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Committee Decisions and Monetary Policy Rules

Remarks by

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It is a pleasure to be at the Hoover Institution again. I was privileged to be a Visiting Scholar here from 1981 to 1982. In addition, many of the researchers and practitioners with whom I have discussed monetary policy over the years have had affiliations with the Hoover Institution--including several people here today. It is a pleasure also to have been invited to speak at this Hoover Institution Monetary Policy Conference, for the Hoover conference series provides a valuable forum for policymakers and researchers to engage in dialogue about important monetary policy issues facing the United States and other countries.

Today I will offer some observations on monetary policy rules and their place in decisionmaking by the Federal Open Market Committee (FOMC).[1] I have two messages. First, policymakers should consult the prescriptions of policy rules, but--almost needless to say--they should avoid applying them mechanically. Second, policymaking committees have strengths that policy rules lack. In particular, committees are an efficient means of aggregating a wide variety of information and perspectives.

Monetary Policy Rules in Research and Policy

Since May 2014, I have considered monetary policy rules from the vantage point of a member of the FOMC. But my interest in them began many years ago and was reflected in some of my earliest publications.[2] At that time, the literature on monetary policy rules, especially in the United States, remained predominantly concerned with the money stock or total bank reserves rather than the short-term interest rate.[3] Seen with the

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[1] Views expressed in this presentation are my own and not necessarily the views of the Federal Reserve Board or the Federal Open Market Committee. I am grateful to Ed Nelson of the Federal Reserve Board for his assistance.

[2] See, for example, Cooper and Fischer (1972).

[3] There was, however, a long tradition of monetary analysis in the United Kingdom and continental Europe that was centered on the authorities' use of the interest rate as an instrument. See especially Keynes (1930) and Wicksell (1936). In the post-World War II decades, this tradition continued in the U.K. research

benefit of hindsight, that emphasis probably derived from three sources: First, the quantity theory of money emphasized the link between the quantity of money and inflation; second, that research was carried out when monetarism was gaining credibility in the profession; and, third, there was a concern that interest rate rules might lead to price-level indeterminacy--an issue disposed of by Bennett McCallum and others.[4]

Subsequently, John Taylor's research, especially his celebrated 1993 paper, was a catalyst in changing the focus toward rules for the short-term interest rate.[5] Taylor's work thus helped shift the terms of the discussion in favor of rules for the instrument that central banks prefer to use. His 1993 study also highlighted the practical relevance of monetary policy rules, as he showed that a particular simple rule--the rule that now bears his name--provided a good approximation to the behavior of the federal funds rate during the early Greenspan years. The research literature on monetary policy rules has experienced a major revival since Taylor's seminal paper and has concentrated on rules for the short-term interest rate.

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literature on monetary policy: Examples include Currie and Levine (1987) and Flemming (1993). In addition, an interest rate was the policy instrument in some key contributions to open-economy monetary theory, such as Meade (1951) and Mundell (1960). These traditions likely reflected the long-standing use of Bank Rate as a policy instrument in the United Kingdom and the fact that, for most of the period from the Treasury/Federal Reserve Accord of 1951 until the 1990s, central banks in countries other than the United States tended to be more explicit than the Federal Reserve chose to be about their use of short-term interest rates as their primary policy instrument. Even in the U.S. context, however, there was a certain amount of research on interest rate policies. For example, it was common practice among builders of large econometric models to consider different Federal Reserve interest rate strategies (see Ando, 1981). In addition, the empirical and simulation properties of the Federal Reserve's interest rate reaction function were the concern of such studies as Dewald and Johnson (1963), DeRosa and Stern (1977), Dornbusch and Fischer (1979), and Henderson and McKibbin (1993), while Sargent and Wallace (1975) and McCallum (1981) examined the analytical properties of interest rate rules. A later magisterial study of the analytics of interest rate rules was Woodford (2003).

[4] See McCallum (1981). I should add that when we presented work based on Cooper and Fischer (1972), we were urged by several economists to focus on the interest rate as the monetary policy instrument. Among these economists were Albert Ando and Franco Modigliani, who were then working with others on building the MPS (MIT-Pennsylvania-Social Science Research Council) model.

[5] See Taylor (1993).

Consideration of interest rate rules has also, as I will discuss, come to have a prominent role in FOMC discussions, with the Taylor rule being one benchmark that we regularly consult. But--building on recent remarks I made elsewhere--I will also indicate why policymakers might have good reasons for deviating from these rule benchmarks and why, in pursuing the objectives of monetary policy, they could appropriately behave in ways that are not very well characterized by simple monetary policy rules.[6] In particular, I will point to reasons why the FOMC's discussions might lead to decisions that depart--temporarily or permanently--from the prescriptions of baseline monetary policy rules.

Rules as a Benchmark for Policy Discussions

Some perspective on the status of policy rules in FOMC discussions is provided by considering what has changed over the past 20 years. Donald Kohn, at a landmark conference organized by John Taylor in January 1998, described the role played by monetary policy rules in the FOMC briefing process.[7] His account noted that Federal Reserve staff members presented FOMC participants with prescriptions from several policy rules, including the Taylor (1993) rule. This description remains true today. Publicly available Bluebooks and Tealbooks of successive years demonstrate that the coverage of policy rules in the briefing material provided by the Board staff expanded considerably in the years after Kohn spoke.[8]

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[6] For my earlier speeches in this area, see Fischer (2017a, 2017b).

[7] See Kohn (1999). At the time, Donald Kohn was director of the Division of Monetary Affairs at the Federal Reserve Board. The conference proceedings were published as Taylor (1999a).

[8] The Federal Reserve Board's website (https://www.federalreserve.gov/monetarypolicy/fomc_historical_year.htm) provides downloadable copies of the briefing books (the Greenbook and Bluebook, which were replaced in 2010 by the Tealbook) distributed to FOMC members and other participants ahead of each FOMC meeting. At present, the most recent year for which these materials are available on the site is 2011. The "Monetary Policy Strategies" portion of the Bluebook (and, later, the Tealbook) contains prescriptions from interest rate rules.

Kohn noted that policy rule prescriptions served two functions: as a "benchmark for the stance of policy" and "to structure thinking about the implications of incoming information for the direction of policy action."[9] These two functions continue to be important: Policy rule prescriptions provide a useful starting point for FOMC deliberations and a convenient way of organizing alternative arguments about the appropriate policy decision. Policy rule prescriptions, particularly prescriptions that are obtained from a dynamic model simulation, also help policymakers take to heart a key message of the literature on policy rules--namely, that monetary policy decisions should concern the appropriate *path* for the policy instrument and not merely the current setting of that instrument.

Kohn also observed, however, that "in truth, only a few members look at this or similar information regularly, and the number does not seem to be growing." That state of affairs has probably changed in the two decades since Kohn wrote. It is clear from transcripts in the public record that rule prescriptions have frequently been cited at FOMC meetings.[10] The prominence that interest rate rules have achieved in Federal Reserve policymakers' analysis of monetary policy was underscored by Chair Yellen in her speech at Stanford University earlier this year.[11]

Further, as is clear from Taylor's econometric derivation of his 1993 rule, actual monetary policy decisions may--and probably should--exhibit systematic patterns that can be described as a rule. In fact, as I have already noted, one attraction of the 1993

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[9] See Kohn (1999, p. 195). The first of these functions of policy rule prescriptions was one I also had highlighted. In Fischer (1994, p. 289), when considering McCallum's (1988) proposed rule for monetary base growth, I described it as "a useful benchmark against which to judge policy."

[10] Searchable transcripts of FOMC meetings up to 2011 are available on the Board's website at https://www.federalreserve.gov/monetarypolicy/fomc_historical.htm.

[11] See Yellen (2017).

Taylor rule was that it described U.S. monetary policy patterns well over a certain period, one that was associated with a reasonable degree of economic stability.

Nevertheless, central bankers who are aware of the merits of the arguments for policy rules have on occasion deviated substantially from the prescriptions of standard policy rules. Further, while the implications of different monetary rules are described in the Tealbook and typically referred to in the presentations by several FOMC participants, the overall discussion in FOMC meetings is not generally cast in terms of how it relates to one version or another of the Taylor or any other rule. The other set of rules mentioned frequently in FOMC discussions are Wicksellian, for there is often a discussion of r^*, which in some formulations of the Taylor rule is also the constant term.

The period since 2008 bears testimony to central bankers' willingness to depart from the prescriptions of a pre-specified rule. In the wake of the financial crisis, policymakers found it necessary to follow a more accommodative monetary policy that was appropriate for the new economic conditions.[12] In addition, structural changes in the U.S. economy have apparently lowered the value of the interest rate--that is, r^*--consistent with neutral policy.[13]

Such structural changes were not anticipated in advance.[14] Of course, once a structural change has occurred and been ascertained by policymakers, they will know

[12] See especially Engen, Laubach, and Reifschneider (2015). Because the federal funds rate was at its effective lower bound from late 2008 to late 2015, policy choices about that rate largely involved decisions concerning the forward guidance provided by the FOMC. These decisions in turn rested on judgments regarding the period over which the rate should remain at its lower bound, as well as about the pace and magnitude of the subsequent policy firming.

[13] See, for example, Board of Governors (2017).

[14] Indeed, Milton Friedman's advocacy of a policy rule consisting of constant monetary growth rested in part on the existence of uncertainty, as he suggested that economists lacked the knowledge about economic relationships required to improve on that simple rule. See Friedman (1972) for a concise version of his case for the rule and Dornbusch and Fischer (1978, pp. 278-80, 516) for a textbook account of Friedman's rule that emphasized the uncertainty aspect of his argument for the rule. Of course, the fact that a policy

what rules would likely have performed well in the face of that change. For this reason, policymakers might change their judgment about what monetary policy rules constitute reasonable benchmarks, or, over time, they might develop a procedure for revising the monetary rule. But a frequently revised rule does not really qualify as a rule in the sense that we currently use the term.

Consequently, when considering the relationship between monetary policy decisions and monetary policy rules, we can expect two regularities to hold. First, actual monetary policy will sometimes appropriately depart from the prescriptions of benchmark rules even when those benchmarks describe past decisions well. Second, in their use of rules, policymakers will from time to time change their assessment of what rule they regard as the appropriate benchmark. Both regularities have been amply observed in recent years, but they were also present 20 years ago, as reflected in Kohn's remark that policymakers "do not see their past actions as a very firm guide to current or future policy." Or, as a teacher of mine at the London School of Economics, Richard Sayers, put it much earlier, "There is no code of eternal rules. . . . We have central banks for the very reason that there are no such rules."[15]

As I will now elaborate, I believe the fact that monetary policy is made by committees in most economies is important in understanding both of these regularities.

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rule is simple far from guarantees that the rule will generate satisfactory economic outcomes in the face of uncertainty and economic change. For example, Friedman's rule would likely perform poorly in an environment in which the trend rate of growth of monetary velocity underwent a major shift, while the Taylor rule could perform unsatisfactorily if the assumption about potential-output behavior embedded in the rule proved to be badly mistaken. The latter possibility was stressed in Orphanides (2003).

[15] See Sayers (1958, p. 7).

The Role of Committees in Policy Formation

Monetary policy decisions in the United States and elsewhere typically arise from a discussion and vote of a committee.[16] In principle, a monetary policy committee could decide to follow a rule. But a decision of this kind is unlikely to occur in practice. Committee discussions bring into policymaking features that a rule lacks. A committee-based decision process is, I suggest, likely to produce policy decisions that depart from the prescriptions of benchmark rules.

A policy rule prescription is more consistent with a single perspective on the economy than with the pooling of multiple perspectives that is associated with a committee policymaking process. Roger Lowenstein's book *America's Bank* details how the founding of the Federal Reserve involved reconciling a large number of interests in the United States.[17] In a similar vein, the modern FOMC framework involves participation by 12 Reserve Bank presidents, each of whom represents a different district of the country. The FOMC framework also balances centralized and decentralized decisionmaking by having most of the permanent voting members--specifically, the Board of Governors--be based in Washington, D.C.

All of the FOMC participants have common goals--maximum employment and price stability--that are given by the Federal Reserve's statutory mandate. They have also agreed, for pursuing that mandate, on the Statement on Longer-Run Goals and Monetary Policy Strategy.[18] But while they have this common ground, each FOMC participant brings to the table his or her own perspective or view of the world. Part of their role in

[16] I discussed some of the literature on monetary policy committees in Fischer (2017b).
[17] See Lowenstein (2015).
[18] See Federal Open Market Committee (2017).

meetings is to articulate that perspective and perhaps persuade their colleagues to revise their own perspectives--or vice versa.

A member of a committee may well have valuable economic information not known by their colleagues until he or she relays it. This point has been brought home to me by Reserve Bank presidents' accounts of recent economic developments in their Districts. These narratives shed light on the real-world developments that lie behind the recorded economic data. They also help shape my interpretation of what part of incoming data may be an important signal and what part may reflect transitory factors or mismeasurement.

The information underlying a policy decision is, therefore, crucially shaped by a committee system. Committees can aggregate a large volume of diverse information about current and expected future economic conditions. The information includes anecdotes and impressions gleaned from business and other contacts, which can provide insights that are not recorded in current data releases.

In practice, it is likely that the information obtained and processed by the Committee will leave the FOMC less inclined to follow a benchmark rule. For example, the Committee's discussions might point up factors that have not yet affected real economic activity and inflation. Such factors would not lead to an immediate change in the prescription for the federal funds rate obtained from a rule like the Taylor rule, as this prescription is a function of current values of the output gap and inflation. The Committee might nevertheless wish to adjust the federal funds rate immediately because the newly unearthed factors are likely to affect output and inflation in coming months.

In addition, and as I have suggested, policymakers might also encounter unexpected or unusual events, or both, or they might perceive changes in the structure of the economy. A committee process is conducive to assessing the appropriate policy response to these developments. A case in point is the decline, as I mentioned, in estimates of the neutral interest rate. The concept of the neutral interest rate is a way of summarizing the various forces, many of them unobservable, that shift the relationship between monetary policy and economic activity. Bringing to the table diverse perspectives is a pragmatic way of confronting such deep sources of uncertainty and deciding how to deal with them. A committee discussion can flesh out the factors behind changes in the neutral rate, and a committee would likely be able to identify such changes more promptly than would a statistical exercise, because of the wider set of information from around the country that the committee is able to process.

The decisionmaking environment that I have described involves more flexibility for FOMC members than they would have if they simply followed a policy rule. But transparency and accountability must figure heavily in this more flexible environment. The FOMC's policy communications include its postmeeting statement, the minutes of its meetings, the Chair's quarterly press conference, the Chair's semiannual monetary policy testimony to the Congress, and other public remarks by individual FOMC members. In this framework, policymakers articulate the reasoning behind each decision and, in particular, explain how the policy decision contributes to the achievement of the Committee's statutory mandate.

There remains a deeper question about committee decisionmaking: Why have almost all countries decided that monetary policy decisions should be made by a

committee rather than by a rule? One answer is that laws in most countries are passed by institutions in which committee deliberation is the norm. Of course, we then have to ask why that has become a norm in almost all democracies. The answer is that opinions--even on monetary policy--differ among experts, while the economy is in a constant process of change.

Because opinions differ among experts, democracies tend to prefer committees in which decisions are made by discussion among the experts--and, in many cases, other representatives of the public--who discuss, try to persuade each other, and must at the end of their deliberations reach a decision. But those decisions have to be explained to the public and to other parts of the government--and hence the appropriate emphasis on transparency and accountability. That is the democratic way of making decisions when opinions differ, as they often do in the monetary field.

I have been a governor of two central banks and, even as the sole monetary policy decisionmaker in the Bank of Israel, would sometimes find that my initial view on the next decision changed as a result of discussions with the informal advisory committee with whom I consulted at that time. Those discussions, which recognize human frailty in analyzing a situation and the need to act despite considerable uncertainties, are the reason why committee decisionmaking is, *on average*, preferable to the use of a rule.[19]

Emphasis on a single rule as *the* basis for monetary policy implies that the truth has been found, despite the record over time of major shifts in monetary policy--from the gold standard, to the Bretton Woods fixed but changeable exchange rate rule, to

[19] The existing literature on monetary policy committees has found that committee decisions tend to be better than decisions made by a sole policymaker. See, for example, Blinder and Morgan (2005); Lombardelli, Proudman, and Talbot (2005); and Warsh (2016).

Keynesian approaches, to monetary targeting, to the modern frameworks of inflation targeting and the dual mandate of the Fed, and more. We should not make our monetary policy decisions based on that assumption. Rather, we need our policymakers to be continually on the lookout for structural changes in the economy and for disturbances to the economy that come from hitherto unexpected sources.

Concluding Remarks

Let me now sum up. The prescriptions of monetary policy rules play a prominent role in the FOMC's monetary policy deliberations. And this is as it should be, in view of the usefulness of rules as a starting point for policy discussion and the fact that comparison with a benchmark rule provides a useful means of articulating one's own preferred policy action. But, for the reasons I have outlined, adherence to a simple policy rule is not the most appropriate means of achieving macroeconomic goals--and there are very good reasons why monetary policy decisions are typically made in committees whose structure allows them to assess the varying conditions of different regions and economic sectors, as well as to reflect different beliefs about the working of the economy.

References

Ando, Albert (1981). "On a Theoretical and Empirical Basis of Macroeconometric Models," in J. Kmenta and J.B. Ramsey, eds., *Large-Scale Macro-Econometric Models: Theory and Practice.* New York: North-Holland, pp. 329-68.

Blinder, Alan S., and John Morgan (2005). "Are Two Heads Better Than One? Monetary Policy by Committee," *Journal of Money, Credit, and Banking*, vol. 37 (October), pp. 789-811.

Board of Governors of the Federal Reserve System (2017). "Minutes of the Federal Open Market Committee, December 13-14, 2016," press release, January 4, https://www.federalreserve.gov/newsevents/pressreleases/monetary20170104a.htm.

Cooper, J. Phillip, and Stanley Fischer (1972). "Stochastic Simulation of Monetary Rules in Two Macroeconomic Models," *Journal of the American Statistical Association*, vol. 67 (December), pp. 750-60.

Currie, David, and Paul Levine (1987). "Does International Macroeconomic Policy Coordination Pay and Is It Sustainable? A Two-Country Analysis," *Oxford Economic Papers*, vol. 39 (March), pp. 38-74.

DeRosa, Paul, and Gary H. Stern (1977). "Monetary Control and the Federal Funds Rate," *Journal of Monetary Economics*, vol. 3 (April), pp. 217-30.

Dewald, William G., and Harry G. Johnson (1963). "An Objective Analysis of the Objectives of American Monetary Policy, 1952-61," in Deane Carson, ed., *Banking and Monetary Studies*. Homewood, Ill.: R.D. Irwin, pp. 171-89.

Dornbusch, Rudiger, and Stanley Fischer (1978). *Macroeconomics*. New York: McGraw-Hill.

-------- (1979). *The Determinants and Effects of Changes in Interest Rates: A Study Prepared for the Trustees of the Banking Research Fund*. Chicago: Association of Reserve City Bankers.

Engen, Eric M., Thomas Laubach, and David Reifschneider (2015). "The Macroeconomic Effects of the Federal Reserve's Unconventional Monetary Policies," Finance and Economics Discussion Series 2015-005. Washington: Board of Governors of the Federal Reserve System, February, http://dx.doi.org/10.17016/FEDS.2015.005.

Federal Open Market Committee (2017). Statement on Longer-Run Goals and Monetary Policy Strategy, amended effective January 31 (original version adopted effective January 24, 2012), https://www.federalreserve.gov/monetarypolicy/files/fomc_longerrungoals.pdf.

Fischer, Stanley (1994). "Modern Central Banking," in Forrest Capie, Charles Goodhart, Stanley Fischer, and Norbert Schnadt, eds., *The Future of Central Banking: The Tercentenary Symposium of the Bank of England*. New York: Cambridge University Press, pp. 262-308.

-------- (2017a). "'I'd Rather Have Bob Solow Than an Econometric Model, But . . . ,'" speech delivered at the Warwick Economics Summit, Coventry, United Kingdom, February 11, https://www.federalreserve.gov/newsevents/speech/fischer20170211a.htm.

-------- (2017b). "Monetary Policy: By Rule, by Committee, or by Both?" speech delivered at the 2017 U.S. Monetary Policy Forum, sponsored by the Initiative on Global Markets at the University of Chicago Booth School of Business, New York, March 3, https://www.federalreserve.gov/newsevents/speech/fischer20170303a.htm.

Flemming, John (1993). "Money, Interest and Consumption in the *General Theory*," in Haim Barkai, Stanley Fischer, and Nissan Liviatan, eds., *Monetary Theory and Thought: Essays in Honour of Don Patinkin*. London: Macmillan, pp. 74-83.

Friedman, Milton (1972). "The Case for a Monetary Rule," *Newsweek*, February 7, p. 67.

Henderson, Dale W., and Warwick J. McKibbin (1993). "A Comparison of Some Basic Monetary Policy Regimes for Open Economies: Implications of Different Degrees of Instrument Adjustment and Wage Persistence," *Carnegie-Rochester Conference Series on Public Policy*, vol. 39 (December), pp. 221-317.

Keynes, John Maynard (1930). *A Treatise on Money*, 2 vols. New York: Harcourt, Brace and Company.

Kohn, Donald L. (1999). "Comment," in John B. Taylor, ed., *Monetary Policy Rules*. Chicago: University of Chicago Press, pp. 192-99.

Levin, Andrew T., and John C. Williams (2003). "Robust Monetary Policy with Competing Reference Models," *Journal of Monetary Economics*, vol. 50 (July), pp. 945-75.

Lombardelli, Clare, James Proudman, and James Talbot (2005). "Committees versus Individuals: An Experimental Analysis of Monetary Policy Decision Making," *International Journal of Central Banking*, vol. 1 (May), pp. 181-205.

Lowenstein, Roger (2015). *America's Bank: The Epic Struggle to Create the Federal Reserve*. New York: Penguin Press.

McCallum, Bennett T. (1981). "Price Level Determinacy with an Interest Rate Policy Rule and Rational Expectations," *Journal of Monetary Economics*, vol. 8 (November), pp. 319-29.

-------- (1988). "Robustness Properties of a Rule for Monetary Policy," *Carnegie-Rochester Conference Series on Public Policy*, vol. 29 (Autumn), pp. 173-203.

Meade, James E. (1951). *The Theory of International Economic Policy, vol.* 1: *The Balance of Payments.* New York: Oxford University Press.

Mundell, Robert A. (1960). "The Monetary Dynamics of International Adjustment under Fixed and Flexible Exchange Rates," *Quarterly Journal of Economics*, vol. 74 (May), pp. 227-57.

Orphanides, Athanasios (2003). "The Quest for Prosperity without Inflation," *Journal of Monetary Economics*, vol. 50 (April), pp. 633-63.

Reifschneider, David (2016). "Gauging the Ability of the FOMC to Respond to Future Recessions," Finance and Economics Discussion Series 2016-068. Washington: Board of Governors of the Federal Reserve System, August, http://dx.doi.org/10.17016/FEDS.2016.068.

Sargent, Thomas J., and Neil Wallace (1975). "'Rational' Expectations, the Optimal Monetary Instrument, and the Optimal Money Supply Rule," *Journal of Political Economy*, vol. 83 (April), pp. 241-54.

Sayers, R.S. (1958). *Central Banking after Bagehot*, rev. ed. Oxford, United Kingdom: Clarendon Press.

Taylor, John B. (1993). "Discretion versus Policy Rules in Practice," *Carnegie-Rochester Conference Series on Public Policy*, vol. 39 (December), pp. 195-214.

--------, ed. (1999a). *Monetary Policy Rules.* Chicago: University of Chicago Press.

-------- (1999b). "The Robustness and Efficiency of Monetary Policy Rules as Guidelines for Interest Rate Setting by the European Central Bank," *Journal of Monetary Economics*, vol. 43 (June), pp. 655-79.

Warsh, Kevin M. (2016). "Institutional Design: Deliberations, Decisions, and Committee Dynamics," in John H. Cochrane and John B. Taylor, eds., *Central Bank Governance and Oversight Reform.* Stanford, Calif.: Hoover Institution Press, pp. 173-93.

Wicksell, Knut (1936). *Interest and Prices: A Study of the Causes Regulating the Value of Money*, trans. R.F. Kahn. London: Macmillan.

Woodford, Michael (2003). *Interest and Prices: Foundations of a Theory of Monetary Policy*. Princeton, N.J.: Princeton University Press.

Yellen, Janet L. (2017). "The Economic Outlook and the Conduct of Monetary Policy," speech delivered at the Stanford Institute for Economic Policy Research, Stanford, Calif., January 19, https://www.federalreserve.gov/newsevents/speech/yellen20170119a.htm.