have unintended consequences of significantly politicizing monetary policy, indicating that this bill is probably a bad idea.

Why monitor?

Monitoring independent agencies is, however, not in general a bad idea. The potential benefits with respect to monetary policy are discussed in Walsh (2015) and Ilbas, Roisland, and Sveen (2012). Monitoring can actually reduce political pressure when the policy goal is clearly articulated, such as a specific inflation target. Having the target monitored gives it more substance and makes it less likely to be temporarily abandoned. It also reduces the pressure to attempt economically infeasible things such as lowering the unemployment rate persistently below its natural rate, which would result in target misses. Both of these monitoring issues, however, deal with ultimate goals rather than instrument monitoring. Instrument monitoring, though, can potentially help alleviate the time inconsistency problem policymakers face and thus make economic stabilization more efficient. Walsh shows that if one knows the exact economic model and there are no measurement issues concerning the data, then both goal- and instrument-based monitoring can be useful. An important assumption is that the model-based output gap is used in the rule. If, instead, one replaces the model-based gap with a purely statistical gap, then generally it is not beneficial to employ instrument monitoring. Also, once it is the model-based gap that is appropriate, robustness issues certainly come to the fore. In practice, we have little idea of what the correct model is and hence what the optimal rule looks like. Further, the analysis of Giannoni and Woodford (2002) indicates that it is likely to be quite complex. The optimal rule is model-dependent and the profession is far from having a representative model.

The robustness issue is taken up in Ilbas, Roisland, and Sveen (2012), who abstract from political pressure effects that are dealt with in Walsh (2015). They use three models in their analysis: Smets and Wouters (2003) is the benchmark model, and the models of Fuhrer and Moore (1995) and Rudebusch and Svensson (1999) are the alternative models. The intuition behind looking at instrument monitoring using a simple rule is that although the simple rule may not be optimal in any particular model, it may have good properties across models. Rule-based guidance may then be helpful, and they implement this guidance by attaching deviations from the rule to the loss function. Their analysis points to benefits of benchmarking policy with simple rules, but does not imply a mechanistic adherence to the rule.

The role of monetary policy reports

That last conclusion points to the usefulness of monetary policy reports, many of which do exactly what Ilbas et al. prescribe. The benchmarking of policy to simple rules can provide a platform by which to judge policy. It forces the policymaker to communicate reasons for deviating and helps clarify the concerns that are influencing policy. Such exercises improve transparency and help align the public's expectations with those of the policymaker. Doing so has been widely shown to improve the efficiency of policy as well as economic welfare. Further, talk is not cheap, and the guidance provided by such reports helps alleviate concerns associated with time inconsistency problems. Requiring regular, detailed reports would represent a more beneficial approach to congressional oversight than a bill that overemphasizes the interest rate outcomes derived from any particular rule. Requiring such reports would also be consistent with practices followed by many of the world's central banks.

Conclusion

To briefly conclude, the monitoring called for in the Federal Reserve Accountability and Transparency Act is ill-conceived, bringing additional political pressure to a nonexistent problem. Past FOMC behavior has been quite systematic, and it has largely achieved the goals set forth in the Federal Reserve's dual mandate. While monitoring per se is potentially beneficial, the conditions for this type of monitoring to be desirable are simply not in evidence. A better idea might be to require a more detailed monetary policy report or to perhaps do nothing at all.

GENERAL DISCUSSION

JOHN TAYLOR: This is a point of clarification for David and Mike. Could one of you explain why Mike gets such different results from David in terms of compliance?

DAVID PAPELL: It's the difference between inertial rules and non-inertial rules.

TAYLOR: That is what I thought. If you put in a lagged dependent variable, as for an inertial rule, you're basically saying: We're going to continue what we are doing even if it's a mistake. You can't distinguish between lagged dependent variables and serially correlated errors. We know that from years and years of experience. So by putting a lagged dependent variable in, you're effectively saying where we are now is good, and so if we move a little bit away from that, it's still pretty good even though it may be very bad based on the rule without inertia. I'm not saying which is right or wrong, but that's the reason for the difference.

MICHAEL DOTSEY: I think that in a lot of these models, the optimal rule that would come out would have inertia in it. That's not something that's unusual to find. Because like in Woodford and Giannoni where they sort of find out what is the optimal rule which depends on state variables, and then say: How do we translate that rule and decentralize it into a rule based on inflation and output gaps? They get a fairly complicated rule that depends on lags of the interest rate and other variables—

TAYLOR: The estimated ones?

DOTSEY: No, no. Out of the model-based rules it said the Fed should be doing something quite inertial, looking at more than just contemporaneous variables.

ANDREW LEVIN: The big issue is to control for the size of the deviations when you are using the different approaches. As long as the process is stationary, you're never going to get a 2 percent

deviation with a lagged coefficient, because the Fed never does a surprise move of 2 percentage points.

PAPELL: There are two big issues. One issue is the size of the deviations. We know inertial rules fit better than non-inertial rules. We know if you stick in two lagged interest rates you can fit in better than one lagged interest rate. A year ago, when we gave our paper here, the first idea that we had was to look at deviations from a wide variety of policy rules. We looked at the five rules that John looked at in the 1999 book. Three of them were inertial rules and two were non-inertial rules. If you try to look at deviations from the inertial rules with these postulated coefficients and try to statistically relate this to rules-based or discretionary periods, you got absolutely nothing. There was no relation in the sense that, when we tried to use that and look at periods of good and bad performance, we found nothing. So I don't think it's just the size of the coefficient. If it was just the size of the coefficient, then we could do fifty basis points instead of two hundred basis points, and it would be no problem. It's that the inertial rules don't give you the kind of differentiation that the non-inertial rules do.

LEVIN: I'd like to clarify a couple things about outcome-based rules, partly because I worked with Alejandro Justiniano on the estimation of the Fed's outcome-based rule. All of the relevant information about that rule is publicly available, because the rule was developed in 2004 and updated in 2005 and 2006, and those FOMC documents have been in the public domain for the past few years. I will say simply that this rule was obtained via data-fitting rather than out-of-sample forecast analysis. In developing the rule, Alejandro spent a lot of time analyzing model selection criteria like AIC and BIC to determine how many lags should be included and how much extra parameters should be penalized. But the basic purpose of the exercise was to find an outcome-based rule that fit the actual federal funds

rate reasonably well over the period from 1987 to about 2005 or 2006. It's worth noting, by the way, that the fitted rule has two lags of the federal funds rate as well as current and lagged values of the output gap. And I'm sure that Alejandro will be glad to hear that you think he did a good job. [Laughter.]

DOTSEY: I would say that would be the reference that you would sort of use.

LEVIN: My guess is the spirit of what the people in Congress are thinking of, and what John Taylor has proposed in some of his op-eds, isn't about what sorts of fancy econometrics can be done to provide the best *ex post* fit to the data. Rather, the intent would be to identify specific policy rules that seem to work reasonably well, and then economists can assess those rules using out-of-sample forecasts and model evaluations. That's a little bit closer, I think, to what David Papell is trying to do. I wouldn't say that you should rule out the possibility of including an inertial component, as John Williams and Athanasios Orphanides studied in their work and that also showed up in some of our joint papers. Interest rate smoothing has an element of replicating commitment-type solutions, and so that should certainly be considered in designing benchmark rules.

Now leaving all of that aside, the fundamental issue here is transparency. The Federal Reserve itself has already been using policy rules for many, many years in its internal deliberations. So I frankly don't see any reason why those rules can't be included in quarterly monetary policy reports or other types of Fed communications to help the public and elected officials get a better understanding of how the FOMC is reaching its decisions. And if policymakers have been using a particular rule for a while, and decide that its coefficients should be adjusted or that the rule simply isn't useful anymore, then they can just explain that.

Furthermore, as John Taylor and I have discussed on various occasions, there doesn't necessarily have to be just one single

rule. It might well be a reasonable approach to have two or three different reference rules. And that could be a key part of the solution for addressing some of the perennial questions about how to formulate and utilize simple benchmark rules. For example, it seems pointless to debate whether a given rule should utilize CPI or core CPI or PCE or core PCE. After all, in assessing the appropriate policy stance, the Fed is trying to determine what's the underlying trend of inflation. And at certain points in time a movement in the CPI that is obviously transitory may be absent from other inflation measures such as core PCE. On the other hand, there are times when the overall CPI is starting to move and it's evident that other measures such as core PCE are going to catch up. Thus, it's simply not the case that any single inflation measure is always best while all of the other measures are deficient. Consequently, there's no reason why policymakers can't refer to several alternative benchmark rules with different measures of inflation in explaining the rationale for their policy decision. For example, they might say, "We're putting a little bit more weight on this particular rule right now, because we think that the movement of food and energy prices is an important part of the inflation pressures that we're seeing and hence merits a policy response." And isn't that essentially in the spirit of what John Taylor has been advocating?

TAYLOR: Yes.

JOHN WILLIAMS: I think I'm going to pick up on some of what Mike and what Andy have already said. This could sound like a technical point, but I actually think it is a deeper point for thinking about rule-based accountability, and that is that a lot of models that we use, I would say the vast majority of models we use for monetary policy analysis, do have this implication that you want to have inertia in your policy, that you do want to have the lagged interest rate in the rule, basically, as Andy said, a link to basically achieving more of a commitment-like equilibrium. This has

implications for when you think about the issue of how you hold the central bank accountable. Are you following the rule? Are you acting in a systematic basis? In assuming the rule were designed to be something close to welfare-maximizing, you would have this problem that Mike and this discussion were highlighting, that you would basically be saying, "I've got a lagged interest rate here, it looks like it's great." And it would be very hard in practice if you were following the optimal policy rule to distinguish between sins and saint-like behavior. I mean it could be the fact that the lagged interest rate is a very powerful state variable for good theoretical reasons. Or it could be that you're just carrying the mistakes from the past. So I just think that even if I'm describing it in a rather technical way, I think that when you think about what we know from optimal monetary policy, we would face this problem in actually trying to hold the central bank accountable, because it's really hard to distinguish between optimal monetary policy by looking at the action and something that would really just be carrying the past mistakes forward.

One thing I just want to say in David's paper, which I did find interesting and educational, is it kind of makes me nervous about this whole Taylor rule-ology. This is like Kremlinology, where we're looking at pictures and trying to figure out the patterns, and what were people really thinking. And what does this mean? And since I'm on the panel, I'll hold my comments to later about some of the issues around trying to use compliance to a policy rule as the best way to measure your thinking, your analysis, your decision-making, and come back to something I'm sure Paul will have a view on and maybe many others about the difference between that and having a goal as really basically what you're being held accountable to. And basically, trying to make the best policies to reach that.

But going back to that issue, the issue that Mike and Andy and really everyone was talking about is a problem you're going

to face if you try to hold a central bank accountable to an interest rate rule, and that interest rate rule has a lot of inertia in it. Thanks.

CHARLES PLOSSER: I just want to follow up on some of Andy's comments. At this conference last year, I proposed, and have continued to advocate, exactly what Andy's been talking about. It is a way for the Fed and the FOMC to usefully proceed. The staff regularly prepares estimates of various rules and their implications for the path of economic activity. From my perspective, the actual conversation around those is not as useful or as helpful as it could be, even within the meetings. But they could usefully be part of publicly available information that is reported in a monetary policy report. The FOMC would be expected to talk about its policy choices in the context of perhaps several reference rules that are widely discussed in the academic literature and thought to be robust. I think that that would change the tone of the conversation and improve the communication of a monetary policy strategy. It would also force the committee to explain itself in the context of benchmarks or guidelines, whether the rules have a lot of inertia or not. Being more transparent through the publication of such an analysis, the committee would enhance its communication through a coherent and systematic discussion of why it chooses its policy at any point in time. Mike Dotsey and I, along with the research staff at the Federal Reserve Bank of Philadelphia, have worked on examples of how one might write a monetary policy report, or at least this section of a monetary policy report that tries to do exactly such an exercise.

So I think at the end of the day this is about communication and accountability, and not necessarily toward the specification of a specific rule, but accountability and a commitment to a framework that forces the committee to talk in a particular way about monetary policy strategy.

Economists almost always model monetary policy as rule-like or systematic. Most forecasting models assume such behavior as well. Yet policymaking remains highly discretionary and, as a result, it is difficult to communicate and highly unpredictable. The approach I've advocated forces the committee to be less discretionary, or at least justify its discretion in the context of a much more coherent and systematic framework. I think that's the power and value of this, and this is exactly what I talked about at the conference last year.

CARL WALSH: I think there are at least three different interpretations or rules at play in policy discussions that have come up here. One is what Charlie just articulated; that it is useful for internal discussions at the policymaking decision stage. And because forecasts are necessary for policy actions, we can't do forecasts unless we forecast what the central bank is going to do. So we can't construct forecasts without implicitly using some sort of rule, and using a variety of rules and seeing what their implications are for outcomes seems very important for the policy discussion.

Rules can also be important for helping the public predict what monetary policy is going to do. And so some central banks provide forecasts of their policy rate as part of the process of being transparent and helping the public understand where policy is going. Here, it seems like the presence of multiple policy rules makes that more difficult. In some sense you have to reach a consensus on what rule is going to be used to describe future policy.

And then the third role, which is probably more closely tied to the accountability aspect, is the role of a rule to potentially restrict policy discretion, that is, to restrict the flexibility of the central bank. And here I think there's a potential problem with having aspects of the rule determined by the central bank itself. We have the experience of monetary targeting in the US, where

Congress mandated that the Federal Reserve establish targets for monetary aggregates, and the Fed produced multiple targets for multiple monetary aggregates. The criticism was that there was always at least one monetary aggregate that came in on target. And so it really didn't serve much of a role for promoting accountability. And then on top of that, there was lots of criticism of the Fed for employing base drift in which it just re-benched the level of the money supply to incorporate any past target misses. So in some sense the accountability aspect is served more strongly if the reference rule, in some sense, is specified outside the central bank.

Now the parallel with inflation targeting is we have many inflation-targeting countries where the government sets the inflation target, which always seemed to me more consistent with the issues of democracy, the role of elected officials, and then the role of the central bank in implementing the policy. In some countries, the central bank defines the inflation target, and that seems more problematic on many dimensions. I think you may have some of the same aspects with respect to a rule if the rule is to serve as a measure of accountability, versus whether it's something to help guide policy and used to help explain policy to the public.

PETER FISHER: Yes, just some observations to provoke people. I was responsible for seven years for what was, in effect, an experiment in rules versus discretion. As head of fixed income at BlackRock, where we managed a trillion dollars of other people's money, we had quantitative investment teams who tended to follow rules, and we had traditional fund managers who had few rules and more discretion. So we had rule-based teams and discretionary teams, and I was responsible for all of their performance. My conclusion on rules versus discretion is that there are two types of errors. There's the type one error of too much change, of time inconsistency, whatever you want to call it. And

the type two error is of too little change, of overconfidence, of too much time consistency. Discretionary fund management teams are capable of both types of errors. The quantitative, rule-based teams tend not to commit the type one error of too much change, of time inconsistency but they are prone to the type two error of overconfidence, of too much time consistency. Reducing type one errors is essentially the gain you get from having rules over discretion. I think that's consistent with what John was saying a moment ago.

The other thing now I want to put on the table in this context, just as a challenge, is the challenge of what transparency of decision-making does to the role of expectations in monetary policy. I find this actually the most problematic aspect of the last decade, that if we never change the market's expectations, that if we so thoroughly have embedded in the market a view of where the forward curve is headed, that when the committee meets and opines, expectations never change, so what's monetary policy doing? And I state that as a dilemma, not as an end in itself, but as a point of departure. And my own view is that the episode of '04–'06 was significantly one in which the committee congratulated itself for never changing the forward curve when it announced decisions. That's another challenge to this question of how much disclosure to give to decision rules. I'm a fan of transparency but I also think that transmission mechanism is about changing expectations. And if we denude ourselves of too much influence over expectations, I'm not sure where we've left monetary policy.

PAUL TUCKER: There are two things I want to bring into the discussion that haven't been present so far. I do not favor at all goal independence. I think it's wrong in a democracy where we expect our elected representatives to make decisions about objectives and values, after public debate. And secondly I think it's absolutely imperative that what I call *operating principles*

disclose how an unelected agent is operating a systematic policy. Those two points are in the background to what I want to add to the discussion.

The first thing that I think hasn't been brought to the table is that there is a big, deep question about putting a precise rule—and this isn't just about John's rule, but any old rule—in legislation, because it makes it justiciable. And the one thing that I will assert is that to the extent that there's a democratic deficit inherent in an unelected central bank, it cannot be repaired by unelected Supreme Court justices. Often, legal scholars in the United States will talk about agencies being *accountable* or *overseen* by the courts. But a thought experiment about central banks absolutely blows that out of the water. The idea that the part of the educated elite who studied law can heal the democratic deficit inherent in the policymaking by the part of the educated elite who studied economics misses the point of democracy. So I think while we certainly need something that makes the Fed, the Bank of England, the European Central Bank, and their peers disclose how their policy is systematic and binds them to a systematic policy, I wouldn't want to do that in a way where it gets played out in the Supreme Court. That doesn't mean that nothing should be under the law. It's a question about *what* should go into the law.

The second consideration that hasn't been picked up yet is about the role of committees, and we will of course come back to that later on with Kevin's paper. If the purpose of delegation is to insulate policy, with a clear goal, from day-to-day politics, then we should be against delegating these powers to one person, either de jure or, just as importantly, de facto. There is no way the Bank of England would have got monetary independence in 1997 had there not been a requirement for decisions being taken on a truly one person-one vote basis. Eddie George's greatest gift to UK monetary policy was and remains that. Even

though he was a tremendously dominant man, he ensured as chair that it really was one person-one vote. And Mervyn King sustained that, and indeed allowed himself to go into the minority on many occasions, including Charlie Bean and I voting on more than one occasion to leave him in the minority. And that did not diminish Mervyn's authority. What I am describing was what really strengthened the monetary policy debate in the UK in a way that Kevin will talk about this afternoon.

That is background to the question or dilemma I want to pose. If a regime truly involves one person-one vote, rather than mechanisms for trimming the chair, how can the committee commit itself to a particular systematic policy? Reconciling those two desiderata is not easy. This amounts to asking whether a systematic policy determined by just one person is better or worse than a true one person-one vote system. I think the solution has to involve a democratic committee having processes that harness centripetal and well as centrifugal forces. As I saw it, the Bank of England has since 1997 aimed to do that through its process for producing a collective forecast of the outlook for inflation.

JOHN COCHRANE: There are two important points we haven't talked about. First: what is the nature of the rules, once we start putting in lags and other variables? Suppose that we get a regression that fits with 100 percent R squared, with lots of lags and extra variables. We don't want to put that rule into legislation going forward, though. Doing so would enshrine that the Fed's rule from the last fifty years was optimal. The whole point of this exercise it that maybe the Fed didn't do everything perfectly. So regression fit is not at all a good measure of a desirable rule.

That point holds especially for the lags. It is natural to summarize a rule by saying, "Here's where we think interest rates should be, as a function of inflation and unemployment. We'll get there slowly." Almost all policy consists of a target and then

gradual adjustment. The point here is to find the target, and much less to prescribe the adjustment process.

Second, a key aspect of a rule is what variables are excluded, not just what variables are included. A rule that directs the Fed to respond to inflation and unemployment by implication tells the Fed to ignore exchange rates, house prices, stock prices, bond prices, credit spreads, "credit availability," and the cries of a long string of interest groups that would like the Fed to intervene in one market or another. A key aspect of an independent bank is a restriction on its responsibilities and tools. No, you can't drop money from helicopters, you can only lend, to banks, and on good collateral. We should pay more attention not just to the Fed's unemployment and inflation responses, but call it to task for its increasing willingness to try to manage and respond to all sorts of other variables.

TAYLOR: Let me just say that what David and also Carl Walsh have done in the papers for this conference is very constructive. They've taken actual legislative proposals and analyzed them rigorously. I agree that the idea that you can justify anything you want is worrisome. But with accountability, one remedy to that—as David shows—is that even if you can justify what you're doing today with some argument, that same approach is not likely to work next time. And so you can look like you're slipping from one argument to another all the time, which raises a lot of credibility issues.

Regarding the issue that it is hard for a large number of policymakers on the FOMC or any other monetary policy committee to be involved in a decision about a strategy for the policy instruments, history shows that the Fed figured that out with the money growth targeting when they were required to do so. They decided on a range for several different aggregates. As you know, Congress took those requirements out of the law in 2000, and didn't replace them with anything. So I think that

such reporting requirements can work. It's not impossible. You might want to have a range of rules.

And more generally—this is something I picked up from George Shultz—it's really a strategy we're talking about. What's the Fed's strategy? There are many organizations that benefit from having a strategy. And sometimes they do it better, and sometimes they do it worse. But having a strategy is what we're trying to get at here. And mathematical formulas are perhaps not always the best way to describe a strategy. The legislation doesn't have to have a specific reference rule. The Senate version of the policy rules bill doesn't have that, and some people prefer that.

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