

A Note on “Post-Modern” Monetary Policy

By
Thierry Warin

Department of Economics
Middlebury College
Middlebury, Vermont 05753

JEL #s: E4, E5, E6, F0

MIDDLEBURY COLLEGE ECONOMICS DISCUSSION PAPER NO. 06-17



DEPARTMENT OF ECONOMICS
MIDDLEBURY COLLEGE
MIDDLEBURY, VERMONT 05753

<http://www.middlebury.edu/~econ>

A Note on “Post-Modern” Monetary Policy

Thierry Warin, Ph-D¹
Department of Economics
Middlebury College

Abstract

This paper surveys the roots of the modern literature on monetary policy, and illustrates the convergence that occurs between open-economy approaches and the micro foundations of monetary policy. From the Banking School versus Currency School debate to the “credibility versus flexibility” refinement, monetary policy has a long history of scholarly works. Although it may be hard to imagine that there is still room for innovations, the current developments of the literature on open-economy monetary policy seem to spawn a new and essential branch.

Keywords: monetary policy, rules versus discretion, credibility versus flexibility, Banking School, Currency School

JEL Classification: E4, E5, E6, F0

¹ Associate Professor, Department of Economics, Middlebury College, Vermont, USA. Email: twarin@middlebury.edu. The author would like to thank Kenneth Donahue. The usual caveats apply.

“Having looked at monetary policy from both sides now, I can testify that central banking is as much art as science. Nonetheless, while practicing this dark art, I have always found the science quite useful.”²

Alan S. Blinder

1. Introduction

The question of rules versus discretion is at the very heart of the theory of central banking and monetary policy. This question has been revived in the recent literature, with leading macroeconomists proposing specific policy rules (Bernanke and Mishkin 1997; Taylor 1993), and utilizing new and diverse analytical tools such as econometrics and game theory. This paper presents an overview of the original focus of the literature and discusses its evolution into the modern literature that we find today.

In mapping the history of monetary policy literature it is difficult, if not impossible, to isolate the exact point at which a new path branches off from the road of theretofore conventional thought. It is always difficult to pinpoint chronologically the origin of new paths in the literature, and contemporary scholars have great trouble attributing them certain authors. Monetary policy has a long scholarly history and it may be hard to imagine that there is still room for the “major” or “radical” innovations referring to the Industrial Organization literature. It is also hard to find a field with such a rich past of breakthrough ideas: from the Mercantilists to the Physiocrats, from the classical economists to Keynes and Friedman, and from the divergence between the study of “what

² Blinder, A. S., 1997, "What Central Bankers Can Learn from Academics and Vice-Versa," *Journal of Economic Perspectives* 11, 17.

is monetary” and “what is real” to Don Patinkin and the first real success with the Theory of Value. Though monetary policy has long been studied apart from other fields in economics, the birth of the New Classical School in the late 1970s began to close the gap between monetary policy and other economic fields. Game theory seems to have played a key role in this development. The capacity to model the interactions of central banks, governments, and citizens’ expectations (rational or adaptative) allowed a new set of literature to grow parallel to that which had been developed via general equilibrium models. With this new literature, the microeconomic approach to macroeconomics was born.

This paper reviews the breaking paths of the monetary policy literature since the inception of the “rules versus discretion” debate. Section 2 presents the bases of modern monetary policy, section 3 treats the New Classical School, will be section 4 surveys the modern debate, and section 5 concludes by discussing new avenues of research.

2. The Bases of Modern Monetary Policy

The bases of modern monetary policy can be found in the debate initiated by Keynes and Friedman over the goals of monetary policy, and the best management of the supply of money (Argy 1988; Fischer 1990). We focus herein on the latter debate over which two distinct camps of literature emerged: the Keynesians arguing in favour of discretionary monetary policies, and the Chicago School advocating monetary policies based on rules. In order to find the origin of the “rules versus discretion” debate, however, we must look to England and the dissensions between the Currency School and Banking School preceding the Peel’s Act of 1844.

Led by David Ricardo, the Currency School stood in favour of rules to govern money supply. It did not conceive of bank deposits as money, arguing instead that money is in circulation and its quantity fluctuates as if it were gold. Therefore, by definition, the balance of payments determines the quantity of currency in circulation. Imagining that central bankers, who were framed by clear and transparent statutes, would set up its program, the Currency School approaches recent discussions on the independence of central banks.

The Banking School stood on the discretion side of the debate. It held that the evolution of the stock of money depended on the movements in the reserves of the Bank of England on the one hand, and whether these movements were permanent or transitory on the other. Thus, its authors criticized the gold standard rule and defended the idea of discretionary

authorities. Nevertheless it proposed an abstract rule for the operations of the Bank of England: the “Real Bills doctrine.” Under this rule credit was to be extended at a discount only for those invoices whose object was to finance real goods in the course of production and distribution. Since this doctrine bound monetary creation to real production, monetary creation could never be excessive, i.e. inflationary (Sijben 1990). By virtue of the Act of 1844 the Bank of England was separated into two entities, an “Issue Department” and a “Banking Department.” The Banking Department functioned as a commercial bank, and the Issue Department converted banknotes of England into gold or coins according to a precise rule of convertibility: a fiduciary issue of 18 million pounds, above which, at the margin, notes were backed by gold reserves at 100%.

With this act, the debate between the Currency School and Banking School turned in favour of the former. The Bank of England’s monetary policy followed a simple rule: the offer of currency varied according to the gold reserves. Although, notably, the Currency School inspired the design of such a rule, the Banking School inspired its implementation. Indeed, the functioning of this system required a high degree of discretion on the part of British monetary authorities. One illustration of such discretion is the period from 1844 to 1944. During this time, the Bank of England actively adjusted the discount rate to answer for changes in the gold stock (Schaling 1995). Hence, *De facto* discretion overrode the rule.

Almost a century after the rules versus discretion debate began in England, it emerged in the United States (1926-1927). It placed Congress and the Federal Reserve System (Fed)

on diametrically opposite sides. Congressman Strong wanted to force the Fed to follow a monetary rule aimed at price stability, whereas Miller, the administrator of the Fed, privileged monetary discretion based on the “Real Bills doctrine” (Sijben 1990). Although the Act of 1913 made price stability the main goal of the Fed, it failed to specify the means with which the central bank could advance this goal, leaving proponents of discretionary monetary policy with some room to maneuver. As was the case in England, the proponents of discretion won the debate, and the independence of the Fed was given the full force of the law.

3. The New Classical School’s Motto: Reputation

Several works form the basis of the New Classical School (Lucas 1972; Sargent and Wallace 1975). From its roots two main trends appear: first, the analysis of the Phillips curve in the light of the assumption of rational anticipations; and second, the question of the monetary origin of inflation. One of the main results of these two previous changes in assumptions is that unemployment deviates from its natural rate only if there are random deviations in the offer of currency compared to its systematic component.

Since Lucas (1972), the “New Classical School” has defended the idea that discretionary monetary policy cannot produce long-lasting effects on output and employment. Discretionary monetary policy is ineffective due to the formation of rational expectations by economic agents assumed. Accordingly, the “rules versus discretion” debate was tipped towards the rule side. Yet, the natural rate of unemployment theory was not

enough to shake the Keynesian structure. Though it denied the effectiveness of monetary policy in the long-run, it did not question the relative efficacy of monetary policy in the short-run.

In 2004, Nobel prizes were given to Kydland and Prescott (1977) who developed the notion of “time inconsistency.” This notion captures the existence of a temptation for a central bank looking to maximize total surplus by not respecting *ex post* its own *ex ante* monetary objectives; that agents have rational expectations vis-à-vis this temptation creates an inflationary bias. In other words, the possibility that monetary authorities will not respect their own commitments reduces the confidence that economic agents have in these individuals, and this backlash undermines money supply control.

Why would a government use the monetary policy to deceive agents’ expectations? The answer is twofold. Firstly, it can change its policy for reasons such as an adjustment to asymmetric economic shocks. Secondly, it can do so for reasons involving the political business cycle (Nordhaus 1975). When important elections are approaching, the government may want to falsify agents’ expectations in order to give a short run impetus to economic activity, in order to benefit politically from the fruits of the welfare improvement that follows.

Being the result of a lack of confidence, the inflationary bias spawned the creation of a new notion: “credibility.” The debate shifted course with the introduction of this concept. Indeed, several authors, since Barro and Gordon (1983) wonder about alternative ways to

develop the credibility of a central bank, while maintaining the option to stabilize the economy in the case of an exogenous shock. Barro and Gordon (1983) were the first authors to explain that the degree of confidence in the central bank is relevant for economic agents when they form their expectations about future inflation.

Several different delegation schemes have been reviewed by Woodford (1999) to introduce inertia into the discretionary side. Inspired by the new set of questions raised by the notion of credibility, Rogoff (1985) proposed the appointment of a “conservative central banker who is more risk averse to inflation than the average economic agent. Thus agents would not consider signals sent by the central bank at the beginning of a period to be “cheap talk.” Rogoff’s model has created the momentum for the modern theory of central banks. While the best known example of such monetary policy delegation is the appointment of a conservative central banker (Clarida, Gali and Gertler 1999; Rogoff 1985; Svensson 1997), Neumann (1991) pushes the literature in a direction of even greater emphasis toward institutional design. He insists on the advantages of having an independent central bank. In such a case, the inflationist bias would almost disappear, and the central bank would have the ability to stabilize the economy in the case of an economic shock via well-suited monetary policy

However, some authors challenge the advantages of an independent central bank. By definition, the purpose of an independent central bank is separation from political power, and thus, the central banker is the only authority in terms of monetary decisions. But is monetary omnipotence beneficial for the currency?

Inspired by Industrial Organization literature, Fratianni and Huang (1995) and Waller (1995) apply agency theory to the relationship between a central banker and citizens. The president or governor of a central bank is the agent and the citizens are principals vis-à-vis the central bank. Like stockholders, citizens are interested in the central bank producing the best currency possible, i.e. properly adjusted to their aggregate demand for money. The central banker's goal is to improve his/her utility function. Agency theory holds that there may be an incompatibility between the objective of the best currency possible and the personal utility function of the manager. In order to prevent an expansionary monetary policy, a control procedure could be implemented forcing the central banker to commit to the stability of the value of the money. Here too, the rule dominates discretion.

Another trend in the institutional design literature focuses on "performance contracts" (Walsh 1995). A performance contract is an incentive given by the government to the central banker to abide by his/her policy announcements. This incentive can be a salary premium which the central banker receives at the end of the period if he or she achieves the goals stated at the beginning of the period.

Lohmann (1992) exemplifies the set of rule-side literature focused on institutional design. She proposes a rule-based mechanism, and argues that Milton Friedman's proposal of the "k% rule" could be revisited in light of this new literature. The intuition was that because

all agents know the rule, and integrate the inflation forecast into their salary contracts, the option to use the monetary policy to stabilize the economy is almost non-existent.

The literature also proposed that instruments could be used to enhance central bank credibility. An oft-discussed proposal is based upon quantities—relating the supply of money to the economic growth rate or changes in the demand for monetary aggregates such as M1, M2 or M4. Along this line, central banks offer several reasons for monitoring the developments of monetary aggregates. First, money may be an indicator of future inflation. Second, money can have an informational role if it is related to other variables that determine inflation but are imperfectly observed. Third, money is closely related to credit, and should, thus, be an important part of the credit channel of monetary transmission. The European Central Bank, for example, gives money a prominent role in its implementation of monetary policy by keeping a reference value of 4.5% for the growth rate of M3. Lately, however, the widely accepted narrow monetary aggregate band has been challenged by new policies, e.g. the interest rate.

In practice, the interest rate that major central banks adjust is the overnight rate on the interbank lending which banks use to meet reserve requirements. Taylor (1993) ignited the discussion of simple interest rules by showing that the rule provided a good description of inflation for the period between 1987-1992. The Taylor rule calls for the gradual adjustment of inflation to its target: it responds to lagged inflation. A modern version of the Taylor rule is based on forward-looking expectations where policy responds to expected inflation (Clarida, Gali and Gertler 1997), and changes have also

been made such as considering an interest rate smoothing objective (Woodford 1999). Other targets, such as a target for nominal income growth (Jensen 2002) and a target for change in the output gap (Walsh 2003), are also discussed in the literature.

Simple rules for targets (as opposed to instruments) have also been proposed, Inflation targeting has received a lot of attention (Bernanke and Mishkin 1997), and all of the leading real-world proposals call for gradual convergence of inflation to target. Sometimes this proposal takes the form of a target for average inflation over several periods (Nessen and Vestin 2005). In other cases it is associated with a role for money (Soderstrom 2005). Since the anchor is explicitly in terms of inflation, this policy avoids the potential problems of instability associated with alternatives, e.g. money growth anchors, that are only indirectly linked to inflation. Finally, inflation targets may instil increased credibility in commitments to maintaining low inflation, while allowing for some flexibility in the short-run (Clarida, Gali and Gertler 1999).

4. The modern debate: Credibility versus flexibility

The early stages of the modern debate have been associated with a change in the methodological approach. Inspired by the reputation concepts developed in the Industrial Organization literature, the founding papers of the new trend in the monetary policy literature use game theory as a primary tool (Barro and Gordon 1983; Backus and Driffill 1985; Canzoneri 1985) It is, thus, no surprise to see the debate branch out in new

directions. New methodologies have transformed the “rules versus discretion” debate into a “credibility versus flexibility” debate. Canzoneri introduces the concept of private information between agents and the central bank, where the central bank has information that agents do not. Canzoneri explains that when agents integrate an inflationist bias into their expectations, the central bank has a real interest in cheating; the equilibrium occurs via a non-cooperative strategy. Therefore, unless the central bank is forced to remain in the cooperative equilibrium, the inflationist bias always exists.

In retrospect, until the late 1990s, the methodology used to study the inflationist bias (Barro and Gordon 1983; Backus and Driffill 1985; Canzoneri 1985; or Fratianni and Waller 1995) was oriented towards a rule of monetary production rather than discretionary intervention by the central bank. Indeed, this literature stressed the importance of monetary authorities continuing to play a key role, not only with respect to the rule, but also with respect to market intervention in the case of exogenous shocks. As had been the historical dialectic of the literature, the discretion side was revived by many authors who showed that discretionary policy-making in a world with forward-looking agents is characterized by a “stabilization bias” (Svensson 1997; Woodford 1999).

5. The “Post-modern” Classical School: Credibility versus Flexibility in an Open-Economy Context

The debate that led to the birth of the New Classical School had always taken place in a closed-economy setting. The latest version of the rules versus discretion debate is

credibility versus flexibility, but even this development does not address the open economy context. For instance, at the international level a rule of thumb may be that to avoid destabilizing economic policies, national monetary policy must be linked to a stable international monetary system through a fixed but adjustable exchange rate mechanism. This would help strike the fine balance between credibility and flexibility. When there is no economic shock a country will import low inflation from the international system, but in case of a shock the country keeps enough latitude to absorb it via expansionary monetary policy.

Unsurprisingly the open-economy exchange rate literature has developed parallel to the creation and expansion of the New Classical School. For instance, the study of exchange rate mechanisms has closely accompanied the literature on optimal currency areas (Mundell 1961). Consideration of the exchange regime is essential since it may constrain the central bank.

While it should seem obvious that the gap between the open-economy framework and the New Classical School must be bridged, such work is at the forefront of monetary policy literature. The international context in which national monetary policy evolves must be included in the study of the credibility of a central bank. First, it is the question of comparing one central bank to another bank to measure the impact of a lack of credibility on the exchange rates. Second, it is necessary to consider the exchange rates by themselves.

Some authors have begun to work in this direction. It is interesting to note that the new integrated approach has started with the European economic integration. De Grauwe (1992) uses a methodology close to Barro and Gordon (1983) to measure differences in terms of credibility between two countries of the European Union. Martin (1996) includes exchange rates in a model built upon the assumptions drawn from Barro and Gordon (1983) in order to respond to the precise question of whether exclusion from the euro zone is relevant for exchange rates.

It is also interesting to ask how the open economy changes the strategies of players, and whether this impacts exchange rates. We can imagine a large risk premium for a currency on the world market if it lacks credibility. From there, it is possible to determine criteria according to which an exchange rate regime is more credible than another. To this end, Herrendorf (1999) begins another new path in the literature. He develops a reputation model with information asymmetries in an open economy setting and finds that, due to the instability created by asymmetric information, flexible exchange rates are inferior to fixed regimes. With the birth of the Economic and Monetary Union, as well as discussions centered on new monetary unions, these questions are particularly relevant.

In both fixed and flexible exchange rate mechanisms, an inflationist bias is prevalent. The realization conditions, and conditions for the success of a monetary union, must be analysed using the inflationist bias concept. If a country is part of a fixed exchange rate regime, its credibility is not reliant upon its decisions. If it is part of a flexible exchange

rate mechanism, integration into a fixed exchange rate zone is a means to improved credibility (Herrendorf 1999; Melitz 1988).

It is indeed appropriate that the forefront of monetary policy literature leaves off where we currently find ourselves vis-à-vis the global and increasingly interdependent world environment. The stakes are high, as the European Economic and Monetary Union has become an example for Mercosur, Africa, and North America. It is difficult to say where and when new paths will emerge in the monetary policy literature, but assuredly, there will be many more. As we know from the transformation of the classical “rules versus discretion” debate, to the modern “credibility versus flexibility” debate, radical innovations are always yet to be discovered.

References

- Argy, V., 1988, "A Post-War History of the Rules vs. Discretion Debate," *Banca Nazionale des Lavoro Quaterly Review* 165, 147-177.
- Backus, D., and J. Driffill, 1985, "Inflation and Reputation," *American Economic Review* 75, 530-538.
- Barro, R., and D. Gordon, 1983, "Rules, Discretion and Reputation in a Model of Monetary Policy," *Journal of Monetary Economics* 12, 101-122.
- Bernanke, B., and F. Mishkin, 1997, "Inflation Targeting: A New Framework for Monetary Policy?," *Journal of Economic Perspectives* 9, 97-116.
- Blinder, A. S., 1997, "What Central Bankers Can Learn from Academics and Vice-Versa," *Journal of Economic Perspectives* 11, 17.
- Canzoneri, M., 1985, "Monetary Policy Games and the Role of Private Information," *American Economic Review* 75, 1056-1070.
- Clarida, R., J. Gali, and M. Gertler, 1997, "Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory," *NBER Working Paper* 6442.

- , 1999, "The Science of Monetary Policy: A New Keynesian Perspective," *NBER Working Paper* 7147.
- De Grauwe, P., 1992, *The Economics of Monetary Integration* (First edition), Oxford University Press, Oxford.
- Fischer, S., 1990, "Rules versus Discretion in Monetary Policy," *Handbook of Monetary Economics*, North Holland, Amsterdam.
- Fratianni, M., and H. Huang, 1995, "Central Bank Reputation and Conservativeness," *Working Paper*.
- Herrendorf, B., 1999, "Transparency, reputation and credibility under floating and pegged exchange rates," *Journal of International Economic* 49, 31-51.
- Jensen, H., 2002, "Targeting Nominal Income Growth or Inflation?," *American Economic Review* 92, 928-956.
- Kydland, F., and E. Prescott, 1977, "Rules Rather than Discretion, The Inconsistency of Optimal Plans," *Journal of Political Economy* 85, 473-492.
- Lohmann, S., 1992, "Optimal Commitment in Monetary Policy," *American Economic Review* 82, 273-286.
- Lucas, R. E. J., 1972, "Expectations and the Neutrality of Money," *Journal of Economic Theory*.
- Martin, P., 1996, "L'important des exclus de l'intégration monétaire en Europe," *Revue Economique* 47, 807-817.
- Melitz, J., 1988, "Monetary Discipline, Germany and the European Monetary System: A Synthesis," in Giavazzi, ed.
- Mundell, R. A., 1961, "A Theory of Optimum Currency Areas," *American Economic Review* 51, 657-665.
- Nessen, M., and D. Vestin, 2005, "Average Inflation Targeting," *Journal of Money, Credit and Banking* forthcoming.
- Neumann, M., 1991, "Precommitment by Central Bank Independence," *Open Economies Review* 2, 95-112.
- Nordhaus, W. D., 1975, "The Political Business Cycle," *Review of Economic Studies* 169-190.
- Rogoff, K., 1985, "The Optimal Degree of Commitment to an Intermediate Monetary Target," *Quarterly Journal of Economics* 100, 1169-1190.
- Sargent, T., and N. Wallace, 1975, "Rational Expectations, the Optimal Monetary Instrument and the Optimal Money Supply Rule," *Journal of Political Economy* 83, 241-254.
- Schaling, E., 1995, *Institutions and Monetary Policy, Credibility, Flexibility and Central Bank Independence*, Edwards, London.
- Sijben, J., 1990, "Geloofwaardigheid en monetaire politiek," *Rotterdamse Monetaire Studies* 38.
- Soderstrom, U., 2005, "Targeting Inflation with a Role for Money," *Economica* 72, 577-596.
- Svensson, L. E. O., 1997, "Optimal Inflation Targets, 'Conservative' Central Banks, and Linear Inflation Contracts," *American Economic Review* 87, 98-114.
- Taylor, J., 1993, "Discretion versus Policy Rules in Practice," *Carnegie-Rochester Series on Public Policy* 39, 195-214.

Waller, C., 1995, "Performance Contracts for Central Bankers," *Federal Reserve Bank of Saint Louis Review* 77, 3-14.

Walsh, C., 1995, "Optimal Contracts for Independent Central Bankers," *American Economic Review* 85, 150-167.

Walsh, C. E., 2003, "Speed Limit Policies: The Output Gap and Optimal Monetary Policy," *American Economic Review* 93, 265-278.

Woodford, M., 1999, "Optimal Monetary Policy Inertia," *NBER Working Paper* 7261.

