Transcript of speech and Q&A by Vice Chairman Fischer on U.S. monetary policy from an international perspective

At the 20th Annual Conference of the Central Bank of Chile, Santiago, Chile (via videoconference)
November 11, 2016

RODRIGO VERGARA. As you all know, the keynote speaker of this conference is Stan Fischer. Unfortunately, Stan could not be here with us in person, so he will give his speech by video conference. Stan Fischer needs no introduction but let me just refer briefly to his outstanding professional career. He's currently Vice Chairman of the Board of Governors of the Federal Reserve System. Before that, he was Governor of the Bank of Israel. Previously, First Deputy Managing Director of the IMF and early on chief economist of the World Bank. Of course, he also has a very distinguished academic career, has published many articles on a wide variety of economic issues. He's been professor of economics at MIT for many years.

I want to say that I met Stan for the first time many, many years ago when Vittorio Corbo, who is here in this room, and I invited him for a conference at the Catholic University of Chile. And from then on, I've had the privilege of interacting with him in different capacities being the last as central bankers. I would also like to mention the great honor that was for me to speak some years ago at his Farewell Conference at the Bank of Israel.

So Stan will speak for about 30 minutes and after that we--after that, there will be 20 minutes for a Q&A session. Stan, it's a great privilege to have here with us. The floor is yours.

VICE CHAIRMAN FISCHER. Thanks very much, Rodrigo, and it's a great privilege for me to speak to you today about how U.S. monetary policy affects the global economy and how foreign economic events affect U.S. monetary policy. I would of course have preferred to be in Santiago and speaking to you and with you in person, but unfortunately I could not arrange that. I would like to congratulate Rodrigo Vergara on his successful, if challenging governorship and to wish him further success as he moves on to whatever challenges he takes up after leaving the Banco Central. Thank you, Rodrigo, for all that you have done as Governor of the Central Bank of Chile, and thank you in particular for the visits you paid to us when I was governor of the Bank of Israel, and the Israeli Republic was able to see you and to see the measured ways in which you talk in person at that time.

Let me turn now today topic of this lecture. Given the importance of the United States in international trade and in the global financial system, the monetary policy actions of the Fed influenced the global economy through a wide range of trade and financial channels. As I will discuss, each foreign economy may be affected differently by U.S. monetary policy actions and each may view spillovers from U.S. monetary policy as desirable or undesirable. Even so, I'm reasonably confident that the spillovers from ongoing U.S. monetary policy normalization will generally prove manageable for foreign economies.

While most of my discussion will focus on monetary policy spillovers from United States, I will begin by underscoring a different aspect of the interconnectedness of the U.S. economy--namely, how foreign developments have an important influence on U.S. output and inflation, and hence on the conduct of U.S. monetary policy.

Well, how do foreign developments influence U.S. monetary policy? The U.S. economy is affected significantly by foreign developments through both trade and financial channels. Given that about one-eighth of the goods and services produced in the United States are exported, a sizable component of U.S. aggregate demand depends on foreign consumption and investment decisions, and hence ultimately on the economic health of foreign economies. The high degree of interconnectedness between domestic and foreign financial intermediaries--banks, the nonbank financial sector, and insurers, among others--means that developments in foreign financial markets tend to reverberate quickly back to the United States, including through changes in asset prices and risk tolerance. The pronounced tightening of U.S. financial conditions during the euro-area sovereign debt crisis that occurred from 2011 to 2012 illustrated the strength of these financial ties.

During the past couple of years, foreign developments have at times been a substantial headwind for the U.S. economy. Although financial conditions have improved markedly in the advanced foreign economies and their monetary policy has been highly accommodative, these economies have yet to break out from the tepid growth they have experienced since the global financial crisis. Growth in the emerging market economies has also been disappointingly slow, as I'm sure I didn't have to tell you. For example, GDP growth in Latin America declined to zero last year, far below the 3 to 4 percent growth rates achieved in the first few years of this decade. The emerging market economies, the EMEs, have weathered several bouts of financial market turbulence, including earlier this year, due to market concerns about economic growth in China and about its exchange rate system. With foreign growth relatively weak, the prospect of a gradual normalization of U.S. monetary policy contributed to a large appreciation of the dollar since mid-2014, with the real effective exchange value of the dollar rising around 17 percent.

These global developments materially slowed progress towards the Fed's employment and inflation objectives. The sizable appreciation of the dollar has been a substantial drag on U.S. exports over the past two years, and hence subtracted from economic growth. The stronger dollar, together with lower oil and other commodity prices, has also markedly reduced import price inflation and has been a factor keeping inflation well below the Federal Open Market Committee's 2 percent goal. These developments have influenced the FOMC's decisions to maintain a very accommodative monetary policy longer than members of the FOMC had expected in 2014 and through the end of 2015, as those of you who follow the dot plots are aware.

Financial market conditions have generally improved relative to earlier in this year, with even the initial market turbulence following the Brexit vote appearing fairly short lived. I am cautiously optimistic that the drag on the U.S. economy and inflation from past dollar appreciation may have mostly worked itself out, and that foreign economies are on a somewhat more secure footing that poses smaller downside risks to the U.S. economy. It is also possible, and one has to keep remembering, that foreign economies may outperform forecasts, which would provide a boost to U.S. employment prospects and also to inflation. Now, forecasts are inherently uncertain, and so we will, as always, pay close attention to foreign developments, given their significant consequences for the U.S. economy, and take such developments into account in determining the appropriate stance of U.S. monetary policy.

So now let me turn to discuss the key channels to which U.S. monetary policy affects foreign economies. Spillovers from the policy actions of major central banks, including especially those of the Fed, have been the focus of analysis and debate for decades and have attracted considerable attention since the global financial crisis. Foreign economies were affected when the Fed engaged in unconventional monetary policy stimulus and will likely experience some effects of the Fed's ongoing normalization of monetary policy. The literature on the spillover effects of monetary policy focuses on three channels. The first is the exchange rate. The second is the output of the monetary policy change on the--is the effect--output effect of a monetary policy change on the domestic economy, and the third channel is the impact of U.S. monetary policy on global interest rates and the asset prices.

The Fed’s focus on supporting domestic objectives for inflation and employment has sometimes been criticized as having potentially undesirable effects on the global economy. The unconventional policies that the Federal Reserve implemented following the global financial crisis, and particularly our large-scale asset purchases, have been characterized by some observers as supporting the U.S. economy by putting downward pressure on the dollar and thus hurting our trading partners.

My reading of the evidence is that, overall, Federal Reserve policies during that period probably boosted foreign economic output. It is indeed likely that the depreciation of the dollar that accompanied U.S. asset purchases and forward guidance reduced foreign net exports and thus weighed on foreign GDP through the exchange rate channel. However, our accommodative policies also increased U.S. domestic demand, a second key channel of transmission that operated to boost the net exports of our foreign trading partners. Our empirical estimates suggest that these countervailing effects roughly canceled each other out for our trading partners so that their net exports were not very much affected. Moreover, insofar as our unconventional policies reduced global interest rates and boosted asset prices--a third channel that tended to expand foreign as well as domestic demand--these actions were probably mildly stimulative for the global economy.

When I was governor of the Bank of Israel, I used to say when people asked what we were going to do about what the United States was doing to exchange rates, I used to say I would much rather have to deal with a situation in which the U.S. economy is healthy, and we have problems in dealing with exchange rate appreciation, than a situation in which it's easy to deal with the exchange rate but the U.S. is in distress.

It may be helpful to provide some ballpark numerical estimates of how these different channels are likely to play out in determining the overall spillovers to foreign GDP by drawing on the research of my Federal Reserve colleagues. And by the way, footnotes are in the text of the paper, which will be on the Fed website. Specifically, they considered the spillovers from a hypothetical easing of Fed policy scaled to cause the yield on a 10-year U.S. Treasury note to fall 25 basis points. Please note this is not a 25 basis point reduction in the federal funds rate. It's a much larger reduction in the federal funds rate in order to produce a 25 basis point decline in the 10-year rate. This easing by the Fed raises U.S. GDP about 0.5 percent, and--based on event-study analysis--causes the U.S. dollar to depreciate by about 1 percent or perhaps a bit less. While foreign exports are hurt due to the implied appreciation of foreign currencies--and that foreign GDP about 0.15 percent, according to my colleagues' estimates--foreign exports are boosted by nearly the same amount due to the policy-induced expansion of U.S. domestic demand. Thus, the overall effect on foreign GDP arising through these two trade channels is negligible. However, given that the fall in U.S. interest rates tends to reduce foreign interest rates--at least on average--by around half as much, my colleagues concluded that U.S. monetary policy likely has noticeable positive spillovers to foreign economies.

Now, of course, there is considerable variation in how Fed policy actions--whether easing or tightening--affect the output of different foreign economies. Economies with more open capital accounts and that keep their exchange rate relatively stable against the dollar experience larger positive effects on their GDP of an expansionary Fed monetary policy action. The larger positive spillovers reflect the fact that their own interest rates move more in lockstep with U.S. interest rates, while the effects on their traded goods sector from the exchange rate channel are smaller. For example, Hong Kong, which has pegged its currency to the U.S. dollar at a fixed exchange rate since 1983, is an extreme illustration of an economy in which Fed actions pass through almost one-to-one to domestic interest rates. Conversely, spillovers from U.S. policy actions tend to be smaller to economies that have flexible exchange rates and adjust their policy rates based on domestic conditions; or, alternatively, to economies with less open capital accounts such as China.

It was noteworthy that most of the advanced foreign economies, including those that have been very critical of the initial unconventional monetary policy being followed by the Fed, eventually welcomed the positive spillovers to their domestic output that were due to U.S. unconventional monetary policy easing, and were concerned when that easing came to an end. Because these economies generally experienced slower recoveries than the United States as well as undesirably low inflation, their central banks also typically wanted to pursue highly accommodative policies and took complementary actions—including in some places forward guidance and large-scale asset purchases--to spur their economic recoveries.

By contrast, the Fed's monetary easing presented the EMEs with more difficult tradeoffs. Output in many EMEs expanded rapidly during the recovery from the global financial crisis, fueled by strong capital inflows and a boom in oil and commodity prices. Given that the Fed's easing raised equity prices and strengthened the demand for risky assets around the globe, it probably contributed to the growing resource pressures in some of these economies. EMEs had to choose between an accommodative monetary policy that was more in line with the United States and other advanced economies versus a tighter policy stance likely to cause their exchange rates to appreciate markedly and possibly cause a relatively sharp contraction in the tradable sectors of their economies. While a more accommodative stance had the attractive feature that it would lessen the hurt to the export sector, the downside was that it was more likely to lead to overheating and high inflation, and in some cases asset price increases particularly for housing, that could be costly to correct.

My sense is that most EME central banks had considerable latitude to keep inflation near target and output near potential through maintaining a relatively tight policy, and thus to limit spillovers from easing by the advanced economies. But while I think that there is a strong case for focusing on a limited set of objectives, including to ensure that inflation expectations remain firmly anchored, it is also important to recognize the tough tradeoffs faced by EME central banks given their understandable desire to avoid causing a sharp slowdown in exports, a situation which I've faced in my previous job. The tradeoff faced by EME central bankers helps illustrate some of the challenges posed by monetary policy divergence between the United States and other economies closely tied to it through economic and financial channels.

Notwithstanding these challenges, I should underscore that the Federal Reserve's aggressive monetary easing contributed to a faster stabilization and recovery of the U.S. economy, and this benefited the global economy by mitigating a major source of downside risk, thus improving global risk sentiment and confidence. Moreover, the Fed's monetary policy actions were reinforced by many steps to help safeguard the U.S. financial system and increase its resilience to shocks. These efforts included strengthening the banking system's capital buffers, implementing stress tests, reforming short-term wholesale funding markets, and developing swap lines with foreign central banks to help alleviate shortages of dollar liquidity during periods of financial stress. While ultimately aimed at the well-being of U.S. households and firms in pursuit of our domestic objectives, as the law requires, these efforts to improve U.S. financial stability also had favorable externalities for the global financial system and thus helped the global recovery.

Policy divergence remains a familiar theme today, but the focus has obviously shifted to the consequences of a tightening in U.S. monetary policy on the rest of the global economy. In my view, the Fed appears reasonably close to achieving both the inflation and employment components of its mandate. Accordingly, the case for removing accommodation gradually is quite strong, keeping in mind that the future is uncertain and that monetary policy is not on a preset course. By contrast, the major foreign economies--including the advanced foreign economies and many EMEs--are at a different state of their business cycle and likely to maintain a high level of accommodation for some time or even ease further. So there is likely to be considerable policy rate divergence for some time. Now what are the likely consequences of this divergence for the foreign economies?

And here of course, one thinks of the "taper tantrum" in the middle of 2013, which is interpreted by many observers as illustrating how monetary tightening by the Fed can exert a strong contractionary effect on our foreign trading partners through its effect on global financial conditions, just as the high level of Fed accommodation after the financial crisis provided a net boost to the global economy. Indeed, the large rise in U.S. bond yields during the taper tantrum precipitated a nearly commensurate rise in interest rates in many foreign economies and caused the prices of risky assets to fall globally. EMEs with weak fundamentals experienced sharp capital outflows, an abrupt tightening of financial conditions, and large exchange rate depreciations. The EME experience in 2013 in fact seemed reminiscent of past episodes of U.S. tightening--including in the 1980s and again in the mid-1990s--that had sizable adverse spillovers to EMEs, particularly in Latin America.

I am reasonably optimistic that the spillovers from ongoing U.S. normalization, which have been widely forecast, will be manageable for the foreign economies, including the EMEs. While there will almost inevitably be some bumps along the road, there are a number of reasons why I think that policy normalization will not cause sizable disruptions for our trading partners for four reasons.

First, the Fed will remove accommodation only in response to an outlook for improving economic conditions and firming inflation. The stronger U.S. economy and associated improvements in business and consumer confidence should support recoveries abroad through both trade and financial channels and lessen perceptions of downside risks to the global recovery.

Second, central banks in the advanced foreign economies--and in the EMEs with stronger fundamentals--should be able to mitigate an undesirable tightening of their own financial conditions through important policy actions. An important lesson of the taper tantrum was that effective communications and actions by major central banks, including the European Central Bank and the Bank of England, helped quickly push bond yields back down to levels that these central banks regarded as appropriate to their economic situation. For example, the Bank of England's threshold strategy announced in the summer of 2013--promising to keep policy rates extraordinarily low at least until unemployment fell below 7 percent--lowered the expected path of policy rates significantly by pushing back expectations of British liftoff.

A third reason likely to lessen adverse spillovers is that a number of EMEs have markedly improved fundamentals, even relative to just a few years ago. India is a good example. India was dubbed one of the "Fragile Five" economies during the taper tantrum and, during that episode, experienced large capital outflows, a spike in borrowing costs, and sizable exchange rate depreciation. Since that time, India has markedly improved its macroeconomic framework, cutting its inflation rate by half to around 5 percent, anchoring inflation expectations more securely, and reducing what had been large and persistent fiscal and current account deficits. Somewhat more generally, the improved macroeconomic frameworks in many EMEs achieved over the past couple of decades--often with inflation targeting often playing a key role--has enabled these economies to pursue countercyclical policies to a much greater degree than in the past and should help insulate them from monetary policy spillovers.

A fourth reason that spillovers could be mitigated is that U.S. policy rates are likely to increase only gradually--assuming that economic developments unfold reasonably in line with expectations--and, this is a new part, to plateau at a significantly lower level than the historical average. The low long-run level of the policy rate reflects a number of factors--including slower productivity growth, demographic change, and a higher demand for safe assets--that have pushed down the long-run--real long-run neutral rate, which is the real interest rate needed to keep the economy at full employment in the longer-run. The upshot is that U.S. policy rates are likely to increase more slowly, and by a lower cumulative amount, than in past episodes of U.S. monetary tightening. This in turn should reduce the divergence between the stance of U.S. and foreign monetary policies and the associated spillovers arising from such divergence.

While there are good grounds to expect that spillovers from U.S. monetary policy actions will be manageable for most of our trading partners, events may unfold differently than expected. To illustrate, a noticeably faster U.S. recovery would require a more rapid removal of U.S. accommodation and could exert noticeably larger spillovers abroad by putting more upward pressure on foreign interest rates and by inducing larger depreciations of foreign currencies. Despite greater policy divergence, many of our trading partners would nonetheless receive a net boost to their GDP provided that the stimulus to their exports--from stronger U.S. demand and a weaker domestic currency--was sufficient to offset possible tightening in their financial conditions. But other economies might be hurt as a weaker currency could lead to balance sheet deterioration and rising risk spreads, especially if their central banks were called on to tighten monetary policy to keep inflation at bay.

While such uncertainty is a constant feature of the landscape we confront as policymakers, both the U.S. and global economies will be served best if we keep our own houses in order and ensure that policy rates are adjusted as appropriate to achieve our inflation and employment objectives. In my view, the prospects of a continued steady expansion in the U.S. economy are maximized to the extent that we proceed with a gradual removal of accommodation. Such a gradual approach to tightening policy will also help mitigate the risk of undesirable spillovers abroad--including by reducing the risk of having to tighten more abruptly later on--and in turn promote a stronger global economy, which is what we all want. Thank you.

RODRIGO VERGARA. Thank you very much, Stan, for that excellent speech. Very insightful, of course. Now we'll have time for a Q&A session. So what we'll do is we'll accumulate three or four questions per round, and time permitting would have two or three rounds of Q&As. So please, if you have a question, raise your hand and [inaudible] state your name, affiliation and stand up please. Questions? Andres?

ANDRÉS VELASCO. Hello, Stan. Andrés Velasco here in Santiago. Thanks for a very persuasive case for [inaudible]. As you can imagine, we've spent a lot of time here at the conference talking about spillovers from the U.S. And while your case is persuasive, let me complicate it with two or three elements. First, there's increasing evidence that in spite of improvements in the policy framework in emerging markets, episodes of current account reversals and of capital flights continue to occur, and Barry Eichengreen presented a paper that makes that case very powerfully. Secondly, there does not seem to be much difference across countries whether they pursue fixed or flexible exchange rates. In other words, maybe floating is not the panacea or maybe not the very powerful instrument that your remarks implicitly believe it to be. Thirdly, a lot of the news cycle seems to be driven not so much my Fed interest rate movements, but by movements in appetite for risk in the U.S. and particularly the VIX. Given all of this, which is not entirely new but which is a somewhat different way of thinking about spillovers, first, do you think there's a case for maybe revising how much the Fed and other central banks can do about spillovers? And if not--maybe you'll say predictably the answer is there's not much room for that--where else do we look? IMF, central bank coordination, or maybe some other policy we haven't thought about. Thank you.

RODRIGO VERGARA. Thank you. Questions? Elon, no? Alberto? Here? The mic, yeah.

ALBERTO NAUDON. OK, well, thank you for very interesting presentation. After many years of unconventional monetary policy, there's a lot of evidence that shows that it has a significant impact on asset pricing, but the evidence of the impact on the real economy is far from conclusive. On the other hand, many people think that it could be a lot of significant risk associated to those policies. So--for the United State and for the other countries--so what's your view at this point on the balance of risk associated to those policies? Thank you.

RODRIGO VERGARA. He was Alberto Naudon, the chief economist of the Central Bank of Chile over there. Yeah. Hi. Hello. Stand up.

QUESTIONER. [Inaudible.] So a related question is your description of what the Fed is going to do sounds pretty much like a normal time policy--monetary policy tightening while we're in a--not in normal times and not normal policy framework. So when you tighten or you increase the Fed's fund, while you're not reducing the liquidity in the market, in global markets and in the

U.S. market, how you expect these to affect asset prices? It's not clear to me how this work. It's clear to me how it's--it will affect overnight markets of but not long--longer term interest rates and other asset prices.

RODRIGO VERGARA. O.K. Thank you very much. Stan, the floor is yours.

VICE CHAIRMAN FISCHER. Well, thanks very much. I knew I'd get tough questions but I sort of hoped I'd get three easy ones to begin with and then warm up. But now I have a--Andrés, you can be relied on. The--it may well be that the difference between fixed and floating exchange--what are formally fixed and floating exchange rates has not--doesn't show up as making a very much of a difference and what you talk about the continuing episodes of reversal are also a problem. Now, and then you say well what can we do? I--given the names of the people you quote as having stated these things, I'm not going to argue with the evidence that they present in the paper that I would have preferred to hear at--in Santiago but didn't.

In the end, you have to do what works and if those things don't work then you can go on. Yes, intervention is possible. Yes, help from the IMF is possible and then of course, we can look ahead to the longer term when maybe we'll find ways of encouraging more countries to take flexible credit lines as others have done and return to Keynes's original visions of the IMF. But other than that, intervention is-- I don't have a problem with intervention. If the question is about capital controls, well, each country makes up its mind on those. My experience--I learned while I was in the IMF that the people who are most anxious to not impose capital controls were those who've done it the last time. And so, I'm not sure. I know the theory; I'm not sure how people actually feel about implementing them.

So those are the--those are the things, and you got to deal with the real world as the real world is.

Second, on unconventional policies, the statement that it doesn't affect output. Well, it's certainly true that output growth in the United States has been slower in this recovery than in any other. But that is not true of what our policy target is, which is employment. The effects of monetary policy in the United States, including the period of unconventional policies have been impressive, and we are essentially at full employment after seven or eight years of a major financial crisis, which Ken Rogoff and Carmen Reinhart persuaded us could go on for much longer even that it has. So I think it works.

It's-- the problem with growth is fundamentally a productivity problem, and there's not much the central bank can do about it. There are things that fiscal policy, the Treasuries of the world can do, but these are not short-term--these are not the policies which will operate countercyclically very effectively. They have to do much more with getting the basic underlying rate of productivity growth up. So I don't think that the--well let's--we can ignore unconventional policies.

Remember, they are probably a little bit less effective than normal interest rate policies, but we didn't have normal interest rate policies. We were at zero in the days when we believed that zero was the lower bound, sort of we operated on that on a log scale and thought there was nothing lower than that, but there is. I doubt very much that their policies which are as effective as the unconventional policies that keep the interest rate away from zero, and it's certainly clear that the Fed is very unenthusiastic about and hopes never to have to deal with negative interest rates. On the statement--sorry--on the statement that our policies look like we think they are normal times, we know there aren’t normal times for many countries in the world, you know, and it's very easy to complain. The most--the biggest complaint I actually got from colleagues and other central banks is, "When are you guys going to raise the damn interest rate? We need our exchange rates to depreciate." Well, that--I don't want to tell you when this will happen, because I don't know. But that's what lies in the future, and it will have impacts, which could have positive impact on your countries.

RODRIGO VERGARA. Thank you, Stan. We have more questions here. Pablo, over there?

PABLO GARCIA. Thank you. Thank you, Stan, for a very insightful presentation. Pablo Garcia from the Board of the Central Bank. I have two quick questions. In the recent past, the Fed has been very explicit in using forward guidance to commit to future policy. Now that we are in a bit of a more normal times to take back the--to take the same expression used recently. Is it your expression that markets have had a hard time adjusting to the fact that the Fed doesn't need such an explicit commitment? The second question also is related to a generalized view that monetary policies has been overburdened to stabilize a cycle. Is it possible that a more expansionary fiscal policy can lift that overburdening going forward, and what will you think about that? Thank you.

RODRIGO VERGARA. You have a question, Fabrizio?

FABRIZIO PERRI. Hi, Stan. I'm Fabrizio Perri from the Minneapolis Fed. My question--you start the presentation saying, I will really like to think the fact that the form-- the rest of the world as in the U.S. is always an interesting perspective. In particular, I'm thinking the experience of England recently when they try to normalize and raise rates. You know, they, all of the sudden, they experienced a strong appreciation of the pound, and the inflation that was just rising a little bit after a few months of it from the raise, they find themselves with inflation and be way below target. So, I now think in the same experience with taper tantrum, we hint that we're going to raise, dollar appreciate, inflation tanks, price of foreign good tanks. So I'm thinking, looking forward, how concern are you that, you know, the moment we try to raise inflation--we see inflation--try to raise interest rate because they say inflation pickup that the spillovers from the rest of the world to the U.S. will put us back to low interest rate and we think that would be? How likely are you to see this scenario developing? Hugo?

Hi. Thank you for the presentation, Stan. In the last two days, we have seen--

RODRIGO VERGARA. Sorry, name and affiliation.

GUIDO SANDLERIS. Ah, Guido Sandleris from the Universidad Torcuato Di Tella. In the last two days, we have seen the yield on the 10-year U.S. Treasury bond jump up significantly. I was wondering whether you kind of share your thoughts on that and whether these might affect the U.S. monetary policy in the near future. Thank you.

RODRIGO VERGARA. I would like to add a question, Stan. The U.S.-- I mean, the Fed has been doing this argument on monetary policy is accommodative but not that accommodative since the neutral interest rate has gone down quite significantly. If you can elaborate a bit on that, please. So, Stan?

VICE CHAIRMAN FISCHER. Thanks very much. Let me start with Rodrigo's question, and then I'll take the others in order.

All estimates of the--of what is known affectionately or unaffectionately as r-star (r*), the equilibrium real rate, and that's the real rate that it will be at full employment, has gone down significantly but very significantly, and estimates in the Fed are somewhere between zero and one or something like that--they are much, much lower than they were, and this simply means that we have much less room to use an expansionary monetary policy with the--as we move ahead without generating inflationary--to use an expansion monetary policy raising the interest rate a lot without generating a slowdown in the economy. So that is something that weighs on the mind, and, you know, there are arguments about how do you know what your estimate of r*--is it correct, et cetera? There is a large standard deviation around r*, but the standard argument is well we've had these interest rates for a long time. If r* is much higher than a low-ish number, we'd have seen a lot more inflation, and we haven't.

So, that's how we think about it. And we've--well, I think you see from the dot plots, if any of you study them, that the members of the Open Market Committee--the participants in the Open Market Committee have all reduced their estimates of the--of r*. So, it's an opinion reached by a lot of people who are more or less independent in their thinking.

Now on the three other questions for which also many thanks. On forward guidance, do the markets find it difficult to operate without forward guidance? You know, it's natural for people to want certainty about their--the outcomes of their investments. And so, if you have a perfect knowledge about when you're going to move, then the markets would like that. On the other hand, the market operators are paid to take risks, and given that we don't know when it's optimal to change the interest rate three years ahead or however long and far ahead people are thinking of forward guidance, we--they will just have to operate with the amount of certainty that we can give them. And the--Janet Yellen’s speech at Jackson Hole you’ll see used the fan chart about the interest rates, and those confidence intervals are very wide. And that I think is just the reality that we have to talk to the markets about, or at least let them know about, that they're operating in risky markets.

On a personal note, I used to tell some of my central bank colleagues in up to say 2007 and before that in 2006 that the confidence intervals in their fan charts were far too wide. And then came the great financial crisis, and those confidence intervals seem more realistic than what I had thought previously. So there's a lot of uncertainty around, and we have to accept that and deal with it.

On more expansion in fiscal policy, I think many members of the Open Market Committee and of the Federal Reserve Board have commented that the--it would be useful to have a more expansionary monetary fiscal policy. These statements were made over several months. Recently, I'm on record with that as having believed that. People who look at what determines r* are aware that a more expensive fiscal policy will increase r* and ease the task of monetary policy.

And the phrase, "the only game in town," is a compliment in some ways, but it's not a compliment to the overall design of monetary policy. There are more-- of the economic policy of the country. There are more than one policy tool. There is fiscal policy, and in this particular instance, it could be used for quite a few reasons, and we'll have to see what happens.

I take it to Fabrizio's question was, “Will we see another taper tantrum?” Well, we have said what's going to happen. We've tried to be as open as we can be. It's the--if and when we raise interest rates, nobody will be able to say they are surprised. And whoever is very surprised then loses a lot of money will have walked into that with their eyes open, and we can't do very much better than that.

Of course, central banks have an obligation if markets are really operating, are really disorderly to intervene but to acquire, not for any particular interest rate, but just to restore order in the markets in a very short run.

Guido, I'm sorry that I was still writing down about the previous question when you asked your question. So could you ask it again?

GUIDO SANDLERIS. Yeah, sure. The question was that, in the last few days, we saw a significant increase in the yield--

VICE CHAIRMAN FISCHER. OK. Now I know why I didn't write it down.

GIDO. So I--whether you could share your thoughts on that and whether these could affect monetary policy of the Fed in the near future?

VICE CHAIRMAN FISCHER. Well, on the sharing my thoughts on that, we try not to comment on movements that reverse direction a day ago and had reserved direction a day before that. So, it's very early to answer that question. And in any case, Fed Board members shouldn't give market advice to anybody. You should be particularly warned that my wife when somebody will ask me for advice tells them, "He's no good at this business." So you can take that as given. Of course, we will watch events, and depending on how the markets turn out and how the economy turns out, we will adjust our policy if we think that's necessary. So, it's-- but if you ask me in which direction would have an impact, I'm not even sure that I could answer that question. So, apologies.

RODRIGO VERGARA. Thank you very much, Stan. We have one last question here. Pierre [inaudible].

PIERRE-OLIVIER GOURINCHAS. Hello, Stan. Pierre-Olivier Gourinchas from UC Berkeley. I want to follow up on the discussion, which I think was very clear about the natural rate. And so if I interpret what you're saying, we are reasoned to believe that the natural rate in the U.S. at least is likely to come back above zero, and that's why the Fed will be in a position where it could normalize. But I'm concerned about the fact that, as a lot of the discussion in this session was about and in the conference more generally, we have to take into account some of the broader developments. And if the rest of the world has an r* that is much below of that of the U.S., and, you know, if we think about Japan or the euro zone, certainly the advanced world seems to be in a much weaker position on the macroeconomic side than the U.S., and the U.S. is financially integrated with that rest of the world and tries to target its own r*, then it brings a number of questions. It suggests that what will happen is a very strong appreciation of the U.S. dollar that will benefit the rest of the world and will hurt the U.S. economy and may even stifle the attempts to bring the U.S. economy close to a natural interest rate it might be able to achieve on its own but will not be able to achieve once economies are integrated. And so, I wanted to raise that question and ask if you have any thoughts.

VICE CHAIRMAN FISCHER. Yeah. I've--I keep asking people, do we have a doctrine on whether we want countries to be correlated or--and whether we want the policies to be correlated or uncorrelated? To put it differently, do we have a policy on whether we would prefer countries to have different shocks or not? And the theory is, yes, the overall system will be more stable if with the same variance of shocks, they're not correlated, and there's more divergence in the situation of different economies. So as it kind--as it turns on r*--first of all, we don't target r*; r* is operating as a guide to what we're doing. We're targeting inflation, and we're targeting employment. That's what we're required to do, and that's what we have been doing. And depending on what happens, what the results of policy changes in future are, we would--we of course retain the right to adjust policy.

I'm not certain that the U.S. has to follow the r*s of other countries, or that other countries have to follow the United States' r*s. And so I think of that as a useful indicator of policy for our--for a particular country, but I'm not sure we would want the whole world to be coordinated on a particular r*.

RODRIGO VERGARA. Thank you very much. The session is coming to an end. Time is up. So again, thank you very much, Stan, for being here with us via video conference. It's been a pleasure and an honor to have you here, and thank you very much. Goodbye and see you around.

VICE CHAIRMAN FISHCER. Thank you very much indeed.

[Applause]