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 Bundis Bank 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. Horizonal 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 apployment 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 affects 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 Romer's 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.