of Rick's least favorite topics, was introduced that we saw a dramatic shift in expectations of markets. It just has been said, what mattered was that the markets understood what we said. I think the 10 year treasury fell by 20 basis points roughly on that announcement. And we saw with our future forward guidance statements, a significant effect on financial conditions. The big advantage to me of a price level targeting or Ben's version of that or some variation on that, is that that would be built into the framework. That expectation that we would have lower for longer, that we would be keeping interest rates low, not only to help the economy recover but to reachieve our price level target wouldn't be something we would need to put into our FOMC statements or struggled with how to best do this, this would be us executing on an agreed upon framework.

MS. SHEINER: So, is going down this road at all changing the balance between rules and discretion? Is this kind of making you a little bit more rule based by saying that you're going to have this history dependence or not really do you think?

MR. BERNANKE: I think the issue here, and the whole purpose of actually having a target, is to deal with the issues of rules versus discretion but still have flexibility. So, I think that issue is a completely separate issue. So, the Taylor Rule could be done with a price level target. Taylor Rule actually has this in it. It has the output gap and the inflation gap. So, you could have an inflation target, you could just do that with a price level target and have a Taylor Rule done that way. So, that issue is a completely separate one. I've gone on record that I do not think we should have adopting some kind of instrument rules like a Taylor Rule but I think it's a completely separate issue from the one we're discussing here.

MR. FRANKEL: So, accountability, something that Rick said right at the end of his presentation is absolutely critical. Getting the nominal anchor is the most important part of monetary policy. That's why I am arguing for something like a price level target because I think that will help anchor inflation expectations even with a zero lower bound. I think from an accountability point of view it's actually not that complicated. If you have a price level target, obviously with a dual mandate, you can plot the price level target, you can look at where the price level is relative to that target and, of course, then go through the normal explanations why the price level is somewhat higher or lower than the target and what we're going to do to achieve it.

I don't actually think that it is any more difficult than a nominal GDP target in that way. You have a level, you're talking about where you are relative to that level and then how you're best going to achieve your goals over time. Of course, it's important that this is done in a flexible way. Like inflation targeting, you don't try to get back to your target in weeks, months or even quarters. But think about a strategy that gets you back to your target over a few years and best manages your dual objectives.

MR. BLANCHARD: Can I go back to something that you mentioned that dismissed which is the symmetry of a price level target. Which is on the one side, when inflation has been too low, it's fairly attractive to say it is going to be higher. But on the other side, when the economy is doing fine but there is an excessive inflation in the past, you actually have to slow down the machine because you promised. Do you think that there is any credibility to that part of the rule? My impression is that would never happen.

MR. MISHKIN: So, it's interesting. At the meet of the American Economic Association meetings that just took place in Philadelphia. Chrissy and David Romer gave a presentation and they were looking at nominal GDP targeting. But quite honestly, the same issue could arise there. And they did, in their presentation, a few historical episodes where they looked at where a nominal GDP, and I would say price level targeting would have the same result, would have told you to have tighter policy. And the examples were, I think if I recall right, the late 90s and the mid-2000s. They made the argument, well maybe policy could have been tighter in those periods and based on their analysis it wouldn't necessarily have been a bad thing.

As I showed in my chart that showed the price level target, we did run a few years above the target persistently before the recession. And the price level target would call for slightly more tighter policy but not dramatically more.

MS. SHEINER: So, you were talking about how the target audience for the expectations is the markets. So, communications are for the markets and not main street. I wonder if you worry about overshooting whether or not that would still be the case. Whether or not you would start hearing from main street that inflation is running really high, I don't believe the Fed anymore, they're just political. So, what is the danger for people who don't understand this more complicated rule that they would misinterpret it and that would have implications for the Fed?

MR. MISHKIN: Communication is a key element of this. If you look at basically what John, Ben and I, our position is actually very similar. It's really about communication. I think that's why I like the idea of communicating in terms of average inflation rates. Price level targets, that, I think, is not going to be understandable to the public. Instead of saying that we have an inflation target of 2 percent, we have an average inflation target of 2 percent is actually very easy to communicate.

MS. SHEINER: So, it's both right? It's a change of communication and a change in your reaction function. It's not communicating what the Feds are already doing, it's having to change what the Fed is doing and communicating it.

MR. MISHKIN: Absolutely.

MS. SHEINER: So, I'm going to turn to the audience in a few minutes but I have just one final question. We are worried about the possibility of the next recession. We said it could happen at any time. And yet we still think that thinking about changing the framework is a very hot topic. What is the timing for this kind of thing? How long can we wait because now we feel like maybe there is just too much political pressure on the Fed. And how do we go about getting to a place where you could make the change. Because I think it is interesting that everybody here basically wants to make a change. Everybody feels vulnerable for the next recession. So, how do we get to that? How do we develop the political?

MR. BERNANKE: Well, just based on my experience with the FOMC, we have a presumably new incoming chairman and new incoming vice chairman. I'm sure that somewhere next year, I would guess in the first half of the year, the chairman will assign a communications committee to work on this with staff support. There will probably be a discussion of up to a year or so. But at some point, I'm just guessing based on my past experience, somewhere in 2019 I think there will be some pretty serious discussions. For those who are interested, we had similar discussions at the FOMC in November 2011 when we were looking at potentially at changing the framework to deal with exact problems that John was talking about. At that time, I think the general feeling was that at the middle of the recession was not the right time to making those changes. I imagine this will come up for a serious debate in the next year to 18 months. Again, since it is a big step, I don't know what the public engagement would be after that whether the FOMC would announce something or whether they would begin to engage with politicians and the public and so on, I'm not sure about that. It's certainly something within a reasonable period of time that the FOMC and the staff can evaluate.

MR. MISHKIN: Yeah I really should have said my disclaimer that everything I say reflects my own views and no one else in the Federal Reserve system. I actually think this is an important part of the process too. I think where the conference is or seminars or other kinds of forms that we can have where people in the private sector, academics, experts, along with central bankers is really an important part of that to think though these issues. I agree with everybody that you don't want to jump to a new framework without fully thinking through all the risks, all the possibilities and situations because it is not something you want to do every couple of years.

I also want to point out that this has international ramifications. All the issues that we're talking about in terms of a low neutral interest rate, other developments that led to this discussion, apply to all the other advanced economies. In fact, I would argue that in time, we'll start applying more and more to emerging market countries as well. So, I think that this is an issue, not only for us sitting here in Washington or in the

U.S. but for central banks around the world to really be thinking through. We also know from the work of many economists in the last few years, these very low neutral interest rates, zero lower bound issues, have important implications for the international spillovers of shocks and also international effects of monetary policy actions. So, we really want to think about this very carefully in that context.

MR. WILLIAMS: To build on that, the big emerging market countries are dealing with these issues. They do not have a zero lower bound problem. Some of them have a problem of inflation too high, they are back like we were in the 80s and trying to commit to getting inflation down. And they do, as I mentioned, have far more in the way of supply shocks, productivity shocks, weather disasters, natural disasters, terms of trade shocks. That's partly my case for nominal GDP targeting particularly applying to them.

I want to say something sort of in response to both of the last two questions you asked. Olivier said, when we started this, all the models were based on rational expectations. So, whether the goal was to get inflation down as it used to be in the 80s or to get inflation up as it has been lately, our models all assume that if the central banker were pure of heart or failing that, if they had their hands tied that it would work. That magically expectations throughout the economy would be transformed and you could do things like getting inflation up or down without paying output costs. I don't think this discussion among monetary economists has quite adequately acknowledged the extent to which that has failed. They were pure of heart, they really meant it about the 2 percent target and they didn't achieve it. I think we need to take that into account more. Any of these very clever proposals about level or rate of change or whatever, including nominal GDP, probably wouldn’t be so transformative on expectations as we think.

And that brings me to a concern that Ben had which is, if you open up the process, it will get politicized. I actually am going to vote in a practical sense in favor or what we've already got. If it ain't broke don't fix it.

MR. FRANKEL: I agree with you there's an issue about whether rash hesitations is as valid as we thought and particularly, the example of Japan and how difficult it is not only to get inflation up but to get inflation expectations up is very relevant. But one of the issues is that when you choose one of these policies which has as history dependence which if you undershoot than you try to overshoot. The actual policy changes, the reaction function changes. And that actually means that you're going to get policy which is likely to lead to higher inflation when you want it. That in and of itself produces some good results. So, even if people are backward looking which, I think, to a great extent they are, it still, one of the great successes of central banks has been that we've anchored inflation expectations of 2 percent.

One of the results of that is that you see the inflation actually did not get into deflation during the great recession. In fact, this man is one of my heroes for many reasons. Ben is going to go down in history has somebody who actually made sure that inflation expectations stayed anchored. That was what we were trying to do through that whole crisis, which is make sure that people, we didn't go the route of Japan where inflation expectations got unanchored in the downward direction. So, in that sense, I think that policies which tend to lead you to anchor that and, in fact, in this history dependence will have benefits in that direction, do exactly what we want in that regard.

MS. SHEINER: I'm going to open up to the audience. I'll take a few questions. Tell us who you are. I'll take a few and see who wants to answer them.

MR. NAGUHOW: Thank you. Chris Naguhow with (inaudible) Partners. Two quick questions, particularly for John Williams and Ben Bernanke please. The first is, would a price level target be helpful in managing expectations, inflation expectations in normal times, under a condition of a very flat Phillips curve. Where you may have long periods away from your inflation target. The second is, when you have these rules that commit to staying low for longer on the exit from a zero bound, how would you integrate that with financial stability concerns?

MR. BASTOW: Corine Bastow with Triple Eye. Also for John Williams, in your presentation, you had the chart of the Price Level Targeting Rule and had 2005 as a start date. So, obviously the start date is critical in terms of what policy rate is being prescribed now. My question is, how hard would it be to find a consensus on what's the appropriate start date and number two, who gets to decide, would it be the FOMC Committee like Ben Bernanke was talking about. Just how you would see that whole process going about.

MS. GULLE: Grace Gulle, Justina Capital Management. Question for everyone. So, if were tending that 2 percent is so desired, why don't we go back to CPI like many other countries rather than sticking with PCE. It changed about 18 years ago and we can always go back. At CPI level, I think we are pretty much 2 percent over long period of time. Thank you.

MS. SHEINER: Okay, John.

MR. WILLIAMS: I'll just quick answer. CPI runs and PCE runs, CPI runs about a quarter percentage point higher than PCE. So, I definitely would not say let's switch to a 2 percent CPI target at this time. We've chosen, I think, the broadest measure of consumption prices and PCE has brought us index. We have, we think it has a very good measure of inflation. So, that makes sense.

Let me answer very quickly, the question about my chart. There is a technical part and there is a substantive part. The technical part was, when I drew that picture for a presentation early last year, I basically viewed 2005 as a place where the U.S. economy was roughly at a full employment and inflation was running about 2 percent at that point. It seemed like a neutral place to start and I was assuming a 5 percent natural rate of unemployment so basically that's why I chose that. But obviously, if you're actually thinking about any of these kind of procedures, nominal GDP target or price level target, that would be one of the considerations. When you started what's the right level to start it at and move forward. I think that gets back to your earlier question of what's the right timing of this debate. The right timing of this debate, I think is really now because the U.S. economy has fully recovered from the recession. The economy is now we're getting close to being the second longest expansion in history and I'm very hopeful that we'll be getting near our inflation targets. I think that's a good neutral starting point to think about some of these long term strategies.

I think one of the things that is really difficult, and this is something that Ben has already said. If you are in the middle of a deep recession or a very difficult situation, thinking about changing the strategy does conflate two things. Your short run policy objectives, I want to stimulate the economy or something and really what is the right framework in the long run. I think we mostly solved the first one. I'm more optimistic about inflation than Jeff. So, I think now we can really focus on longer term issues.

MR. BERNANKE: Switching to CPI target would move in the wrong direction because we want a higher target not a lower target. Good question about, I mean there are some real practical issues with price level targeting. One would be the financial stability issue. Of course, the standard answer is well we use macro prudential and regulatory policy for that. Does it make it any worse than say having forward guidance? I'm not sure that it does but it is clearly an issue that we would have to think about.

The other question, I think, related to that is, what about if inflation expectations are completely adaptive, let's say, and you had these overshoot periods that create destabilizing patterns and inflation expectations, I think the only way to study that in the absence of actual experience, would be through some simulations and other model analysis that takes into account those possibilities and tries to look at the range of outcomes. I think the ideal thing, if we could just persuade New Zealand which introduced inflation targeting in 1990, if we could just persuade them to do price level targeting for three or four years so we could all find out how it works, that would be a tremendous benefit to the rest of the world.

MR. FRANKEL: So, Ben I've tried that when I've been in New Zealand and they said, we did our part by inventing inflation targeting, it's someone else's turn. So, maybe Canada will do it.

MS. SHEINER: More questions? This side of the room here.

MS. YON: Jean Yon from Bank of Canada. I find today's discussion extremely informative, believe it or not. At the bank, we started to think about the next inflation targeting renewal which is in 2021. Today my question is on ELB. I think today most of the discussion is related to the existence of ELB and the frequency of hitting ELB which limits the central banks' ability to respond. But what does that mean we should tackle the existence of ELB (inaudible) instead of thinking about alternative monetary policy framework. For example, shouldn't we be thinking about ways to eliminate ELB including central bank issue e-money? Thank you.

SPEAKER: A question for everyone. So, one of the things we haven't discussed in this is the --

MS. SHEINER: Who are you? Can you tell us your name and where you're from.

SPEAKER: (Inaudible) from Morgan Stanley. One of the things we haven't discussed today is some of the forces of inflation are probably outside the purview of central bank. For example, the role of technology at this point is something not exactly a central banker would explicitly control. For example, the Phillips curve is a lot flatter than it used to be and things like that. So, I think the question is, is there a consideration that inflation target can actually be lower instead of being higher? As some of the source structure forces and inflation continue to weigh down. That's been something that has been suggested by the BIS Claudia Boyer, I believe, that inflation targets can actually be lower going forward than the 2 percent than maybe went higher from 4 percent or 3 percent.

MR. GANYON: Thank you. Joe Ganyon, Peterson Stute. It came up earlier, the issue of whether we would want to open up congressional legislation and how that might lead to things we don’t like. But if it does happen, I guess I'd like to hear what panelists think about possible changes to the powers if that could happen. The previous questioner just now mentioned possibly doing things that would remove the lower bound on interest rates so you could have negative interest rates perhaps.

A couple of other thoughts which I would be interesting in hearing. One would be, the Fed has a lot less ability to buy assets and other central banks. Maybe the normal basket of assets for the Central Bank should be the market basket of all assets in an economy, would that be good? Another possibility would be perhaps under very limited circumstances, do helicopter money. Maybe when you're at the zero bound and if the Treasury Secretary agrees, you could mail out checks.

MS. SHEINER: Okay great. Let's answer those. Do you want to take that one?

MR. BLANCHARD: There are two ways to think about it. One is allowing nominal rates to be negative. The other is to increase the equilibrium safe rate, the equilibrium neutral rates. And that goes back to way is it that the safe rates are so low. Here, I disagree slightly with Larry. There are basically two ways to think about it. One is that its deep forces like demographics and such and it is going to be really difficult to do anything. The other is safe assets, hypothesis which is for various reasons, there is a very large demand for safe assets. If we just satisfied that demand, we would actually get a higher equilibrium rate. I'm more optimistic that something can be done on the supply of safe assets to increase the equilibrium rate. That will go a long way to decrease the probability of taking the zero lower bound.

MR. MISHKIN: There's always this issue about when you've undershot a target, should you lower it. This has come up, I actually did an evaluation of Swedish monetary policy. They had a period just like this and that was one of the recommendations. I think that's actually the worst thing you can possibly do. The reason is, you get exactly the wrong kind of expectations dynamics. In fact, this is one of the reasons why I didn't like comfort zones. Ben teased me today about this. I give a speech called “Comfort Zones, Shmumfort Zones” when I was a governor to bring a little bit of Yiddish into the discussion of monetary policy. But what happens is, if you actually have a fall in inflation and say gee, just because I can't get there I'm going to lower the inflation target, that actually has the opposite of the inflation expectation dynamics of the price level targeting. It means that any negative shock is actually going to propagate even more.

In the academic literature, this has been discussed. It is one of the big problems that occurs in terms of, for example, during The Great Depression. Where you had very negative demand shocks and then you had a deflation set in, that then really means you get a disaster. I know this issue has been raised but when you think about the theory of it, you realize that it is absolutely the worst thing you could possibly do in that situation.

MR. WILLIAMS: So, fundamental problems, zero lower bound and some sort of radical solutions have been suggested like helicopter money or abolishing cash all together. I've got to return to a question that someone asked in the first session when Larry was talking about, what about fiscal policy. The conditions of the zero lower bound are the conditions where monetary policy is not powerless but it's really, really tough. It is precisely the conditions for fiscal policy is most effective. Now, Larry said it is very hard, he did it and had to deal with it. He learned that there were no shovel ready projects. The fastest projects took a year or two years or three years. But didn't we learn that that would have been great. A year or two years or three years of fiscal expansion. I think that that's not so hard.

More generally, it seems to me in the length of my career which is similar to some of the people's careers here, we have forgotten the most important thing we learned in introductory macroeconomics. Which is that you at least want to try to have fiscal policy be counter cyclical. It's tough to get the timing right, there is political constraints, but the last thing you want is for it to be procyclical. What we have in this country and in some other countries, is procyclical fiscal policy. Or at least some politician is thinking, when the times are good and the economy is booming, that's the time for tax cuts and only in a recession do you realize that a deficit is a problem and that's the time for fiscal austerity. I think we economists need to talk more about the desirability systematically of having less procyclical fiscal policy, ideally countercyclical fiscal policy even if we can't get it exactly right. And the payoff to that, seems to me has got to be greater than some of these second order things we're talking about.

MR. BERNANKE: I just had one quick comment to this which is, I agree with you on this. There is an issue about having monetary policy capacity. That's the argument for why you would want a higher inflation target. The same issue comes up for fiscal capacity that if you, in fact, are doing countercyclical policies, so when times are good, you're actually doing a little saving, that gives you the capacity to do a lot when times get tough. The Romers just wrote a very nice recent paper on this that they looked at countries that had more fiscal capacity and more monetary policy capacity and they did a heck of a lot better during the great recession. So, I think this lesson is actually very important and obviously very current given the recent tax bill.

MS. SHEINER: All right, one last set of questions I think we have room for. Let's just take two.

MR. MARTIN: Hi, Rob Martin, UBS. I was just wondering, all of the polices that you've talked about today rely to some extent to another in the central banks having a great influence over inflation. Given that most central banks have amassed their inflation target for some period now, do we have to see a period where if central banks consistently hit their targets before adopting a new measure, I fear a change in policy still missing and then having even a greater loss of credibility.

MS. SHEINER: I'm going to stop with that question because we don't have that much time and it's a great question. We sort of brought up a little which is, do we have a way of achieving any of these new rules.

MR. MISHKIN: So, can I respond to this. First of all, I think it goes back to an earlier question. In 2011/2012, it might have been a very difficult time to talk about any of the issues we're talking about because it seemed like you were struggling just to do the basics. Now, I think we've shown that we've gotten the full recovery, we're on a good expansion, expect inflation to be moving to target. So, I think it is a better time, for at least in the United States, to have this discussion. I will push back on this premise that we lack credibility in the United States because we've been missing our inflation target.

Janet Yellen gave a really great speech last year about the inflation experience during the economic recession during the recovery. And highlighted that up until 2016 roughly, the shortfall inflation was exactly what our Fed models, such as they are, what it would predict. We had a period where the unemployment rate was very high due to the severity and length of the recession. We had some other factors such as the import prices, commodity prices and things like that which obviously affect inflation.

In fact, the inflation story, the fact that we missed on our inflation target, was a direct consequence of this very deep and long recession and slow recovery. To me, it's not a sign of a failure to achieve our inflation target, but much more just a reflection of the difficulty of getting the economy back on track. Now, a lot of people focused in 2017 about the fact that inflation dipped after rising almost to 2 percent early in the year, but of course, that's a reality with inflation. It tends to move up or down for various factors. The critical part for me is not that inflation was below our target in terms of the credibility of the Fed during the recession, it's really that we achieve our inflation objective going forward.

I think though that this gets back to one of the advantages of price level targeting. That when you have an extended period of missing your targets, you are committed and are going to carry out inflation that is somewhat above. I don't think that is that difficult a mission to actually accomplish.

MS. SHEINER: With that, I hope you've all enjoyed the session as much as I have and learned as much as I have. I'd like to thank the panelists.

(Recess)

MR. WESSEL: If I can get people to sit down we can resume. So in thinking about this event and in what we wanted to accomplish here, what we set out to do was to have Larry Summers make the case why we should think about this, have a number of very experienced monetary economists who have views about what we should do speak about what we should do. And then in this panel the question was could we get some people to -- from very different points of view to talk about so what difference does this really make? Is this worth the energy we spend on it and to whom does it matter?

And so we have a deliberately diverse panel. John Taylor from Stanford well known for his Taylor rule who has been thinking about monetary policy for a long time. Kristin Forbes is a professor at MIT but until recently was on the monetary policy committee of the Bank of England where correct me if I'm wrong, Kristin, you never had the chance to raise rates, right, is that right?

MS. FORBES: I tried.

MR. WESSEL: You tried. Peter Hooper who is the chief economist at Deutsche Bank Securities to think a little bit about how this would look to the markets and my Brookings colleague Sarah Bender who has written about the relationship between the Fed and the Congress which is only briefly mentioned this morning but is relevant given that after all, the Federal Reserve exists because Congress created it and as we know what Congress created it can taketh away. Sarah and her colleague have a book out called the Myth of Independence which traces the history of the central bank and its relationship to Congress.

So I'm going go task each of the panelists a question or two to get things going. We are not going to have the sequential opening presentations but, John Taylor, I wonder if I could start with you. So when you did the Taylor rule, which is a guide to setting interest rates, you kind of assumed that a 2 percent inflation target is where they wanted to be. And I'm curious whether in 2018 given everything you've heard, whether you think that was a good idea or whether if you were doing it all over again and you were trying to come up with some normative guide to policy you would have come up with a different number.

MR. TAYLOR: So it's a good question. I wouldn't say I assumed just out of nowhere a 2 percent inflation target. There was a tremendous amount of discussion for a long time about the optimal inflation rate, the zero bound was very much in our minds. Measuring inflation, the bias associated with measuring inflation so while we maybe thought about price stability at a zero inflation, 2 percent seemed like the best thing to assume. And by the way, that was before the 2 percent inflation target was anywhere. So you have to put that in mind. And it just didn't come out of nowhere. There was lots of thinking behind it.

Part and parcel to that was the assumption which is more of an assumption of the equilibrium real interest rate and I also assume that was 2 percent. That was based on considerations like growth rates. Nobody had thought about it at the time, in fact demotion of interest rate as an instrument was still foreign to many central banks. So 2 on the real interest rate, 2 on the inflation rate gave the nominal interest rate of 4 percent which seemed quite good quite frankly and I think Larry Summers described why that was a number that's useful for many purposes. So that's where it came from.

I think the second part of your question is what would I do now? Well, I don't think there is much difference in terms of what we think the measurement bias is or the zero bound because it has always been there. I think the main difference is the equal variable interest rate and John Williams has done lots of work on this. I have questioned some of that. Not so much about the research but about the uncertainty about our star. I have a paper with Volker Wieland emphasizing how difficult it is to determine our star in this environment. It's sort of the fog of monetary policy. Very unusual monetary policy, still unorthodox in many parts of the world makes it very hard to estimate our star.

So I don't take it as a given, it's 1 or it's zero, that's the FOMC thinks it's about 1 now. And that would suggest adjusting if you have a rule that is going to be useful in current policy that would suggest adjusting it to 1 or so which is what I said the FOMC should be doing if they think our star is one. I have my doubts about it though and I think we should watch carefully about it and I think it's most likely to go up based on my considerations which suggests we should stick with that 2 percent inflation target but worry about our star and if I could just add one other thing, David?

MR. WESSEL: Please.

MR. TAYLOR: There are many good things about the inflation target choosing it numerically. Sometimes I worry it's taken too much attention away from other parts of policy and the discussion this morning there was very little discussion of the reaction functions or the policy rules. It was implicit in the comments about strict inflation targeting. Of course with a policy rule you don't do strict inflation targeting. There's a movement towards it.

So anyway I think there is a worry I have that the extra emphasis on the numerical inflation target has actually taken us away somewhat from the notion of a rule or reaction about what the central bank should be doing to active that target. And I have noticed that to some extent and it worries me and I think if we continue with the numerical inflation target which I hope we do, we have to find was to bring more attention to the polices that are actually used to achieve it.

MR. WESSEL: Thank you. Kristin, I wonder if you could talk a little bit, you've had the experience like some other people earlier of being both an academic and a policy maker and do you think this whole framework thing is as important as the speakers on the previous panel suggested?

MS. FORBES: So I would say a very clear yes, the framework is incredibly important. And I can base that based on my experience having to set monetary policy and I think it's important not just it's important for the policy maker sitting in the seats, it's very important for discipline for them but even more important for accountability, transparency for the general public and any government overseeing you.

So let me explain what I mean by that in more detail. So first as someone setting monetary policy, you're asked to comment on a lot of different things and at the Bank of England we were constantly trying to get dragged into the debate on my immigration, on the debate on inequality, some wanted to get into climate change, comments on fiscal policy and then Brexit, you know, so there are lots of ways you could start to comment on lots of issues. And having a clear mandate, 2 percent inflation target was a very good disciplining device for all of us. We are only going to get involved in something or comment on something if it relates to our mandate, our goal, 2 percent inflation target. So I thought that was very good discipline for all of us when deciding when to comment and when not to comment.

Internally too I found it very helpful deciding what I focused on. We would at the Bank of England we would get the staff forecast a few weeks before we'd then meet and debate and decide what the forecast is which then determines what we do with rates. And when you get the forecast there is always a bunch of variables in there, I'll have different views on, different people have different takes. But you can't argue every little point that goes into these huge forecasts so I found it very helpful to say okay, our target is 2 percent, and then run quick scenarios. So I think this variable should be X instead of Y, does that actually matter in terms of how we reach our inflation get or policy? So I would usually go through that sort of list of here is 10 things I disagree with the forecast but 8 of them aren’t actually going to matter for our 2 percent inflation target so I'm not going to worry about those. Instead I'm going to focus my energy and the discussion in the points on those things that will actually matter.

So I think bottom line is having a very simple, understandable framework incredibly important discipline internally and also how you talk externally. But where I think the framework was most important is in maintaining the credibility and accountability of the central banks.

Right now central banks have a tremendous amount of power. They are influencing people's lives in ways that people were not aware of at least as much in the past. They play very big public roles and they have to be able to explain how unelected officials are carrying out those rules and justify what actions they take. I worry about this even more going forward as more central banks are probably going to be raising rates and people are going to start to take out a mortgage and realize it is suddenly going to cost more. The banks are going to have to be able to explain why they are raising rates, why they are making it harder to get a mortgage so you need a very clear understandable framework to get out to the public why you are doing what you are doing.

And some of the things we had talked about earlier this morning they seem understandable, easy to us. Nominal GDP targeting, things like that. But explaining them to the public I do worry is going to be incredibly difficult. Even there were some polls in the UK when I was there asking people what inflation was today and they were often off by 2, 3 percentage points so even what seemed very simple, understandable ideas getting them out to the public again gets hard.

And the other issue of a framework that I think is important is making sure it’s a framework that is relevant to today. I worry about some of this discussion of frameworks where we are averaging what happened in the past a couple of years so you are justifying behavior today based on what happened, you know, several years in the past. And when you go out and explain to the public why you are doing what you are doing, they don’t care what happened a couple years ago. People don’t remember those details. You need to be able to explain what you are doing based on what is happening in the environment today or planning forward in the immediate short term future. So for all those reasons I think the framework is very important but it also needs to be a framework that is very easy to understand, very easy to explain and also very relevant to people's lives today, not something intangible in the distant past or distant future.

MR. WESSEL: And when you were at the Bank of England was there any consideration of whether having an inflation target was a good framework, whether there ought to be an alternative or one thing the Bank of England has done is managed to achieve its inflation target. I suppose we could depreciate our currency by 25 percent and try that as well but, you know, does this issue seem strange to you from the point of view of the Bank of England?

MS. FORBES: So there was a debate before I started when Governor Carney started of whether there should be a change. I wasn't part of that debate but when I was there there was no debate. 2 percent inflation target was, it was a very good focus, a discipline for all of us and we are also told when we started the government sets the inflation target, not us so don't comment on it, don't get involved, don't go public so that if nothing else that was an easy excuse not to get involved in it.

I think the other thing that's important too is some of the discussion we have had suggests that having a strict inflation target is constraining in some way. Doesn't let you do the optimal monetary policy you would do to maximize welfare, reduce output losses, something like that. And the UK has an even stricter target than in the U.S. It's just 2 percent inflation that's it. No weight on the output gap, no dual mandate, it's just the inflation target. But my sense being there was we still had a tremendous amount of flexibility.

We could look through price shocks whether it was temporary, oil price shocks, whether its medium term shocks such as an exchange rate move did not affect inflation for it could be three, four years. We could look through that. We could when there were large output gaps we could explicitly talk about that as part of our inflation framework. We usually brought it in in a way that our goal is to meet our 2 percent inflation target sustainably so that meant even if there was an output gap then we would not sustain the inflation around 2 percent. So that was a way to work in a lot of other considerations.

And more recently right as I was leaving, there was more discussion about the speed with which you returned inflation to 2 percent and the cost of that. So my sense there was in some sense we had a very strict mandate, 2 percent inflation, that’s it but yet we could still work in a lot of these other considerations that a lot of these other frameworks seemed to be trying to bring in more formally. So I'm not entirely convinced we need to bring it informally. We were able work that in already informally.

MR. WESSEL: Peter Hooper, does anybody in the markets care about what framework they pick? Nominal GDP, price level, 2 percent inflation target? Turn on your mic or they won't know whether you care or not.

MR. HOOPER: Well, let me start by giving the disclaimer that what I'm about to say does not necessarily reflect the views of the entire market.

But certainly there is quite a bit of interest. I won't say that we have put it quite at the level of importance as inside central banks at this point but yes, there's interest and the possibility of something happening here I think people looking to the likelihood we would see a substantial increase in uncertainty, I mean, if it went to the level of raising an inflation target substantially to 3, 4 percent that would obviously open up the Federal Reserve Act. That’s no longer price stability and by any stretch. And that would I think raise quite a big question as well.

Certainly anything, any move in that direction you are raising inflation expectations but over time very slowly. People tuned in to the possibility there and the inflation risk premium. I think the inflation, the notion of a shift in the inflation target upward 3, 4 percent I kind of agree with Ben, it's not like us. People are generally discounting that would be my sense. It's, I mean, the view in the markets currently is if the Fed changes their target, they should change it to something achievable like 1 and a half percent which is where it's been, I mean, that was a question raised at the end of the last session which I think is a serious one. People in the markets generally don't believe there is a Philips curve or many or at least the view of the inflation is always and everywhere a monetary phenomenon has certainly seemed to have been violated. There are global forces, there are technological forces, demographic forces all tending to hold inflation low even some nice work at the San Francisco fed recently suggesting that the non-cyclical element of the economy is growing, is now more than 50 percent and tending to hold inflation down. So there is going to be a real challenge getting inflation back. Maybe up even to 2 percent let alone 3 to 4 percent. So the notion of an inflation target increase just isn't there. If I can go on and talk a little bit about --

MR. WESSEL: Sure.

MR. HOOPER: -- well the alternative, the one that seems to be coming through a little bit more on the discussion today is the sort of the average inflation target or price level target. Here you are dealing with something that would I think folks in the market recognize increased volatility, certainly to hit an inflation price level over time you're going to have shocks to the downside. That will have to be offset exactly with shocks to the upside. That means not only more variance in inflation but also more variance in output I would argue.

Let's take an example of what if we had adopted this has been suggested when we first hit the zero bound and we find ourselves today as we do at 5 percent below target on inflation. What are we going to do over the next 5 years? Are we going to raise the inflation rate immediately to 3 percent and have it stay there? Maybe that raises inflation expectations? I will say inflation expectations adjust slowly. They are adaptive. And it's going to take some time to get there. So let's say we do get there. How does the Fed achieve that? It achieves it by driving the unemployment rate I think significantly lower. It's always below NAIRU maybe we go down in the mid three's, maybe lower, a lot of uncertainty about our inflation models now and exactly how to get there.

But I like to go back to the 1960's, the last time we had an occurrence sort of like where we are now. We went through the 50's at 2 percent inflation, the first half of the 60's it was 1 and a half percent. From '63 to '65, through '65, the unemployment rate went down below NAIRU, reached about 2 percent points below NAIRU with no move in inflation about 1 and a half percent. Then suddenly in '66 it jumps by 2, 2 and a half percentage points in one year and from there on we, that's sort of the opening saga of going into the great inflation.

I think the, there is a fair amount of work suggesting there are non-linearity's in the Philips group so if we are getting down there are we going to have control over the situation going the other way. What is going to keep us from overshooting?

MR. WESSEL: But okay. So we could relive the 60s.

MR. HOOPER: Yes.

MR. WESSEL: I do sometimes think that everybody in monetary policy is fighting the last war but different people are fighting different last wars. We have been -- you don't seem to agree with Larry and some of the others that we have an urgent problem here. That we are likely to hit the next recession unable to use monetary policy sufficiently to get us out of it. That the risk of hitting the zero lower bound is large, uncomfortably large, the natural rate has come down and that the risks of being not reliving the 60's but reliving the last five years are worth thinking about.

MR. HOOPER: Okay. I'll observe that the Fed has never been able to get the unemployment rate up from significantly below NAIRU back to NAIRU without a recession ensuing. So the record in achieving soft landings here is pretty remote. Question is how -- does this lack of evidence, does this lack of ammunition create significant risks going into the next recession?

My view on this is that the costs are pretty significant. We need to get a better handle on what the cost of higher inflation may be. Yes, there are benefits obviously from the ammunition for policy standpoint but the balance here is pretty close. I would say rather than jumping into something right away, let's see how it goes in the next recession, okay. And let's see how it goes in terms of getting us back to NAIRU, I mean, what is our ability to control things here?

MR. WESSEL: I know it seems to be a little bit like saying you’ve had this massive heart attack and you are trying to decide whether they should do a coronary bypass and the cardiologist says well, why don’t you wait until you have a another heart attack before you decide. I mean--

MR. HOOPER: That analogy is not perfect.

MR. WESSEL: Well, but it was not as good as Summers’, I can't come up with them like that. I take your point, I'm sorry.

Sarah, let me give you a chance. So one of the interesting things about the conversation this morning was that every once in a while Congress would come into the picture, I think most notably there were some suggestions and people have made this a number of times that 4 percent inflation may be hard to justify with the price stability and that just a, in a legal sense, not in a political sense. So I know you have done a lot of thinking about what role does Congress play in this and how would you look at this discussion we had this morning, I mean, earlier this afternoon from the eyes of the political realities of the central bank in the United States?

MS. BINDER: Sure. So I think there has been as you’ve said a good discussion of economic costs earlier today about either raising the target or alternative regimes. But I think with the exception of Ben Bernanke no one has really kind of nailed down what the political cost is here. I would argue politically Congress really has to buy in to either raising the target let alone any other more potentially quote unquote radical changes to how it goes about pursuing its mandate. Again the usual --

MR. WESSEL: Sarah, why don’t you pull the microphone -- if you're going to look at me, be sure the microphone is on my side --

MS. BINDER: Okay.

MR. WESSEL: -- of your mouth.

MS. BINDER: Okay. I will keep looking at you, David, okay. I think the usual objection before I get going here that I usually and it's good to anticipate is well look, keep in mind that's Dan Fisher distinction that the Congress gives the Fed its mandate so sure, the Fed has goal dependence but then we always say that the Fed has instrument or tool independence and so why should we worry about any political, potential political costs. To put it bluntly, the notion of independence for the Fed we could call it a myth. I will give you three reasons here that will help us, I think, think about the political costs.

First its crystalized by Bens comment that if the Fed pushes too much in an expansionary policy by virtue of changing its target, we could easily see it risk losing half the side of the mandate, the employments of the mandate in the first place. So but second, even without legislative action, it's not at all clear on this sort of goal versus instrument distinction. It's not really clear to me where the inflation target or any GDP targeting where it fits. Right, is the target a goal? Is it an inherent part of the feds price stability mandate and thus changing it is Congress's prerogative? Is it a tool for achieving price stability but of course Congress also sets tools, right? 13.3 interest on excess reserves and so forth. So conceptually I think there is very little apriority expectation of autonomy on the Feds part for making changes to the target.

Third, perhaps more importantly, right, set aside the conceptual issues, think about how the Fed got its current target. Bernanke as we know from his memoir and from reading the FOMC transcripts, right, he worked for a decade to convince not just his colleagues on the FOMC but also his congressional bosses on the Hill that the feds should have an inflation target. We hear those constraints for those of us not around the table but are dependent on the transcript, Don Coh, 2008 quote having an inflation target won't have any effect if it's repudiated by the Congress. Bernanke in 2010 again around the table or one of the main issues has been whether we could succeed politically in creating an inflation target or whether there would be quote, pushback from Congress unquote.

And of course there was pushback from Congress. Bernanke has said the new, when he went to the Hill in 2009 Bernie Frank then Chair of the House Financial Services Committee said this would be a particularly bad time at the height of the recession to dot the target for just one side of the Feds dual mandate. All right, think about it. That was 2009. It took until January 2012, all right, it took the Fed three more years --

MR. WESSEL: Well, they were a little busy during those years.

MS. BINDER: For sure. But in any theory of instrument independence, all right, when they might have most needed it we might have expected it perhaps to move more quickly. But I think what it is critical here is that six years later all right, lawmakers they're still threatening the Fed about the target. Not from the left this time but from the right. We have the videotape.

MR. WESSEL: Go ahead.

MS. BINDER: Let's just, assuming this goes -- okay. Here we go. This is Jep Hanserling, the outgoing chair during Financial Services Committee. This is during the last July semi-monetary report, the hearing held with Janet, oops. Oh no.

MR. HANSERLING: In a recent press conference, some interpreted comments that you made to indicate that you were open to an increase in the inflation target. Are you pursuing an increase in the inflation target or other members of the FOMC? Is this a matter of discussion within the FOMC to increase the 2 percent inflation target?

MS. YELLEN: It is not. We reaffirmed our 2 percent inflation target in January. We are very focused on trying to achieve our 2 percent inflation target and it is not a subject of discussion.

Mr. HANSERLING: Thank you, I will take no for an answer.

MS. BINDER: I mean, that crystalizes the dilemma here, right. I will take no for an answer.

MR. WESSEL: We get Hanserling back? Having Jeb Hanserling look over my shoulder is not.

MS. BINDER: Just to think about it, right, will Jay Powell be treated any differently than Janet Yellen was? Obviously remains to be seen or part of it depends on whether the criticism coming from the Hill was purely ideological in terms of economic views or was part of that partisan right because it was a democratic --

MR. WESSEL: So let me just go to you for a moment. So if the fed decided it wanted to move to a price level target, as has been discussed. Is it your view that they would need kind of the at least consent in an informal sense of the members of Congress before they did that?

MS. BINDER: Well, that's my interpretation judging from not just the inflation target but other episodes when the Fed has looked for particular tools or changes. The challenge here is, I'm not an economist but the challenge here is sort of history dependence that Kristin just mentioned, right. If there is ketchup behavior going on here but what law maker's care about is the state of the economy and whether they are going to be blamed for things going poorly. Their eyes are going to be what the current state of the economy is and they're not going to be pretty wild I don't think about numbers of inflation rising on their watch.

MR. WESSEL: John Taylor, so what would you do? Would you give up on all this talk of frameworks and just try and pursue the Taylor rule? Do you think there is some attractiveness to price level or nominal GDP targeting or some variant?

MR. TAYLOR: So the Taylor was a framework, right, of policy rules are frameworks for thinking about the decisions about policy making. I don't think there is any way to think about it, it's a little more detail than just the inflation target. That's part of it but it's not the whole story. So no, I wouldn't give up on it at all. In fact it seems to me you could talk about the Congress there is a bill which I think this would require the Fed to say what it's doing on its policy. In fact, what if the Fed came with a rule of some kind which was price level targeting but what makes you think they would be rejected. Its, they basically they would like the Fed to say what the Fed is doing. If the Fed comes, and this is what we are doing well I'm sure there would be lots of discussion. But why would you just [inaudible 8:09:34) said they are going to ignore it. And I think that's the way to think about things now.

The instrument independence versus goal independence I think the Congress would like the Fed to describe its decisions on the instruments doesn't take any independence away. The Fed just to describe what they are and if it is along the lines that John Williams has said then it's hard to see why they would just scratch at it out [inaudible 8:09:59]. I do think there is a better way to go about this which actually goes back to earlier work of John Williams and David Reifsnyder which is, it doesn't have, you don't have to change the inflation target or have price level targeting. You just commit to when the interest rate hits zero to keep it at zero a little longer is a beautiful way to think about this. It's a description of the instruments, it's kind of a meta rule and that's one of the things I would do going forward is say here is what we are doing and here is why it worked and I don't think you have to go through the whole inflation targeting change or the price level targeting to achieve that. It seems to me it's, it is very close or much closer to what the Congress is asking the Fed to do.

MR. WESSEL: So, Peter, do you think the market -- let me ask, I won't ask you to speak for the whole markets, that wasn't fair. Do you worry at all about that the our star the equilibrium loan run rate is low and that we might find ourselves in the position of having recession that's hard to fight both because of monetary policies out of ammunition and fiscal policy is either paralyzed by political gridlock or by too high debt to GDP or do you think that's just a fairy tale that we shouldn't worry so much about?

MR. HOOPER: Oh, I think it's definitely something to worry about. No question. The question is what to do about it.

MR. WESSEL: Right.

MR. HOOPER: And --

MR. WESSEL: So what would you do about it?

MR. HOOPER: For now I would stick with the policy we have but recognize that it does give you room for some flexibility on the upside, I mean, allowing inflation to overshoot into the 2 and a half, 3 percent range giving you a little bit more ammunition when the time comes I think would certainly be wise.

MR. WESSEL: Do you think the markets think the Fed is willing to let inflation overshoot the 2 percent level right now?

MR. HOOPER: I, you know, right now the market is having a hard time getting its head around the idea that it will get to 2 percent. I mean, the tips break even longer dated five year forward five year expectation is about a half percent less than the Feds 2 percent target if you adjust CPI to PCE. So yes, I think it's getting there would be a --

MR. WESSEL: So then why wouldn't the people in the markets be screaming that the Fed is making a mistake by raising interest rates?

MR. HOOPER: Make --

MR. WESSEL: I mean, if we don’t have, we are not hitting the target. You're saying the markets don't think they can hit the target so wouldn't it follow then that we shouldn't raise interest rates?

MR. HOOPER: Okay. Well, there are certainly are people in the market who are saying that's going to occur. And then market expectation about interest rates is substantially less still --

MR. WESSEL: Right.

MR. HOOPER: -- than the average FOMC.

MR. WESSEL: John?

MR. TAYLOR: Yes, let me just interrupt here. The fact that the inflation rate is somewhat below the target doesn't meant the interest rate should be zero. It could be a little higher than zero, it could be 1, it could be 2 and so this notion, in fact I think that's one of the other problems I worry about with the inflation targeting is it seems to be if its 1.5 or 1.63 oh my god we have got to put our foot on the floor but that is not how monetary policy should work. If the interest rate maybe should be a little lower, it should be a little lower than otherwise but not complete full throttle.

MR. WESSEL: Kristin --

MR. HOOPER: You should allow the inflation rate to rise above target which the current system allows you but I don't see the need to put yourself into a tighter straightjacket if you will --

MR. WESSEL: Right.

MR. HOOPER: -- of having to achieve a certain average over a certain period of time which is more difficult than the current one.

MR. WESSEL: Kristin, I'm going to let you answer any question you want so I'm going to ask you a question but don't feel you have to -- so does the rest of the world, and put on your international economist hat for a minute. Does the rest of the world care about the conversation we had here earlier about how the Fed is choosing to define price stability under its mandate?

MS. FORBES: I would say yes to differing degrees in different countries but the Fed is a leader, I mean, what the Fed does does set examples for the rest of the world. The Fed is highly respected, it has a very smart group of economists. I know for example the Fed, the fact that they are cutting back on QE the Bank of England, we were very excited because we could see what happened and see what happened in the U.S. economy to get a sense of what might happen when it's time for the UK to follow that path. So, yes, the UK is a, or U.S. is a role model. But I also I wanted to take advantage of your suggestion to jump on anything. There were three points that were raised earlier that I wanted to get in there.

First, Peter, you said expectations tend to change very slowly. Inflation expectations are very adaptive, very slow to change. My experience is that's not always the case. In the UK inflation expectations were quite low especially around 2015 after the oil price shocks and inflation hit zero, it even went briefly negative. So inflation expectations were quite low and then we got a Brexit shock and suddenly inflation expectations popped up quite high and now if anything they are a big higher than some people might be comfortable with or about historic expectations or historic averages. So we saw inflation expectations change very quickly, you know, I'm not suggesting a Brexit shock and a 20 percent depreciation of the currency is the way to accomplish that but it does show how quickly people can change when the situation changes.

Another question, David, which you asked was how big a risk is the zero lower bound and I think that's an important point. I came here so for all the people who have spoken today, I think a lot of people came here with priors on what the optimal framework is or where we should go. I'm one of the people came here without a prior and I came here largely to learn and hear the arguments and listen to the cases and then try to form my own opinion and what hit me is most, I think all of the cases this morning started with the argument we need to change the framework because of constraints around the zero lower bound and fall in our starred so we just aren't going to have the room to operate in the future that we would like to have when the next bad thing happens.

So I largely agree with that I think especially in terms of theoretical models if you believe the lower zero bound is a constraint, this all holds and there are big welfare gains from changing the framework. I don't know if Larry Summers are quite as accurate but there probably are welfare games and certainly in theoretical models but in practice where I wonder if the argument is quite so strong is how tight a constraint is the zero lower bound. And here when I started, I will draw on my own experience in the UK. When I started in the UK I was also worried about the zero lower bound and that also made me more cautious starting a tightening cycle knowing we were so close to the zero lower bound and there could be another native shock.

But then we had the Brexit shock, interest rates then were at point five so we weren't quite at the zero lower bound but in the UK the estimate with weights could probably go a touch below 25 basis points but not much lower due to the structure of the finance societies in the UK. So we were pretty much almost at the zero lower or effective lower bound for the UK. So in the response to Brexit, the committee decided to do a package that was lowering interest rates 25 basis points, you know, pretty small and pretty token given the predictions of what would happen to the economy but then also doing QE, starting a new corporate bond purchase program and starting a new lending program to make it easier for banks to pass on lower interest rates, so a four prong package. We did some estimates of what impact that should have on the economy. We had a skeptical view of how effective QE or these pretty small packages of corporate bond purchases would work, not sure at all how much this program in terms of having banks pass on lower rates would work.

And what we saw is this package worked quite well. It was more effective than our estimates and I became convinced that things such as QE, these asset purchases programs can be quite effective in helping alleviate constraints around the zero lower bound. They did stimulate the economy more than we expected and it wasn't because financial markets weren't functioning or there wasn't liquidity, I mean, there's a whole line of arguments that QE only worked because markets weren't functioning, they eased liquidity issues and that was not the case. So I guess the bottom line of all that is I'm less convinced that being near the zero lower bound is such a tight constraint. We do have a whole set of new tools. Those aren't optimal tools, I would rather go back to the old fashioned way of adjusting interest rates and not using these new tools for sure but if we are in this situation we are at the zero lower bound again, I think we do have options so we shouldn't -- I don't feel as big an urge to dramatically change the framework with potential costs because of that constraint.

And the final point I just want to make that it hasn't come up as much as I expected despite, David, I think one of your mandates to everyone was to discuss how their policy would function during all stages of the economic cycle. What hit me this morning is most of the discussions focused on this stage of the economic cycle or when inflation is too low and again in the UK we went through that and then very quickly we got another shock and now inflation is too high. Its 3.1 percent. So when the committee, not me anymore, is in the position of having to write to explain why inflation is too high. So I think we have been in a very unusual state of the global economy. We had the global financial crisis, prolonged recovery, Euro crisis and then just as things might have been starting to normalize, we got the commodity shocks that brought headline inflation down around the world. So we are, it's not surprising we are focused on the situation when inflation is too low but we forgot, there is a whole other set of shocks out there that could hit and we need to make sure that if we do make a change any framework is going to function well in that alternate environment also.

MR. WESSEL: Peter.

MR. HOOPER: I stand corrected, Kristin. I certainly inflation expectation are sensitive to oil shocks et cetera, so less so in the larger less open economies and less over longer dated periods but I do think that the key question here is what effect do central bank announcements have on inflation expectations? At least in the G3 have had, the Bank of Japan has certainly had its troubles with that one. And I suspect that a Fed announcement that -- oh we are going to go to 4 percent if, unless inflation had already risen to near that level could be problematic and announcing something when you are well below it and failing to get there could be really devastating to credibility.

MR. WESSEL: John.

MR. TAYLOR: So your question about international I think is very important and for the last few years there has been a tendency for central banks to follow each other. I think it's quite clear. The examples I give is Japan followed the U.S. in quantitative easing because the Yen was too strong and then the Mario Draghi and the ECB follows as well because the Euro was too strong. Both actions changed the currencies dramatically and you can see emerging market countries all over the world worried about exchange rate behavior because of the very unusual policy. So this is a global phenomenon and I think I have a great concern about the exchange rate effects.

Many people feel that we need to have a more rules based international system, that is not a view of a few people. I think the best way to get to a rules based international monetary financial system is for the individual countries to follow that kind of a policy. Inflation targeting, the 2 percent inflation target has effectively become global is what the Europeans talk about, what the British talk about, what the Japanese talk about, of course we are talking about it. If you move away from that I think almost in a clearly if it's from 2 to 4 you can upset that and its obvious currency issues will come to the fore right away.

I also think that even more modest changes of the price level targeting and by the way, my original work on policy rules was price level targeting way back in ancient history if anybody is interested. But we changed that because it had some of the problems that people are referring to now. So I think even a small adjustment like that threatens the problem, the goal I would say of moving towards a more rules based international system. And a lot of people want to do that. I think there is an opportunity for it now. There is more and more evidence coming about the exchange rate volatility, the capital flow volatility that has come from the unusual policies and Europe is talking about moving back, even Japan is talking about moving back and so that seems to be a goal. I don't want to upset that goal by a change in our policy. Very important. Very important for me to white a stick to what we are doing as best we can.

MR. WESSEL: Thank you. I think we will have time for a few questions if anybody has one, any. Peter Doyle here and there is a woman over there. Why don't we start with the woman in the back because the mic comes to you, Peter.

MS. DUROSIS: Sophia Durosis [phonetic 8:23:15] from TL Macro. One question I had is regarding the framework of monetary policy. If going forward there is more of a role for say asset prices than just the credit transmission channel so if the transmission mechanism has changed, how should the framework change? Some of you sort of touched on it with regard to implying that unconventional tools might be here to stay but can you just kind of address maybe how the framework to change if the transmission mechanism has changed.

MR. WESSEL: Okay. Peter Doyle?

MR. DOYLE: The discussion as I hear it has reached a conclusion which is that every single person is advocating either for the status quo or for a change, acknowledges some shortcoming in their proposal. We have nobody is claiming universal benefits for their own proposal. What that situation tells me is that we've pretty much exhausted the possibilities that there are. We now have to choose between, you know, do we think something is more probable or something is less probable? There is no silver bullet.

What that suggests to me is that we need to also devote as much intellectual tension to thinking about an assumption which we all share in this debate which is that the shocks are acts of God. There is a shock and to which we respond. How do we respond, how does that fulfill the area, we need a certain kind of instrument. We have all taken the same assumption which is they are acts of God but they're not acts of God. These are things which are produced by economic systems, by economic policies and I think we should be devoting at least as much attention to thinking about diagnosis of the problems that gives rise to these shocks as we are to devoting our attention to policy frameworks who deal with them when they happen.

MR. WESSEL: Okay, thank you. I think, Peter, you are being a little unfair. There was discussion and in fact disagreement about whether we have to accept that the natural rate of interest had come down or whether we could do something about it which seems to me part of the point you are trying to make. Does anybody want to take the point on either question? Sarah?

MS. BINDER: So I just want to make explicit what's been sort of implicit to you mentioned it, the assumption that unconventional monetary policy is here to stay. All right. That we had the Bernanke and Yellen playbook and we have put it on the shelf and we are going to break the glass and take it out again. I don't, wouldn't make that assumption. I could imagine, first of all we know that parts of it have been tinkered with, right, the 13.3 authority. It's not irreparably harmed but it would be harder to use it in the targeted fashion it was used in 2008 and I guess late 2007. I wouldn't guaranteed that the Fed, that Congress might weigh in on asset purchases, on the size of the balance sheet, on paying interest on excess reserves, right, which wasn't immediately part of the playbook but one could imagine that the set of tools that that had the first time around assuming it's a similar type of crisis might not actually be ready on the shelf or even that there might not be able to take them off the shelf. And just to keep in mind that also probably assumes that there is a massive tarp but I wouldn't necessarily bank on another Wall Street bailout certainly looking like the one that it looked like back in 2008.

MR. WESSEL: John?

MR. TAYLOR: So these two questions I think are somewhat related because there is the shocks are coming from somewhere else and I agree that studying the best way to react to those shocks is a big question and there will be more coming, the asset markets. But what I think is we also have to emphasize and sorry to bring this up but some shocks are caused by monetary policy. I happen to argue that big changes in polices so called great moderation became because those shocks diminished. I have also argued that this terrible tragic great recession we went through had a lot to do with monetary shocks. So those are part of the discussion. That's why we want to have more stable monetary policies and there is various ways to go about it but I agree, don't forget that powerful aspect of monetary policy which can be very damaging if it's not done right.

MR. WESSEL: Kristin, did you want to respond?

MS. FORBES: Hit a couple of reactions. So first question on has the role for asset prices in the transmission mechanisms in monetary policy. I mean, asset prices are front and cetera in central banks model, not because central bankers want to affect the asset market or put equities at a certain level. It's centrally not but more you know that changes in monetary policy are going to affect asset markets and those changes in asset markets will then affect consumer wealth, consumer spending and have real effects on the economy which is what you are driving so that is built in there implicitly. Those transmission mechanisms may have changed but there is also a lot of other things that have changed in the economy. So I had actually been surprised.

For the UK there were some modeling we did of how we weren't sure given that interest rates had been near zero for so long what would be the effect of the first change in a long period of time of course the change down and then the change up. And to at least the best you can estimate with all the usual huge number of caveats is that there hasn't been a huge change in how these transmission mechanisms worked. But having said that there has been a lot of other changes in the economy and this is one, another point that I don't think got enough attention earlier today was we don't know where NAIRU is in many economies around the world. We don't know where our starred is. I was struck, John, when you showed us the graph of our starred you showed a steady downward trend and then it plummets around the time of the global financial crises and then it falls gradually and then you said the main factors driving this are demographics and a couple other things which are largely still moving. I had this argument with someone at the Bank of England once. So if most of the factors are slow moving and, you know, there were a couple other things you unmentioned but if most are slow moving, why was there this drop off a cliff? Why won't some of that come back? I mean, I think we don't know. So there is a lot of uncertainty.

Another uncertainty, John, which you hinted at is more and more monetary policy seems to be working through changes in exchange rates. Especially in many smaller economies or in the Euro area or Japan so that changes how monetary policy is transmitted. So there is a lot of structural changes that have happened. We don't know where things are going to normalize, where things are going to settle so any consideration of changes in the framework are particularly hard given that we, it's hard to know exactly where normal is and what, how things will settle in. So that again makes me cautious making any changes until we are a bit more comfortable with where some of these big structural variables settle until the next shock.

And then the, your comment was you commented that you had heard a lot of suggestions and everything had pros and cons. I challenge you to find any economic policy ever discussed that does not have some pros and cons so I actually thought there was something healthy about the debate, how most people were pretty candid and not just pushing one side of the argument, we really did hear both sides of all the polices and that's what makes economics interesting. There is always costs and benefits and you have to weigh them.

MR. TAYLOR: Just one quick observation on QE. I can't imagine that if the economy is going into a significant recession, jobs are being lost, markets are crashing, Congress can't get its act together with any kind of fiscal support that they wouldn't allow the Fed to use a tool that has proven to be somewhat effective in the past, the QE. So that, I can't see taking that off the table.

MS. FORBES: Mortgage backed securities. Can they buy any asset that they currently have the authority? I don't know but I think it would be at least prudent given the rather pretty tough criticism that came from the far right on the Hill about whether the Fed had strayed or whether it had strayed into credit policy or fiscal policy by buying housing mortgages in essence, right. I was thinking about the future recession knowing past criticism, I would wonder how broad a range of the playbook would be available.

MR. TAYLOR: Well, I think we are, our shop hasn't yet called it officially but we are thinking we could see a recession in 2020 and I can't imagine the current administration sitting on the wayside, by the wayside and allowing conservatives in Congress to call the shots here.

MR. WESSEL: I'm not sure which is more heroic. Predicting the date of the next recession or predicting Congressional reaction to it. For that please join me in thanking this panel.

(Applause)

MR. WESSEL: And then we're going to move to the next segment which is really important because it seems to me that there's a question not only about what we should do, but how we should get there. And it may be that we have something to learn from the Canadian experience. So, I want to introduce John David Murray who was for 32 years at the Bank of Canada -- 32 or 34, John?

MR. MURRAY: Thirty-four.

MR. WESSEL: Thirty-four years at the Bank of Canada. Last four as deputy governor. He retired in -- three years ago and is now an academic and a board member and he's going to talk a little bit about how the Bank of Canada has come to have a much more organized process about reviewing the framework. And then Eric Rosengren the president of the Federal Reserve Bank of Boston, who has been thinking about just that question, is going to respond. So, John.

MR. MURRAY: Is this mic on?

MR. WESSEL: It is.

MR. MURRAY: Thank you. There should be a PowerPoint that accompanies this. Not that one. (Laughter)

SPEAKER: Just click it forward.

MR. MURRAY: Oh, there. You can see what I propose to talk about and for central bankers in the room, this will usually make them apoplectic. (Laughter) Partnering with the government. But I'll explain what I mean, and it relates to David's introduction. The special way that we partner with the government in Canada and perhaps what I'm going to relay is somewhat unique and specific to Canada, but I think you'll find it interesting and beyond that. I also think that there are more general lessons here. So, don't want to over sell it.

The first thing I'd like to say is that, in fact, standing things on their head a little, when inflation targeting came to Canada, it was actually the government that proposed it, not the Bank of Canada. Now, you might say, why did they do that? Three quick reasons come to mind: One of them, the most positive perhaps, is that they thought it was a good idea and they thought the Reserve Bank of New Zealand provided an interesting lead. Some encouragement. So that's number one. Number two, is that the government was in the process of introducing a new goods and services tax, a VAT which was going to boost the headline inflation rate quite significantly and this coincided with a situation where unfortunately, they had to negotiate labor contracts with all most all the units in the federal government. So, we can think of them wanting an inflation target as some kind of assurance. Some kind of buffer to see them through this difficult period. And the third is sort of a preemptive act, that the Bank of Canada had started on a very sort of aggressive, determined, track and was out there talking about the virtues of price stability which I know isn't anything new for a central bank, but this was in a very direct and the term (inaudible), and though no numeric target was given for an end point on this. When asked by a journalist what this might mean, the answer was for inflation: Four is not as good as three. Three is not as good as two. Two is not as good as one and one is not as good as zero. So effectively, don't want to put words in his mouth, we were talking about price stability.

So, you can think about this as a preemptive act on the part of the government so that in their view things didn't go too far. What was the bank's reaction to this proposal? Well, it was mixed. There was the positive; they were very receptive to the idea of inflation target. They were less enthusiastic about the way the government wanted to go about it. They wanted to aim for a relatively high rate, not high by that time, but say 3 percent. And they were thinking of something sort of short term. I'm going to call it a patch through this difficult period. The bank's reaction to this was that it had to be meaningful and it had to be long term. It had to be serious. And in the event, perhaps a little surprising for some, the Bank of Canada's view prevailed. And what we got in the end by way of the very first announcement in 1991, was an inflation target of 3 percent for 1992 going down to 2 percent in 1995, and there was a 1 percent band to either side of these targets. But what's perhaps most interesting, is that this was regarded as only a beginning that after 1995, five years hence, based on experience, this issue would be revisited, but with a strong presumption, a gain that 2 percent was only an interesting start and you were going lower.

The first renewal of the agreement the bank had with the government, in other words, 1995 was to review the experience, but it was related to that thought of in terms of, but one and done, that after five years' experience, surely, we'll have enough information that we'll be able to peg the rate, the optimal level of inflation for us and then that's it. So, this was not seen as the beginning of an ongoing process of renewal. Key aspects of the agreement were this was simply a joint press release by the bank and the government and it came out as part of the government's February 1991 budget.

There is no supporting legislation for this and in deed that's been a part through time. It's public and that extent has some force, but it is agreement between parties. It's a partnership with one admittedly more equal than the other ultimately. The government of Canada for a long time, it's been very clear in the legislation, has the power to issue a directive to the Bank of Canada. If it's unhappy about monetary policy, it can tell them what to do. This came about in 1967 as a result of events that I won't go into. But there are three conditions around that ability: One is that they have to be very specific about what they don't like. Two, they have to be very specific about what they want the bank of Canada to do, and three, it has to be published and there's always been a presumption that if it was ever used, the governor, at the time, would feel compelled to resign. Perhaps, as a result of that, it's never been used. This nuclear option.

What it means is that having that in place is good in two ways in our view. That it does give ultimate responsibility for monetary policy to the government, but it also insures that they can't use it too lightly, and effectively give the Bank of Canada considerable operational independence, instrument independence. I'll speak to this later, hopefully quickly. We actually see the agreement instead of eroding that independence potentially rather enhancing it because once you've got the government to sign on, the scope for them to criticize as long as you're actually doing your job becomes more limited.

So, we see tremendous advantage in this public agreement and as I'll mention in a minute, this renewal process that's developed where it's refreshed every five years. I've talked about the early ambitious regarding ultimate price stability, at the origins of the process -- let's see have I got this right? Just to give you a flavor of where this was headed initially, the first bullet doesn't complete all of it, just lays out specific targets as I described earlier. I think the last two bullets are more interesting for you. Thereafter, that means 1995, the objective would be further reduction in inflation until price stability is achieved.

The last one, based on a lot of work that the Bank of Canada had done in advance is, a good deal of work has already been done for Canada. This work suggests a rate of increase that is clearly below 2 percent and you might ask where did that come from? Well, it came from a lot of research, but the three reasons for having an inflation rate above zero at the time for us, we're not regarded as that material. We had a measurement bias in the CPI, but it was judged to be very low presently probably and then half a percent or less now. That's not a reason to have a 2 percent target. We could find some statistical support for this notion of nominal age frigidity, which would be the second argument, but our work suggests that economically it was not very important or meaningful. And because of the great moderation perhaps we've underestimated the significance of the effective lower bound that was something that we thought if it did occur, surely there would be means to overcome.

So that's where we were coming from at the time. In the event the target was renewed with the government in 1993, I won't go through why instead of '95, and it's since been renewed in 1998, 2001, 2006, 2011, 2016, it's up for renewal 2021. Was referred to earlier, despite all these renewals, there's been no material change. The 2 percent has been maintained at the midpoint and the language around it is quietly changed. Instead of talking about price stability so often, we talk about low, stable, and predictable inflation as being the good thing. One of the reasons, and it's perhaps the reason the 2 percent target hasn't changed, is that the economy seemed to perform so well, better than expected under the 2 percent inflation target. So that set a rather high bar for doing anything adventurous especially you'll note the date for some of these renewals coincided with episodes in which the economy the situation was particularly uncertain 2001 right after the tech bubble. 2011 well into the follow from the great recession. But just to give you a flavor for how much things changed on the inflation front, looking good.

We actually did so well, that the IMF and others accused us of covertly price level targeting and you can see why looking at this graph that might be a reasonable suspicion. The blackline shows you a hypothetical price level that has allowed to grow at 2 percent a year and up until about 2012, 2014 even, we're doing a remarkably good job. This came as a surprise to us. (Laughing) No, not the good part. Not the good performance. We knew we were doing a great job, but when the IMF pointed this out and accused of covertly price level targeting, which is itself a little odd because the major benefit of price level targeting is to advertise it, so you can condition (laughing) expectations. As we reflected on it, two things, people have referred to luck earlier and perhaps a sequence of shocks that happened to be offsetting or symmetric more or less. But another thing that's been mentioned and we learned to appreciate its importance even more is our reaction function, which like many central banks put a large weight on interest rates moving and if you think about that, that already introduces quite a bit of history dependence and you are inflation averaging unwittingly. You might as well take credit for it.

Quickly, the advantages of a regular renewal process: You may say, what's the point if you don't change anything? But there's a lot going on underneath is what I'll maintain. The first, that we believe this is a critical part of our accountability. That this is a critical element of our fiduciary responsibility to Canadians to ensure on a regular basis that we are working under the best possible framework for them. Second, it's a way of diffusing potential problems, and by that, I mean if this is a once in a lifetime event, "Oh, they're going to renew the target and things might change," there's a lot of excitement around it. But if there is a regularity to it this is business as usually, you diffuse a lot of that. We're just taking care of business for you.

Next it promotes -- oh wait -- deliberate and transparent mechanism to engage stakeholders in the feedback. This is terribly important, the transparency part in particular. When the Bank of Canada renews the agreement with the government, this isn't the product of some sort of secret discussions between the two, this is something that is initiated quite early on and the Bank of Canada is very careful to lay out the issues it proposes to address. The changes that it might consider and to invite feedback from the public, from the government, of course, from academics and it's the beginning of a sequence of often conferences as part of this process. So, the transparency to our mind is important in terms of credibility and buy in. And that's a way of promoting public awareness and understanding. It's a driver. Kristen mentioned this, a driver for more focused research effort within the bank and something new has actually been learned on every occasion.

It's not as though we find it hasn't deepening our understanding of the economy or the monetary policy process. Nothing has changed, but things are going on underneath. Possible disadvantages -- some have argued that by renewing every five years, perhaps you're not going to anchor expectations. If the market thinks every five years there's a possibility you're going to change, inflation expectations might not be well anchored. I'll show you some counter evidence in a minute. There's increase scope for unhelpful interference and this has been the topic of Sarah, a lot of people today. And that's true, there's a risk. Could say waste of time and energy. I mean, if nothing really changes in the end, what's the point?

And then you can relate it to that trying the public's patient sort of announcement fatigue, "Oh, we're going to renew, we're going to renew. Oh, 2 percent. Did I mention that?" (Laughter) Counter arguments -- there's absolutely no from Canada, very little, of fragile or unanchored inflation expectations as a result of this. It's actually a mechanism for enhancing the central banks' independence we would maintain, and it's important confirmation of the framework's soundness. Even if nothing changes, the fact that you are confirming that in your view, we are where we should be is important. Inflation expectations that's just to show you that this is based on two and three-year inflation expectations. You always get a little movement, but they're remarkably stable for that term, one to three years. I'm near the end.

Quickly, what are some of the issues the Bank of Canada's examined in the last 27 years? I divide them in two categories, fundamental and then sort of housekeeping or operational. The fundamental ones, which we've always looked at, should the inflation target be lowered? That occupied everything right through to the 2011 agreement. It's only in 2016 that the question was turned and should we raise the inflation target? In the end we didn't. And I can explain why. Maybe I'll do it now, very quickly.

There'd been this predisposition towards lower is better staring at the beginning. And this had sort of receded a little, but there had always been a sense that lower inflation something close to price stability would be better. And price level targeting held a lot of attraction for some of us as a way of achieving a lower inflation rate while dealing with the effect of lower bound. If price level targeting works, it actually reduces the swings in inflation, in output, in interest rates. You need much less by way of interest rate movement to stabilize the real economy and inflation.

The key is communications and credibility. People have to know what you want to do and believe you're going to do it and that could be a big if. Would price level targeting be better? And again, as I mentioned a lot of us thought, oh, that's kind of good, interesting. How much recognition to give to financial stability consideration, i.e., leaning? Do you want to modify your reaction function in a way and give that recognition your framework? We asked that as part of the 2016 thing and the answer was, probably not much.

That we'd already gone on record in 2006 speaking about leaning and its potential advantages. We refreshed that in 2011 and addressed it again in 2016. 2016 we actually stepped back a little, where as in 2011, we said, "Oh, it could be a fourth line of defense," that if supervisors and regulators weren't doing their job, that's too bad. If macro credential tools didn't appear to work, if investors weren't being provident enough, shame on them, or institutions as a fourth line of defense, if you really had to, you might lean. But by the time we got to 2016, we'd been influenced by the work of Lars Spencino that shows there actually might be a negative benefit to leaning if you do more damage than good. The bank didn't quite run away from that in their latest renewal, but it was sort of easing back.

Operational housekeeping matters, CPI, the best index still that's the one we do target and we favor that for a number of reasons. Best measure of core inflation, that's changed a little through time. How important is measurement bias? And we confirm every time that it isn't something bigger indeed as some changes that have been made by Statistics Canada, it's a little smaller. It wasn't big to start with and it's smaller now.

Looking ahead, this is my last slide, next renewal set for 2021, Bank of Canada already mapping out a research agenda for the next five years. The final questions have not been determined yet or else they'd be advertised, but they intend to take a broader sweep this time. Instead of just looking at the objectives or the framework per se, but to also look at tools in more detail and communication. Old issues will almost certainly be revisited, other new initiatives will no doubt be added here in terms of the fundamental issues while we've done a lot -- I've retired I shouldn't say we --well, the Bank of Canada has done a lot of work on lowering inflation it's advantages are cost price level targeting. While we talked about it and did some work, we didn't talk about nominal GDP targeting and I think that is going to be revisited in level form as opposed to growth rate. I can't be sure. This isn't based on information -- or inflation averaging where instead of -- we already inflation average, we just happened to pick a 12-month period for that. What it did two years or three years or like Australia, over the cycle and as I mentioned earlier, we already do it, kind of with our interest rates moving and the reaction function.

So that's some of what will be looked at. But the main take away I want to give you is that the Bank of Canada really values this renewal process and it doesn't become sort of a dog fight between the central bank and the government. Maybe that's a usual situation. Now, you may argue -- oh, I'm almost --

MR. WESSEL: That's fine.

MR. MURRAY: -- you may argue that you can't take much comfort from that because we've never proposed a major change, why would the government, sort of be nasty or push back? And that's fair argument, but turning it on its head a little, I can say from my experience, I am not aware of the government ever pushing us to do something or to change something. Like wouldn't a little higher inflation be nice for everyone? So, the fact that that question was raised in 2016 and examined, isn't at the behest of the government or anything, you know, take it easy, no. That very much the bank has been carrying the load on the proposals, the proposal changes, and the research, bringing the government in the end. It is a partnership and obviously, they have final, final say to a degree, but there's a lot that's been going on and I'll end with this. What did I mean by a lot going on underneath? Although we didn't change anything major.

You can see where we started. There was a strong presumption that we were going lower. We had research to support it. Two percent was nowhere near price stability and price stability would be of tremendous benefit to the economy because measurement errors is a problem, nominal (inaudible) wages doesn't matter. The effect of lower bound doesn't matter. The first two, really haven't changed materially. The third one clearly based on experience, has gained more importance, but where I think we come out in the end is that the painful experience -- I shouldn't call it painful -- the experience with the great recession, unconventional monetary policy, which we still believe works effectively, you just have to try harder, sort of gave us a slight -- a different view on the importance of the effective lower bound. But I think the Bank of Canada jut reached a point where it made it happier about 2 percent as opposed to revising its view about how high it needed to go. Feel the unconventional tools are effective. The feel that fiscal policy could play more a partnering role in desperate situations hopefully so you're not on your own, it doesn't become a headwind instead of a tailwind for. Just a number of things and also this view, this judgment that it's a little early to call a big change in the neutral rate.

And I like the point that was made based on John William's graph that sure it's been going down, people are in the habit of saying, "Oh, it's been going down for 25, 30 years." Maybe a little because of demographic things, but it didn't fall off a cliff because of those and to sort of take that as your base now, oh, it's a random walk from there, I don't know. That seems a little presumptive. So anyway, I'll stop.

SPEAKER: Thank you Mr. Murray.

MR. WESSEL: So now we're going to turn to Eric Rosengren who I'm sure will say something that was said earlier at a lunch we had that maybe all that's different is the Canadians are nicer, so they can do this. (Laughter)

MR. ROSENGREN: Thank you very much. So, let me just put John's very nice presentation in the context of this conference. So, this conference started by Larry Summers talking about the fact that very low interest rates for a long time were both quite likely and quite costly. The second panel then talked about what are the possible solutions? Giving a number of different frameworks that would make that less likely or less costly.

MR. ROSENGREN: The third panel put together a group of stakeholders and talked about, more broadly, how the various stakeholders should care out this issue. And this final panel is really to talk about process. And so, I am going to talk about process in this panel rather than necessarily go into details about the various proposals that have already been discussed. So, we heard what Bank of Canada did and I think it was a very clear presentation, so thank you very much for that, John. And I want to put it in the context of how applicable is this to the United States. There are a lot of differences between the United States and Canada and we'll -- I'll start with, we start with a very different framework.

So, we do have a dual mandate. So, it's maximum sustainable employment and stable prices. We've explicitly defined the price part of that to be a 2 percent piece, total PCE inflation. The maximum employment, we didn't provide a numerical target because it was viewed that the natural rate moved around. And finally, how do we deal with the fact that when we're missing on both of those two elements of the mandate? Well, we take a balanced approach and Don Cone was the one who highlighted that we don't talk enough about this, and I agree that the balanced approach, I think, actually is quite important that we give equal wakes to deviations from both targets and that's how we're -- this is the operating procedure we should be using.

Each January, the committee reaffirms the framework and so we have the potential every January to make changes. To date, those have been relatively modest; they've been, at least in terms of the overall framework, it's been pretty consistent over time. The main change was to emphasize the fact that we have a symmetric inflation target. There's no mechanism equivalent to what the Bank of Canada does in terms of a five-year review; particularly in the context of having much broader public discussion. So, we do have a private discussion at these January meetings. It's a relatively small part of the overall part of the meeting; we certainly don't have an entire research agenda over a five-year period and we don't have the extensive public comment that the Bank of Canada goes through.

So first, the Congressional mandate that we have hasn't changed. So why should we think about a framework that changes when out dual mandate doesn't? And I think there are a couple reasons for why we should think about that. We started with an inflation target around 2 percent because it was viewed that it was probably likely to be in the neighborhood of optimal and there was a lot of work done both in the United States and abroad and most central banks have picked a target that's very close to 2 percent. I would say that that research was broadly done at a time where we didn't think we were going to hit the zero lower bound very often and we didn't think it was going to be very hard to get off that zero lower bound. So, what's new about thinking about it at this juncture is that we have been through this period of extended low interest rates, not only in the United States, but in Europe and in Japan as well.

We also have different characteristics now then what we were having going into the great recession. We have very slow productivity growth. We have very slow population growth, aging demographics. All those would tell us that it's quite likely that we're going to have relatively low real interest rates as long as those conditions hold. So, in fact, what we've -- in our initial framework kind of thought about inflation being constant with -- at 2 percent. You could argue that the optimal rate of inflation, if you think you're going to hit the lower bound depending on what's happening with population, demographics and productivity. That the optimal level of inflation shouldn't necessary be constant; it should actually be moving around so it's not just the employment part of the mandate that might change over time, it may be that the inflation part of the mandate would change over time.

The second reason for thinking about it at this juncture is that we've fallen short of our inflation target, so, we've been -- almost every major developed country around the world has missed on their inflation target through much of the last 10 years. Under shooting inflation has occurred, not because we haven't tried to get inflation back up to 2 percent; there've been very aggressive actions taken both in the United States and at major central banks around the world to try to alter that. We've had quantitative easing, we've used a number of other tools that we hadn't historically used. So, despite those best efforts, we haven't been able to hit the 2 percent inflation target. I would say, like John, that I do expect over the next couple of years we will, but nonetheless, we do have this period of missing for quite an extended period of time.

The third factor we have to think about is fiscal policy. So, fiscal policy, the rising debt to GDP, gives us less of a buffer in fiscal policy just like we might have less of a buffer on monetary policy. So, the potency of non-traditional monetary policy, I think we've heard different opinions in different panels today. So, there's disagreement about exactly how effective these non-traditional policies are. But I think what's clear is that we certainly didn't get back to full employment in 2 percent inflation target as quickly as some people had hoped. And the trade-offs between the goals and the optimal level of the goals may be different over time so maybe the F1C should be talking about that in a more concrete way.

So, Bank of Canada has periodic assessment and I do think that a federal reserve led assessment that thinks about getting a variety of sources to provide us input actually does make a lot of sense. I think it is opportunity to actually think about whether economic fundamentals have changed in a significant way. Equilibrium interest rate is the one that most of the speakers today have highlighted. But we should think about what are the best ways to make sure that we're satisfying the congressional mandate and if economic fundamentals are changing then we should be factoring that in to say are we really meeting the mandate with the framework that optimally tries to address the guidance that Congress has given us. So, it would be good to have a more standard way to think about whether the framework should change over time. The Bank of Canada experience highlights that you don't have to change it very often. And in fact they've made very few changes. But, thinking periodically about the costs and benefits including the cost of transitioning, which Chairman Bernanke did talk about quite a bit. And also, then, what are the longer run implications and longer run implications would include how likely is it that we'd be hitting the zero lower bound for extended periods of time.

So what would we reassess? Well, I think it's basically the second panel. There were a number of different proposals that were laid out, so having a more concrete discussion including getting input from people outside the Federal Reserve as well as people inside the Federal Reserve. We could think about whether the optimal inflation rate does change over time. And actually, I would argue that we should be thinking more in terms of an inflation range rather than a fixed inflation target. I'm not going to go to any length today because I don't have time, but I will talk about it later this week. But I think there are other ways to think about having a little more flexibility than what we currently have with our inflation target.

The process should reflect the unique Central Bank features. So one of those features is obviously the political economy; that was the topic of the previous panel or at least part of the previous panel. And I do think the politics are a little bit different in the United States than they are in Canada. Canada has a parliamentary system, we have a checks and balances system. That may mean that some of the lessons from Canada may not translate perfectly. We need to focus on structural changes that could reduce the efficacy of the feds policy framework. But I really think it is important that this doesn't become a partisan exercise. So this should be viewed as a technical exercise. How we best enforce the mandate Congress has given us, not a question of whether we're re-evaluating the congressionally given mandate.

While any kind of significant change should involve consultation with Congress and when we were thinking about the 2 percent inflation target, there was consultation with Congress at that time as well. So, any change in our framework, I think, does require not only a broad discussion, but also a discussion with congress to make it clear that this is what we're thinking of doing. My own personal preference would be to conduct a full review like the Bank of Canada. I don't know whether five years is optimal, so I think we should give a little thought to having a certain frequency in which you have this discussion. However, I think it's also probably useful to have the possibility to call for an earlier review if you picked longer periods of time.

We certainly have learned things from the great recession, thinking that we would come up with the exact same policy now that we would have in 2006; given all the things that have transpired over the last decade, tells me that there are maybe times where you think that you should actually have more of a reflection and that may not actually fit in particularly well with a five-year timeframe or longer timeframe if that's what you picked. However, clearly I think it's an approach that there are a variety of permutations so the F1C could consider. But, I think the basic idea of a structured discussion where there's governance around that you have to actually have to address these issues actually is an attribute that I think has quite a bit of value.

So, my concluding observations, the Bank of Canada has a process and as I've gotten older, I've gotten a better appreciation for the fact that having these kinds of processes and governance actually does matter. It does give you an opportunity to have discussions that you might not have otherwise. It also is a good way of communicating with the public more broadly about what you're doing, why you're doing it? And, also having a clear communication with Congress about what you're doing and why you're doing it. So I think those are incredibly important aspects of central banking. In my own view, the cost of hitting the effective lower bound for a prolonged period should cause us to at least have a reassessment and at least think about what the implications of that are. We might, like the Bank of Canada, choose not to do anything, but we certainly should be having those discussions.

The great recession was a big enough event that we certainly should have a period where we reassess and say, "How do we make sure that we don't have those kinds of events? We certainly did it on supervisory policy; there's no reason not to reflect back and ask, on monetary policy, is there anything we should think about differently. So having a process that can fully and more transparently examine the monetary policy framework, I think, would be a process improvement. So, I thank John for his discussion because I think there's a lot of positive attributes. I think we probably would have to think about how that fit into the U.S. framework, both politically and monetary policy framework. But I think that, nonetheless, as an instructive lesson that we should give some thought to. Thank you very much.

MR. WESSEL: Thank you very much. I'm just going to ask a couple of questions and let the audience weigh in. John, can you just explain a little bit how does this work in practice? Does the Bank of Canada come up with and publicize the research questions and run them by the government or how does that get started and then what happens over the five year period?

MR. MURRAY: That's a good question, David. I tried to give some flavor for that in my presentation. I think we -- it's the Bank of Canada that does the running, does the proposal and any, for questions to be asked, changes that might be reasonable. We do give the government a little heads up before we come up with our list just so they'll know. But there's nothing terribly surprising about that list that it'd be hard for the government to say, no, we don't want you to think about any of these things. They might resist, of course, of us doing it, but that's different than researching it, asking the questions; trying to do the best thing possible.

What has happened through time is, I guess what we thought of initially was a one off, you know, one and done, and then we know forever quotes; what the rate should be. That actually continued for two or three renewals where we always thought, oh, the next one is going to tell us then another five years' experience helping us test the waters, see what's happening, then we'll know. But I'd say by about 2001 anyway we -- well, views changed on some things, but recognition was given at that point to, hey, there may be some benefit to this repeated exercise and since then it's something that we take quite seriously and it's something that we map out quite carefully as I've indicated. It's not that we've spend the whole five years looking at nothing but the inflation target renewal, but it provides a road map for our research and other people who we hope will join us --

SPEAKER: You bring outside (inaudible).

MR. MURRAY: Yeah, exactly, exactly.

SPEAKER: And the questions are made public at the beginning of the (inaudible).

MR. MURRAY: Oh, yeah, yeah.

MR. WESSEL: And the discussions and papers and all are public?

MR. MURRAY: Yeah, there is a website that's set up.

MR. WESSEL: And does anybody pay attention? I mean, did the market (laughter) -- I didn't mean that, usually I mean what I say, but in this case I didn't. I mean, do you get a lot of attention in the press and from the markets or is it -- is it like Jackson Hole or --?

MR. MURRAY: No, it's not like Jackson Hole or Canada, but (laughter) we do have good economic reporters in Canada; a set of them. Admittedly, not very large, but they watch what we do, what we say very carefully. The market is aware and follows that and I think as Ben suggested, the public at large probably don't live and breathe inflation targeting and if it should be changed, but the chattering classes, the opinion setters, I think, do watch and it matters.

MR. WESSEL: Eric, I want to ask you two questions. One is, so is there some institutional inertia that prevents the Fed from doing what the Bank of Canada does or is it a fear of what the markets might say or is it just maybe the time wasn't right, but now it is? What's your sense?

MR. ROSENGREN: There's nothing that prevents us from doing it so any one of those January meetings could actually be doing exactly what the Bank of Canada does so there's nothing institutionally that prevents us from doing it. I do think when you don't have a regularized process, there's a lot of inertia in any bureaucracy and I don't think the central bank's any different than any other governmental or any many business organizations that this is a process that actually is forcing a discussion and it hasn't been our tradition and it didn't start out as a tradition at the Bank of Canada; either it doesn't sound like. So I think it's more -- you're certainly in the middle of the crisis had been highlighted would be a difficult time to be talking about completely changing your framework.

There's so many other things that you're worried about and it would be very difficult to communicate to the public more broadly about why you're doing it in the middle of a crisis. But, I do think that once you're out of the crisis you'll have a little more perspective; it's a little bit easier to have that discussion. I think the idea that when you're close to full employment and you're close to your 2 percent inflation target isn't a bad time to be reflecting. So I think one reason for you having this conference is we've had enough time to develop to say that maybe we need to think about monetary policy and fiscal policy buffers in a little more coherent fashion. So, I think there is an opportunity to do it if there is a willingness among the F1C to do so.

MR. WESSEL: And then I promise to read your speech later in the week, but I just want to understand what you are talking about. You're suggesting then that instead of saying we have a 2 percent inflation target, we have a range say of, I don't know, one to three or one-and-a-half or two-and-a-half. How does that make things better? Is that just like you can decide we want to be a little higher or a little lower or what?

MR. ROSENGREN: So, if you -- let's say you took an inflation range of one-and-a-half to 3 percent. You're in a period of very high productivity and a lot of population growth, then you probably don't have to worry about hitting the zero lower bound as much and you'd be lower in that range. If you're in a period where the labor force is growing very slowly and productivity is very weak, so you worried about hitting the zero lower bound much more, it's much more likely in the next procession and you might choose to be higher during in that inflation range. So that it gives you a little more flexibility to say, the optimal inflation rate isn't fixed over time.

If you picked a range from one-and-a-half to 3 percent, it actually isn't going to be, it's not like picking a four or five percent, which is the numbers that some people have picked. So, I think if you think that the population growth and immigration and productivity are going to stay constant, you wouldn't make any changes. But if you're in a world where those things actually can change and sometimes do change, then saying that having the exact same inflation rate, regardless of what's happening with productivity, regardless of what's happening with population growth, regardless of what's happening to immigration, there is enough fixing of the inflation rate that you're going to get a sub-optimal result. So having a little more wiggle room to actually think about what the optimal inflation rate is for that time, without having it so wide, that you have to worry about it's different than the price instability.

MR. WESSEL: And, I won't play with this, but would you then disclose that we're think we're kind of headed towards the high end or low end? Is that an objective?

MR. ROSENGREN: So, we're still following a dual mandate, but we have a range that says we're going to factor in a little bit more about what is the likelihood we hit the zero lower bound and so there is a cost. If we hit the zero lower bound frequently and very hard like Larry Summers did discuss and I do think we're in an environment right now where we're likely to have fairly low interest rates. And so, I think there are -- we haven't talked a lot about what the costs are, Larry gave some numbers. But I do think that monetary policy effectiveness at the zero lower bound is not nearly as, we're not -- we can't get out of that situation as easily as we have thought. In fact, the fact that neither Europe nor Japan have gotten out of that situation yet indicates how difficult it can actually be.

So I think we have to take that and think a little bit about what does it mean if once you hit the zero lower bound, you may be there for a prolonged period. And what does a long period of very low interest rates mean? Their incremental quality issues, their difference between savers and investors, there are lots of things that you have to think about in terms of financial stability if you have long periods of very low interest rates. So I think factoring those in should give you a little bit more flexibility in your monetary policy framework than what we currently have.

MR. WESSEL: Thank you. Peter Hooper? Would you wait for mic because for the benefit of --

MR. HOOPER: Whereas, the Bank of Canada's review is with the Ministry of Finance, I presume in the U.S. case it would be with Congress; one question.

The other question is for both panelists. What are the significant costs of inflation at 3 percent versus one-and-a-half or 2 percent? Any --

MR. MURRAY: Well, I won't be very original; sort of repeating some of the arguments that we and others laid out early on, but -- so it just relates to equity, being fair to people and not having arbitrary re-distributions of income and you know that a large part of the inflation is regressive that those laid stabled to protect themselves; often the poorest, have a more difficult time than those that can accommodate it more easily. And some of it, a lot of it is efficiency arguments that while there isn't a big difference, admittedly, between two and three or two and four. But in terms of what it does to inflation, I'm certainly looking ahead. It's enormous. A lot of people don't realize that even with 2 percent inflation, price levels doubled every 35 years. And for many people, that kind of corresponds to their retirement period. So, you've got more uncertainty about the economic environment, whereas, something closer to price stability provides more certainty. It contributes at the margin better decision making, better planning than you'd have otherwise. So it's sort of this equity efficiency, surely things would work better on notion.

I don't know if that answers the question. I think that's where a lot of, some of us would still be. There are offsets to that and those were mentioned; the bias and the measure, the nominal wage security that might occur hitting the effective lower bound, but --

MR. WESSEL: So, Eric, did you have in mind that there'd be a dual --

MR. ROSENGREN: Yeah.

MR. WESSEL: Yeah, please.

MR. ROSENGREN: So the in a range of one-and-a-half, in a range of one-and-a-half to 3 percent, I don't think most people are going to notice so we've been undershooting for most of the last five years. If we'd exactly hit 2 percent, do I think the world would be dramatically different? Probably not. So I wouldn't want to pick a range that's much higher, but I do think that in that range it would be hard to argue that there'd be big differences between a one-and-a-half, two and two-and-a-half. Where I would worry is; what is the likelihood I would hit the lower bound, may be very different at one-and-a-half than it is at two or two-and-a-half depending on what else is happening in the world, so if I'm in a world where the labor force is growing slowly and we have very low productivity and I'm picking a number of one-and-a-half. Well, as Larry said, you're going to now have an interest rate that's going to be not high enough that the next time you have a recession; you're almost certainly going to hit the zero lower bound. So thinking about if frequently we have to drop interest rates by 400 or 500 basis points, but we don't have enough inflation plus the real interest rate to get to that level before the next recession hits, I think there is an issue about how frequently you want to be in that situation.

MR. WESSEL: And did you anticipate a role for Congress in this Canadian style review?

MR. ROSENGREN: So I wouldn't argue necessarily for exactly the Canadian style review, but I do think the Federal Reserve could have a broader discussion about our framework and why we think the current framework is the appropriate framework. And I think as part of that there should be public questions that would be shared publicly, including with Congress. And that if we were to decide the framework, there would have to be consultations with the various banking committees to talk about we've had this intense of discussion, we've done a lot of studies and this is why our interpretation of the dual mandate is that we're not following it optimally with the current framework.

MR. WESSEL: Thank you. Christian Deveaux.

MR. DEVEAUX: Thank you. So, I do very much agree that a careful thorough framework review inside the Fed would be a good thing at this point, but I think it also comes out from the statistic discussion, how different the political economy context is and the government's context. And there are clearly some risks involved in a higher profile, more open, more politically engaged process here that may not exist in Canada or at least not to the same degree. So, I just wanted to press, particularly, Eric. What is it that we cannot achieve by simply interpreting the existing symmetric target more aggressively?

MR. ROSENGREN: So let me start with -- I think there are costs to having a review and there are risks that instead of being a technical discussion it becomes a part of some political discussion. Seems like Bank of Canada gives us an example that, that doesn't necessarily have to happen. And I do think that there are also our costs to having the wrong framework and those costs are the ones that Larry Summers and others this afternoon discussed. So I think there are other ways that you can broaden it out. So, just for example, the example of taking an average over a longer period of time has some attributes of that. But it do think that it does help to actually talk about it in a public way; communicate it clearly. And whatever your framework is, it's going to make a difference for policy. So, if I'm picking a five-year average or a one-year average or only looking forward, I'm going to have a different policy prescription. So, when I'm thinking about my monetary policy and what interest rates are optimal, it's within the framework that we adopt it in January.

So, if we had a price level target right now, I would not be recommending the same monetary policy prescription as the current framework that we have. So, to the earlier question that Christian was talking about, frameworks make a big difference because our policy path would be different depending on which framework we picked. And so, how much risk you're willing to take for inflation being above 2 percent or being above 2 percent for an extended period of time would depend on which of the various frameworks you thought was the appropriate framework. So, I think it is important to have a lot of agreement, not only on the committee, but more broadly with Congress and the public more generally about what the framework should be and then it's our responsibility to follow that framework even if it's not the framework that I personally would pick.

MR. WESSEL: So, one of the measures of a conference like this is that, I've learned that since coming to Brookings that afterwards people ask you, so what did you learn? And usually I have to think about this for a while afterwards to decide, but I think one of the things I've learned today is that there are moments at which asking questions like this feel really appropriate and this certainly seems to be such an appropriate moments. So, I want to thank all the large number of people who participated today and as I said, we hope to synthesize this because I have a feeling that as Ben Bernanke suggested earlier that this is a conversation that will be ongoing and probably with increasing volume over the next year-and-a-half or so.

Secondly, I'd like to thank the Hutchins Center staff, Kerry Grannis, Anna Dawson, Haowen Chen, Sage Belz, Vivien Lee and Mike Ng for helping us put this together. Mike did very nice explainer about some of these issues which are on our website. And finally, I want to thank all of you, particularly the people who sat here for over four hours to talk about monetary frameworks. You're my heroes.

(Applause)

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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)

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