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

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

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

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

Second proposition: Recessions will come. What is the likelihood of recession? My reading suggests that the best thinking is that recoveries, unlike people, do not die of old age. That the probability of recession, once one is significantly advanced into a recovery, is essentially independent of the length of the recovery. And that that probability, depending upon just how far back one looks, is something in the neighborhood of 15 to 20 percent on an annual basis. That's a historical reading looking

back through 50-odd years of U.S business cycle history. Is it the right view going forward? You can make a case that it's an understatement of the risks going forward. That case would emphasize that normal growth is now 2 percent rather than 3.5 percent, and so you have to slip less far to fall into recession. It would emphasize a higher degree of geopolitical risk now than in the past. It would emphasize that we have a more financialized, more levered economy with higher ratios of wealth to income that's, therefore, more at risk of financial disturbance. A case for more optimism would -- that the past probability is an overestimate, would emphasize lower inflation, and less risk of inflation getting out of control forcing the Fed to hit the brakes hard. It would emphasize smaller inventory cycles in a less tangible and physical economy. I'm not compelled that one of those sets of considerations is far more important than the other. So, I think 15 percent annually is a reasonable estimate of the probability of a downturn.

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

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

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

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

With respect to quantitative easing, I would note that there's less room now than there was previously, that it is far from clear in retrospect that it is as effective, once periods of major illiquidity are removed, as is often supposed. As Ben has acknowledged, it doesn't really work in theory. And I

think the evidence now is much less clear than it once appeared, that it works in practice, especially in light of the awkward fact, which most discussions of QE pass over, that the quantity of U.S. public debt that markets have to absorb has increased rather than decreased during the QE period given the activities of the Treasury and given the further observation that the swap spread is negative, somewhat inconsistent with the suggestion that there's an induced short supply of Treasury debt. So, I am completely unconvinced that QE can be our salvation next time round.

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

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

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

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

Thank you very much.

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

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

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

that assume continued expansion with the claim of being symmetric about the 2 percent inflation mandated.

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

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

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

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

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

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

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

MR. SUMMER: All questions to the forum, am I at all concerned? The answer is yes. I do not share your reading of the 1980s, for example, when inflation was in the 3 to 4 percent range, and seemed to me to remain in control. Furthermore, I think that there is a natural corrective in the form of intermittent recessions which would tend to bring inflation down. I could conceive that this would become a problem, but I guess as more and more time passes I come to see the 1970s more as the world's first

experiment with pure fiat money from which it learned painful lessons, and less as a prototypical event that characterizes what's going to take place going forward. So, I don't have that as a concern at the level of the trillion dollars a decade, at least, that I think we're putting at risk from this brittleness problem.

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

On the question of neutral real rate, look, my view is that the neutral real rate is being shaped by some very profound structural things that I would call the demassification of the economy. Law firms used to need 1200 square feet of space per lawyer, now they need 600 square feet of space per lawyer. Nobody wants malls anymore because there's eShopping. Start-ups used to require \$5 million dollars of capital, now they require \$500,000 of capital. Our canonical technology companies Apple and Google, have as their central business problem, what to do with all of their cash and how to disperse all their cash. An environment of that kind, it seems to me, is an environment that's going to have structurally low real interest rates. And, you know, look, here's a basic problem: How do you extrapolate the time series 3-2-1? Like one answer is you extrapolate it to zero. Another answer is you extrapolate it to 1 because stuff is a random walk. Another answer is you extrapolate it to 2 because stuff mean reverts. And another answer is you extrapolate it to 3 because stuff mean reverts sort of fast. And it's very hard to know what the answer is. But I look at the downwards trend in almost any proxy for the real interest rate in almost any country over 25 years, and I'm at least as worried that the neutral real rate

is going to fall as I am of the belief that it is going to rise. And I think you have to take the fact that if you look at the index bond market it is telling you that in neither the United States nor Europe nor Japan is there an expectation that the two percent inflation target will be attained over a decade as suggesting that there is substantial doubt about the capacity of policy to generate adequate stimulus. And so, it seems to me that, if anything, the Kiley-Roberts assumption of a 1 percent neutral real rate is way too high as a certainty equivalent estimate of A) what the real rate actually is, and B) how you should calculate it, recognizing that if you're too high that's a really serious problem and if you're too low that's a much less serious problem.

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