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Harvard University Team
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ANDREAS SCHAAB. During this staff presentation we will discuss our perspective on current economic conditions with particular focus on heightened market volatility in May and June. We will propose that the FOMC publish a revision of the 2011 Exit Principles in its post-meeting minutes. The committee should identify challenges beyond taper as a prudential exercise and then adjust communication policy accordingly. Our presentation addresses three challenges for policy normalization: the communication of lift off, the implementation of lift off and asset sales.

EUGENE WANG. The recovery so far remains modest with third quarter GDP growth at 2.8%. Businesses are doing well due to easier financing, lower labor costs and higher labor productivity. Corporate profits are at an all-time high, and yet employment growth remains sluggish.

SAMUEL YOUNG. The decline in U3 unemployment, now at 7.3% fails to capture key labor market developments. First, workers are leaving the labor force. If you hold the 2009 labor force participation rate constant and lower the employment population ratio by its actual decline, unemployment would be around 11.3% today. Demographic trends can't explain the entire decline as the labor force participation rate of prime age males has also fallen by over 3 percentage points.

DANIEL TARTAKOVSKY. Second, the spread between U3 and U6 has risen by about 3 percentage points since the crisis. Finally, long-term unemployment has increased and average unemployment duration doubled to 36.1 weeks. We worry that cyclical unemployment may become structural when skills atrophy as adjusted by evidence of negative duration dependence found by Croft and others in 2012.

JUSTIN KATIRAEI. So to what extent are these trends structural already? Although we've seen a rise in rate vacancies, stagnant real wages and a low quit ratio both suggest a considerable cyclical component. We would expect structural mismatch to increased wages and voluntary quits as companies compete for suitable workers. Also Lazear and Speltzer in 2012 show that those sectors had the largest rise in unemployment, and mismatch also experienced the strongest recoveries, indicating cyclical trends.

EUGENE WANG. Moderate labor market improvement have been accompanied by low inflation with core PCE at 1.2% and expectations below 2% through 2015. Two reasons are economic slack and lower healthcare inflation.

DANIEL TARTAKOVSKY. One factor weighing on hiring and economic activity has been ongoing business uncertainty. In fact, the Fed itself started uncertainty with talk of exit earlier this year. In the Fed's July Beige Book, both the Boston and Cleveland Fed reported interest rate uncertainty in particular was holding back growth in their regions. So the question is, what happened in May and June? And what have we learned since then?

ANDREAS SCHAAB. Beginning in May, Chairman Bernanke made a series of remarks culminating with a June 20th FOMC statement anticipating moderation of asset purchases. Although the statement contained no new forward guidance about lift off, our event study analysis using a number of market-based measures suggested that it had prompted a large shift in the expected lift off date. Fed Funds Futures OIS spreads [inaudible] implied swap [inaudible] volatility also tell a similar story. We saw heightened interest rate uncertainty consistent with a change in the expected lift off of about four months.

EUGENE WANG. Why did market participants conflate new information about QE3 with lift off forward guidance? In July, [inaudible] described the Fed's communication in June as ineffective. Indeed, high uncertainty about the path of policy rate was cited as the main reason for the rate response.

JUSTIN KATIRAEI. This rate spike had significant adverse effects. Ten-year treasury yields rose 100 basis points in two months, and the 30-year mortgage rate by over 90 basis points since May. Refinance activity dropped 71% to a four year low. The last TISTE by Glazer and others, 2010, suggests that this rise in rates may decrease home prices by 6.3%. Interest rate uncertainty also translated into broader market uncertainty with the VIX at an all-year high on June 20. A long literature explores the adverse effects of increased uncertainty and volatility. Woodford, 2003, argues rate volatility in particular reduces welfare.

ANDREAS SCHAAB. So let's take a step back. This rates spike was prompted by exit and taper talk in an environment of uncertainty about exit. We raise the concern that ineffective communication may also generate uncertainty about subsequent exit steps, because remember, taper is just one stage of policy normalization. As public attention remains consumed by taper talk, we urge the FOMC to reconsider its long run exit strategy and adjust communication policy accordingly. To prevent another May-June, we propose a revision of the 2011 Exit Principles with three policy challenges in mind: the communication of lift off, the implementation of lift off and the question of asset sales.

SAMUEL YOUNG. Current lift off forward guidance can be improved. First, the Fed should reinforce its commitment to history-dependent policy as Vice-Chair Yellen argued in 2012 and English and others noted at last month's IMF Conference. This approximates optimum policy at the zero lower bound. And additionally, the Fed -- more effective communication could reduce the risk of uncertainty as U3 approaches the 6.5% threshold. With these two criteria in mind, we evaluate three proposals: an additional labor-indicated threshold, an inflation floor and a path rule.

EUGENE WANG. We advise against specifying a complementary labor indicator threshold. The employment to population ratio and labor force participation rate will best represent labor market conditions but are sensitive to demographics, trends and shocks that are difficult to forecast. Functional indicators based on [inaudible] are unfeasible because we have no estimate of a natural rate. An additional indicator threshold would therefore be difficult to calibrate, communicate and commit to.

SAMUEL YOUNG. An inflation floor is operationally simpler. The Fed could commit to not raise rates and to expect that inflation's above 1.5%. Although such language may nudge inflation upwards as President Bullard argues, it would neither approximate history-dependent policy nor reduce the interest rate uncertainty. Even if there was doubt about the symmetric weight under negative inflation gap in the Fed's reaction function, less than 25% of participants in the survey for professional forecasters anticipate inflation below 1.5% when U3 is expected to reach 6.5%.

DANIEL TARTAKOVSKY. Instead, we recommend the FOMC provide dynamic forward guidance on the likely path of the Fed funds rate. We propose a partial path ceiling to make the current U3 threshold dynamic as illustrated on the slide. The Fed should commit to keep the Fed funds rate below ceiling point A, say 0.5% while U3 remains above 6% and below ceiling point B, say, 1.5% while U3 remains above 5.5%. When announcing this rule, the committee should strongly emphasize two points. First, this is a ceiling, not the path itself. Second, forward guidance retains state-dependent conditionality on inflation expectations and additional labor indicators. Dynamic forward guidance adds little complexity as it merely generalizes the current U3 threshold.

EUGENE WANG. To calibrate ceiling points A and B, the Fed should model the optimum Fed funds rate path with respect to lost function in inflation and upward gaps and with volatility. The FRB/US model assumes [inaudible] equivalence and perfect foresight so the Fed should consider adding a buffer to account for unanticipated shocks.

DANIEL TARTAKOVSKY. This path ceiling meets both of our criteria for forward guidance. First, the Fed can calibrate these ceiling points so as to signal its commitment to history-dependent policy. Second, specifying a ceiling for a future path reduces rate uncertainty today. By specifying an upper bound, the ceiling points narrow the potential range of expected short term rates for any future date. And so the variance and volatility of long term rates today also fall.

JUSTIN KATIRAEI. We propose the FOMC announce this rule in its post-meeting minutes as part of a broader revision of the 2011 Exit Principles. This would reduce the risk of future policy shocks if market participants again conflate announcements about different instruments. The FOMC could also calibrate the ceiling points so as to add to policy accommodation in order to achieve a smoother balancing of tools and offset the adverse effects of a taper announcement.

ANDREAS SCHAAB. The second stage of policy normalization will be the implementation of higher short term rates once conditions warrant lift off. The FOMC has indicated that it will retain the Fed funds rate as its operational target and use the interest rate on excess reserves or IOER as the new instrument amidst elevated excess reserves. Now before the crisis, the Fed controlled its target directly through reserve supply adjustment. Overnight rates then moved in tandem and passed through to long term rates.

DANIEL TARTAKOVSKY. We worry that this initial transmission from instrument to target and then to other short term rates has become dysfunctional for two reasons. First, IOER is only a permeable floor with the Fed funds rate consistently below IOER. Second, overnight rate co-movement broke down after the crisis. The co-variance of daily changes in overnight rates has dropped considerably. These technical concerns may well pose serious challenges for rate management.

EUGENE WANG. [inaudible], attempts to lay floor permeability to market segmentation. GSEs have no access to IOER and continue to land in the Fed funds below 25 basis points. Solving the national equilibrium bargaining model, Beck and [inaudible] propose upper bound function of form for the spread. They show that effective Fed funds rate is a weighted average of IOER and GSE of alternative option. You can then solve for the spread and take the comparative static with respect to change in IOER. To give you a number with this, they show that a spread may rise to over 40 basis points when the Fed raises IOER to 3%, which is very concerning.

JUSTIN KATIRAEI. Now they assume but do not explain these arbitrage constraints. We extend their analysis and argue that limits to arbitrage persist because financial institutions remain balance sheet constrained by capital leverage and liquidity coverage ratios under tighter regulation. With higher requirements, bank balance sheet space becomes scarce. And as Chairman Bernanke argued in 2009, this creates opportunity costs for arbitrage.

SAMUEL YOUNG. This graph plots end of quarter dates to capture the bank practice of reshuffling holdings for client reports at quarter end. It shows just how sensitive floor permeability is to such window dressing, supporting the thesis that balance sheet considerations are driving this spread. By extension, these constraints also account for the overnight rate divergence.

MALE SPEAKER. So we argue that there is an unprecedented link between regulatory and monetary policy. Fed regulation and regulatory changes under Basel III, for example, will determine how financial institutions respond to lift off. We urge the FOMC to consider this interplay as it formulates policy.

JUSTIN KATIRAEI. If limits to arbitrage persist, impaired transmission becomes an acute risk. To manage lift off, we propose the Fed use liquidity drainage operations to address both permeability and overnight rate divergence.

DANIEL TARTAKOVSKY. Recently the Fed used the TDF, or Term Deposit Facility, to offer banks 28-day deposits and the RRP, or Reverse Repo Program to collateralize limits from a wider set of counterparties. Reverse repos reduce floor permeability. In the [inaudible] Framework, they decrease GSE market share, since some GSEs opt for [inaudible] instead. And they increase GSE bargaining power by offering an alternative option to Fed fund sellers. Also, reverse repos reduce overnight rate divergence better than term deposits by diverting bank deposits to other counterparties as Martin, McAndrews and others at the New York Fed argue in a paper this September.

SAMUEL YOUNG. [Inaudible] operations might be constrained by bank demand schedules. Seven auctions of the ECB failed because banks demanded rates above the cap. Once again, the interplay between regulation and rate management becomes important. For instance, higher collateral requirements increase the demand for collateralized reverse repos but not for term deposits. In the sum, while the Fed can adjust the structure of both TDF and RRP to meet specific objectives, we see more advantages to the RRP.

ANDREAS SCHAAB. So, let's again take a step back. How should all of this inform exit strategy? We've identified dysfunctional short term rate transmission as a key challenge. Overnight markets remain segmented and bank balance sheet constraints impose limits on arbitrage. We urge the FOMC to study the unprecedented interplay between regulatory and monetary policy during lift off. We propose liquidity drainage operations to manage lift off and have raised a set of operational issues that the New York desk should address now as a prudential exercise.

JUSTIN KATIRAEI. A third big question of policy is that of asset sales. The FOMC supported MBS sales in 2011, but recently took a less emphatic stance. To evaluate unwinding, we first look at the implications of an elevated balance sheet.

SAMUEL YOUNG. Tamiko and Cain 2010, first decomposed outside effects into flow and stock effects. Unlike flow effects, stock effects lower yields as long as the balance sheet remains elevated by reducing the expected future supply of long term treasuries and agency

MBS. This low rate environment adds to the Fed's [inaudible] stance, but also raises financial stability concerns that were addressed at length in the March FOMC minutes.

DANIEL TARTAKOVSKY . Sales would prompt and unwinding of these stock effects. MBS rates would rise through the signaling capital constraints and scarcity channels. Not only would this pass through to primary mortgage rates, reducing rate financing and dampening housing, but it would also affect other short term rates through broad channels, signaling duration and recruitment and through convexity hedging, whereby investors will short sell treasuries to hedge against their MBS portfolio's increased maturity.

EUGENE WANG. It is important to address remaining policy uncertainty. The literature on asset sales is sparse. Much of our analysis draws on Krishnamurthy and Vissing-Jorgensen, 2011 and 2013. But their claim that a duration risk channel is insignificant is controversial, for example. Birnwood and Vianos 2013 argues that one standard deviation increase in the supply of long term bonds, which is analogous with Fed asset sales raises yields by 40 basis points through the duration channel alone. So our assessment of potential adverse effects of sales may therefore even be too conservative.

SAMUEL YOUNG. Based on our major analysis, we feel that merely announcing future sales may prompt a non-linear rate spike in this environment. The expected supply of securities would substantially increase relative to the June statement. And, since market expectations are currently consistent with a known sales exit, the announcement would be interpreted as a dramatic shift in the Fed's policy stance. Given these risks, we think it better to refrain from asset sales during the early stages of policy normalization.

JUSTIN KATIRAEI. We do not, however, advocate explicitly committing to a no-sales [inaudible]. It is unclear how effectively the Fed can control bank reserve outflow as President Plosser notes. Unwinding remains a worst case policy tool to address unanchoring inflation expectations. The FOMC should instead articulate that given other policy tools, it does not anticipate the need to sell assets as long as inflation expectations remain well anchored.

ANDREAS SCHAAB. And as we conclude, we want to re-emphasize that ineffective communication contributed to uncertainty and rate volatility earlier this year. In this staff presentation we've urged the FOMC to revise the 2011 Exit Principles. Prudential preparation for exit must begin with identifying challenges ahead and should aim to reduce the risk of future uncertainty. With these goals in mind, we propose that the FOMC publish these new guidelines for policy normalization in its minutes. Thank you very much.

JOHN WEINBERG. Thank you. Very good presentation. Let me start by following up on the your discussion of short term rates, in particular this problem that the array of short term rates have become kind of sort of disconnected from each other, according to what we sort of historically expect. Now, we set that up by talking about the usual way we think about transmission from the funds rate, short term rates, but then down at the bottom of that chain of things we care about was long term rates. And presumably because think that those are the things that sort of affect sort of the economic decisions of certain businesses. So you've been talking about sort of fixing the link between short term rates. You didn't tell me anything about the long term rates, which leads me to ask, why do I care? Why do I care if we've got all these different short term rates and they're all doing different things? How should I think about the link between all these things and economic activity, ultimately?

ANDREAS SCHAAB. Sure. So one factor is that we think long term rates are determined in part by the expectation of future short term rates, by the expectation hypothesis. And then it becomes a question of what composition of short term rates do we look at? And typically we tend to think of some kind of weighted average of short term rates. And that would be a weighted average of rates in the overnight market, which compose both repo rates just as the GC rate but also the Fed funds rate, effective Fed funds rate. And the question is to what extent does each of these rates impact the transmission through long term rates, especially when they do not move together. And so work here at board by Klee and Stebunovs for example has pointed out recently that in effect the repo market and GC rate might have been the epicenter of transmission to long term rates because for one, the market is much bigger. And two, the causality from and to Fed funds rates to GC rate and back and forth might be such that the GC rate might be driving the long term transitions.

DANIEL TARTAKOVSKY . So, Andreas, [inaudible] as much in the GC rate. I'll quickly talk about, you know, early in the crisis the reason you started paying higher ERs to prop up the Fed funds rate because it was driven to the floor because of these leveled elevated excess reserves. So, because Klee and Stebunovs have, you know, argued recently in their paper "Target Practice" that we should maybe target the GC rate instead. That's an important consideration because that will affect long term rates ultimately. But we think it'll be hard to communicate something like communicated [inaudible], something like targeting the GC rate. And we think that currently because of all this May-June uncertainty, we think an extension of the U3 threshold might be better. And then using the IOER to manage short term rates in conjunction with liquidity drainage would be a more smooth transition. So, and we can't, you know, target rates like a three-month, like LIBO rate like the Swiss Bank does. So we think that given the options, even though the repo market is a substantially larger share of the overnight market entirely, we can still effectively use the Fed funds rate to control the repo market in conjunction with like reverse repos, for instance.

JUSTIN KATIRAEI. Finally to add onto what Andreas and Daniel said just quickly, long run rates in addition to being dependent on an average of expected short term rates also include a certain term premium. If the divergence in short term rates amplifies, this would impair the credibility of the Fed if the markets do not feel that the Fed can effectively control the short term rates that they supposedly can set. If the Fed's credibility is jeopardized, this could dramatically raise term premium of long term rates and thus create all adverse effects that were discussed earlier about home prices declining, any asset prices declining and economic activity slowing.

JOHN WEINBERG. So I think what you were just suggesting there is that there's a link, could be a link, between -- that divergence of short term rates could contribute to, could be a factor that increases the term premium or the risk premium [inaudible].

JUSTIN KATIRAEI. Right, absolutely.

JOHN WEINBERG. Is there any evidence of that that you know of?

SAMUEL YOUNG. So that one of the reasons we're suggesting this now is that as we approach lift off we're concerned that the markets may become concerned with that. They might start thinking that. So we think that so to avoid what happened to May and June where we're not addressing future policy and then as we approach a future policy, markets become concerned. We think that if the Fed addresses it now and if they can prepare what they could communicate given that all of a sudden we see a spike in uncertainty about the Fed's ability to manage short term rates that this is a very prudential exercise and is necessary to prevent [inaudible].

ANDREAS SCHAAB. So one episode that we specifically looked at is the question why rates remain high now when the Fed tried to reverse much of its stance after the June FOMC statement then September versus where rates were before May. And we that a significant part of that is volatility premium added onto rates now. And additionally, we want to stress that not only is the divergence of overnight rates important, but also the spread between IOER and the Fed funds rate. And so to the extent that the [inaudible] can only set the IOER at an infrequent rate whereas before you could do liquidity or you could adjust reserve supply on a daily basis, you might get increased realized volatility at a given IOER level with respect to pre-crisis levels and conditions.

GOVERNOR JEREMY C. STEIN. Let's move on. So one of your big ideas was this dynamic ceiling [inaudible]. So if I understood this right it would be something like, well, until the unemployment rate, say, crosses 6%, we won't let the funds rate get above 1 until it crosses 5.5 and we won't make it above [inaudible]. So in thinking about this, do you have in the back of your mind both a sort of an estimate of the natural rate, and maybe more importantly, a sense of the standard deviation of the uncertainty around that natural rate? And how does that factor into your design of the ceiling?

JUSTIN KATIRAEI. So I guess I'll begin with several just general estimates of the natural rate of U3, which is the unemployment. So we have Saheen and others, 2012 with the New York Fed which suggests that the natural rate of unemployment is around 6%. The survey of professional forecasters also comes up with an estimate around 6%. The CBO has come up with an estimate of 5.25% or let's say 5.3%, which also correlates very strongly with the Federal Reserve Board's central tendency between 5.3 and 6%. So it's clear that we can depend on that, particularly the central tendency that the natural rate may be between that 5.3 and 6% range.

EUGENE WANG. Right, so we think that post-crisis the sum of the increases in structural rate is actually due to structural factors. For example, we see that long term unemployment actually increased the median term of duration for unemployment actually increased from eight to 16 weeks. The average duration for unemployment increased from 20 to 36.1 weeks. We see sort of a [inaudible] distribution because there's a huge proportion of the working force, in fact 36.1% of the unemployed workers are joining long term unemployed. So this needs to [inaudible] and therefore leading to hysteresis.

SAMUEL YOUNG. Another important consideration here in thinking about structural unemployment is that we argue in our presentation that U3 doesn't completely represent it. So we should also think about sort of a labor force participation gap. So we argue in our presentation that demographic and structural trends can't explain the entire fall in labor force participation rate and [inaudible] estimate that there is labor force participation gap of about 200 basis points. So that's another reason that with our path rule would provide further accommodation is because we're not only thinking about unemployment gap but also this labor force participation gap.

GOVERNOR JEREMY C. STEIN. So let me come back to your point. So it sounds like within the realm of possibility is a natural rate of somewhere between let's call it 6 and 5.2, something like that. Maybe a little bit extra if you add some standard error. So how will you guys think about your kind of dynamic ceiling? Suppose it turns out that the right answer is 6, or 6.1 or 6.2? Suppose that happens to be the answer? So you've basically got a ceiling that won't allow the funds rate to go above let's just say 1% as long as we haven't crossed 6. If it turns out that the natural rate is 6.1 or 6.2, that might take a very long time to happen, in some sense [inaudible]. So will you then be willing to stick with this ceiling?

SAMUEL YOUNG. For one, we mentioned in our presentation that the ceiling will retain current conditionality on inflation expectations. So it will retain the current 2.5 inflation expectation. So if, say for example, our estimates on the natural rate of unemployment are way too low and we have way too low Federal funds rate at some natural rate, we would expect inflation to rise. And this sort of provides a natural exit from this commitment without breaking Fed credibility because we stated in the proposal that this is a natural exit if inflation expectations are [inaudible].

ANDREAS SCHAAB. And while we are concerned about monetary policy lags with respect to this rule, first of all we would commit to the ceiling just as a means of communication and sticking to the policy, but we think it's really important first also in the sense of inflation expectations that we address that the current unemployment gap might no longer fully represent the welfare-relevant output gap in for example the New Keynesian framework if you want to look at that. Versick and Levin have done extensive work on this and they say that for example even if the unemployment gap closes, inflation may remain suppressed to the extent that there isn't a participation gap that then features in the New Keynesian Phillips curve. To that extent, we are aware that labor might be as high as 6% and we're aware of that. But we would stick to our commitment and we would point to the fact that U3 and the unemployment gap might no longer represent the welfare-relevant output gap that we care about in the end.

GOVERNOR JEREMY C. STEIN. So fine. So you have essentially an escape valve based on inflation.

STUDENTS. Mm-hmm. Yes.

GOVERNOR JEREMY C. STEIN. Would you consider any other form of escape valves or knockouts? So for example, the Bank of England [inaudible].

ANDREAS SCHAAB. The Bank of England has specifically tied the 7% threshold to their knock off of financial stability. And we've thought about that. In the end we considered it as too much of a deviation from previous policy because our main goal here is to add little complexity by simply making, generalizing the current threshold into a dynamic role. That said, we think that the ceiling is not -- in effect we retain discretionary room to the extent that we can look at additional factors like the current threshold does already. And there might be both labor and financial stability indicators in that.

JAMIE McANDREWS. Following up a little bit on that. So with this dual ceiling approach that you suggest, what do you see the funds rate returning to once you're at some range of full employment that you have, let's say you know, 5.5 or 6%? And how closely would that approximate the historical funds rate average? And I so I'd like that --

JUSTIN KATIRAEI. The standard approximation if you look at the financial products and what the markets are expecting whether it's Euro-dollar futures or OAS swaps is that the Fed funds rate will return to a level around 4% in the long run. This is also consistent with general estimates of a Taylor Rule, consistent with roughly a 2% inflation target. So we would be expecting around a 4% range once we complete our exit of the stimulus that we've provided since the crisis.

JAMIE McANDREWS. But how long would you take that -- how long would that take or what would be your upper ceiling number I guess I'm wondering, and threshold with that? Do you have an idea for what that?

JUSTIN KATIRAEI. What we've done is only provided a partial path ceiling rather than the full path ceiling. We stated that as we approach lift off in the next couple of years we will know better with the increased data about the labor market what kind of full path ceiling the FOMC would like to generalize the partial path ceiling towards in determining the end of our accommodation.

SPEAKER. Great -- go for it.

DANIEL TARTAKOVSKY. Well, within the general framework, we are committed to history-dependent policies, so we mentioned forward guidance in terms of the Woodfordian idea of forward guidance. How we need to keep rates lower for longer because long term rates are function -- or short term rates are a function of expected long term rates for any future date. And so we were focused on providing greater accommodation in that sense to potentially offset the adverse effects of a taper announcement. So we think that we want to use the forward guidance, dynamic forward guidance to smooth the transition to both, you know, flatten the expectations about the future path and to create certainty around the lift off date. So we think there are two factors that contribute to that uncertainty, the date of expected lift off and as well as the, you know, pace of tightening. So if people expect, even if there's certainty about lift off date, people might expect a more quick return to the Taylor Rule type scenario. But we think that, you know, our path ceiling could help mitigate some of that and create a lot more accommodations.

ANDREAS SCHAAB. And just to give you a number on this, if we do follow history-dependent policy under an optimum policy framework as in the FRB/US market for example, if you look at the model estimations, I think they hold rates at the zero lower bound for as long as 2018 if you follow fully optimum policy. So obviously, this is somewhat questionable because the model assumes full commitment and full credibility. But to the extent that we can approximate optimum policy we would try to approximate that rule in our --

JAMIE McANDREWS. And you see this as following kind of a Woodfordian thing. You're trying to get as much accommodation today by promising the --

STUDENTS. Mm-hmm.

JAMIE McANDREWS. -- lower rates in the future as possible. Do you see headwinds in the future as holding down the Fed funds target that you'll be aiming at as well? Or are you think that it's just the depressed level of the labor force participation today that is really the …

JUSTIN KATIRAEI. Well, clearly the one major headwind that we see frequently in the news and it's coming up immediately is continued fiscal drag or uncertainty coming out of political decisions. And we have obviously these recurring debt ceilings that need to be extended or government appropriations that need to be extended to avoid shut downs. And every time these events come up we've, based on our Baker, Bloom and Davis estimations on policy and uncertainty spikes, they estimate that 2.3 million jobs have been not created or lost as a result of this policy uncertainty. So that may be a continued headwind if the public continues to be polarized and that leads to increased to political polarization.

SAMUEL YOUNG. And then another concern of ours with headwind for is that we've seen with the new strong growth in the housing market, and we're worried there may be some specific headwinds with this, specifically with the rates. And this is one reason why we think that we need more accommodation today. We're concerned with this because in May-June we saw the mortgage rates spike. Currently it's at about 4.2%. And since then we saw housing sales drop by about 40,000, housing starts drop by about 100,000. And we want to make sure that we can provide further accommodation to the housing market as this has been driving US growth. And we want to make sure that rate spikes from a taper announcement or other Fed policy, they don't stop this growth that has been a huge plus to the US economy.

EUGENE WANG. So on the flip side, some of the opponents of more accommodation actually say that inflation might be a risk going forward. However, we see that right now there's actually a drop in [inaudible] philosophy. And according to a paper by Carpenter and Demiralp, 2012, the relationship between reserves and M2 money supply has broken down partly because reserves are no longer in the margin of source of funding for bank lending. So going forward we don't see inflation to be much of a problem.

SPEAKER. Time.

GOVERNOR JEREMY C. STEIN. Is that time? All right. Thank you very much.