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Adaptation and central banking

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Abstract
What or who governs central bank decisions? Most considerations focus on motivations. Instead, we consider the extent to which specific behaviors have adaptive value in the context of central banking. From that perspective, poor decisions are not the product of poor motivations. They are, instead, a product of the poor institutions within which central bank decision makers operate.

Keywords Adaptation · Bailout · Central bank · Motivation · Seigniorage · Selection · Research

JEL Classification E31 · E42 · E52 · E58

Officials from the US Federal Reserve System (Fed) meet eight times per year to decide whether to adjust the stance of monetary policy. Fed staffers prepare projections for those meetings, deciding how to weigh all of the various factors that might affect the future course of monetary policy. Following the meetings, regional Reserve Bank presidents decide whether to speak out in support of or in opposition to the committee's decision. Others at the Fed oversee its obligations to supervise and regulate its member banks. The officials decide how to craft regulations; whether to issue guidance; determine whether a violation of regulatory rules has occurred; and what the appropriate fines or sanctions will be in a given case. Still others at the Fed decide what kind of research to conduct; whether to include an article in one of the Fed's publications; and whether to hire—or fire—a particular researcher. People working at the Fed make a lot of decisions. Why do they do what they do?

Two competing explanations have been advanced for explaining the behavior of central bank decision makers. The *public interest* view assumes the Fed aims to maximize social welfare. In all of their various tasks—producing research, regulating banks, conducting monetary policy—central bank decision makers are thought to act with the best interests

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of society in mind. To the extent that errors are made, they are attributed to poor information, incomplete models, or the ordinary difficulties of completing assigned tasks. The *private interest* view suggests that central bank decision makers are far less noble. They are thought to act more-or-less like everyone else, with their own salaries, budgets, and reputations in mind. In that view, pursuit of private interests comes at the expense of the public unless incentives are properly aligned.

Choosing between the public and private interest views is rather unsatisfying. We agree with Meltzer (2011, p. 39), who maintains that "[t]he appropriate model for policy analysis is a political economy model." Central banks do not operate in a vacuum, immune to any political pressure. And many decisions at the central bank are channeled through a political process. The public interest view fails to address the politics behind the Fed's policies.

The private interest view, on the other hand, relies too heavily on the heuristic of inferring intentions from outcomes. It calls into question the motives of central bank decision makers, many of whom have been drawn from the ranks of economists and the banking industry itself. Being acutely aware of our own motivations and having casually evaluated the motives of our colleagues, we are confident that most central bank decision makers strive to act in the best interests of society. Hence, both views leave something to be desired.

We offer an alternative hypothesis. Instead of focusing narrowly on motivations, we consider the extent to which specific behaviors have adaptive value in the context of central banking.[1] As we explain in Sect. 1, our approach shifts the focus from intentions to institutions. We illustrate that view by analyzing the context within which the Fed captures and remits seigniorage in Sect. 2. In Sect. 3, we explain why the consensus view in monetary economics tends to support the behaviors that have adaptive value at the Fed. Then, in Sect. 4, we show that central bank decision makers have considerable intellectual leeway to act as they see fit when the consensus view fails to support such behaviors. We maintain that poor decisions—that is, those failing to maximize social welfare—are not the product of poor motivations. They are, instead, a product of the poor institutions within which central bank decision makers operate.

In reaching that conclusion, we affirm what we believe to be the standard *public choice* view. The public choice view superficially resembles the private interest view, insofar as both adopt the assumption of agents maximizing private utility subject to constraint. It is nonetheless distinct. In particular, the public choice view does not infer intentions from outcomes and does not confuse a model of human behavior with a description of mankind's nature. It merely employs an objective function believed to have adaptive value in the institutional context considered.

1 From motivation to adaptation

An important debate over the reasonableness of modeling economic actors as optimizing agents came to a head in the late 1940s. Participants on both sides of the controversy typically expressed their views by considering the respective agent's motivations. Does a firm

[1] We employ the terms 'selection' and 'adaptation' throughout. By selection, we mean the filtering process of institutions. By adaptation, we mean the durable properties of entities that remain after the filtering process has weeded out entities lacking those properties. Hence, a durable property is said to have 'adaptive value' if it is selected for in the filtering process.

actually try to maximize its profits? Is a consumer really trying to maximize his or her utility? Answering those basic motivational questions seemed fundamental to continued progress in economic science.

In that context, Alchian (1950) put forward a novel view: rather than focusing on motivation, economists should shift their attention to adaptation. It does not matter whether firms intend to maximize profits.[2] Competitive markets select the most profitable firms over time.[3] Firms making the largest profits will find it easier to hire labor and capital; they will be able to increase their market shares. Less profitable firms will find themselves at a disadvantage relative to their competitors. In other words, profit maximization is a product of competitive markets.[4]

Alchian's adaptation view can be generalized by recognizing that an individual's or organization's objective function is a product of the institutional environment within which it acts. Although an individual or organization always will be doing the best it can in a purely formal sense, what *doing the best it can* actually means will depend on the particular institutions governing that particular sphere of behavior. For firm-level decision making, the relevant institutional environment is the market, wherein private property rights and freedom of contract generate a competitive process. Those institutions select for some behaviors and filter out others. As such, the implications of the model ultimately are driven by institutions, not by motivations.[5]

Adaptation is no less important in the context of non-market decision making. For example, politicians might be modeled as if they were attempting to establish and maintain a minimum winning coalition (Riker 1962). That politicians are motivated by a host of other factors is irrelevant if the institutions governing contemporary politics tend to select for those who win a public office with sufficient spoils to distribute. Bureaucrats, to take another example, might be modeled as budget maximizers (Niskanen 1968). That assumption need not imply that bureaucrats are lazy or unscrupulous. Rather, it merely recognizes that exhausting one's budget has adaptive value in a bureaucratic environment. Hence, for both politicians and bureaucrats, the behavioral assumptions employed do not depend on motivations. As Buchanan (1987, p. 246) notes, "[t]he relevant difference between markets and politics does not lie in the kinds of values/interest that persons pursue, but in the conditions under which they pursue their various interests."

We maintain that the same considerations of adaptation should be recognized in the context of central banking. Central bank decision makers fill a number of roles. Some are voters, making monetary policy decisions. Others are bureaucrats, regulating the banking industry. Still others act like academics, conducting and publishing research on the Fed's behalf. In each case, we should expect a central bank decision maker to do the best she can—and we should expect the objective function she is maximizing to have been determined, at least in part, by the central banking environment.

[2] Although Alchian (1950, p. 212) articulates his view in the context of profit maximization by firms, he maintains that it applies equally to utility maximization by consumers.

[3] A similar point was raised in the debate between (Becker 1962, 1963; Kirzner 1962, 1963) concerning the rationality postulate.

[4] Foreshadowing Friedman's (1953) famous *as-if* argument, Alchian (1950, p. 211) held that "the analytical concepts usually associated with such behaviors are retained because they are not dependent upon such motivation or foresight."

[5] One might reasonably argue that the rationality postulate only has empirical content in the context of an agent's perceived problem-environment. See Vanberg (2004).

We are by no means the first to consider the political economy of central banking. Others have modeled central banks as bureacracies to explain why the Federal Reserve fails to justify its actions (Kane 1980), churns its portfolio (Friedman 1982), and pads its budget (Toma 1982).[6] We do not dispute their claims. We note merely that the objective functions specified in those works (and others) are appropriate only to the extent that they reflect the institutional environment of central banks. As such, decisions that produce socially deleterious outcomes need not be attributed to personal flaws or weaknesses; they might very well have been made by those intent on advancing the public interest.

2 Debasement of the currency

In *The Wealth of Nations*, Adam Smith ([1776] 1904, pp. 929–930) warned of a pernicious juggling trick. He believed that governments would find it convenient to run fiscal deficits—especially in times of war. Then, to pay down their debts with fewer real resources, those governments would debase the currency. In some cases, debasement would take place out in the open, as when the Romans raised two ounces of copper to a denomination that traditionally had stood for twelve. In other cases, debasement would be concealed, as when King John of France ordered officials at the mint to mix in more of a cheaper alloy and, according to Smith, swore them to secrecy. "By means of such expedients," Smith maintained, "the coin of [...] all nations has been gradually reduced more and more below its original value, and the same nominal sum has been gradually brought to contain a smaller and a smaller quantity of silver."

Having dispensed with commodity monies, modern governments stand to gain little by calling in coins and reducing their weights. That the copper content of a penny has fallen over the last hundred years is a consequence of inflation, not a cause. Nonetheless, modern governments seem inclined to run deficits—much as Smith suggested—and modern central banks help finance them. Sometimes central banks produce an unexpected bout of inflation, reducing the real value of the government's outstanding debt. More routinely, they purchase government bonds with newly created money and remit seigniorage revenue to the treasury. No one is sworn to secrecy, to be sure. But complexity obscures. As the saying goes: the more things change, the more they stay the same.

One might counter that modern central bank officials rarely are motivated by a desire to help the fiscal authority spend beyond its means. But such a reaction misses the point. We are happy to concede that central bank officials have the best of intentions. Their motivations are irrelevant. If enabling fiscal profligacy has adaptive value in the central banking environment, then we should expect to see central bankers doing just that.

Consider the Federal Open Market Committee (FOMC). The FOMC consists of 12 voting members: all seven members of the Board of Governors, including the Chair and Vice Chair; the president of the Federal Reserve Bank of New York; and four of the remaining regional Reserve Bank presidents, whose seats are rotated annually.[7] Members of the Board of Governors are nominated by the President of the United States (President) and

[6] Havrilesky (1994) surveys the early literature. See also Burns and White (2017).

[7] The rotation is such that one president from Boston, Philadelphia, or Richmond; Cleveland or Chicago; Atlanta, St. Louis, or Dallas; and Minneapolis, Kansas City, or San Francisco always sit on the open market committee. Although none can vote, the seven out-of-rotation regional Reserve Bank presidents attend and participate in discussions at FOMC meetings.

confirmed by the US Senate (Senate). Governors serving a full 14-years term may not be reappointed, but those appointed to fill a vacancy may be reappointed for a full term. Members may not be removed from office for their policy views. The Chair and Vice Chair are selected from among the Governors by the President and confirmed by the Senate. They serve 4-years terms and may be reappointed and serve until their terms as Governor expire. Regional Reserve Bank presidents are appointed by the Bank's board of directors and confirmed by the Board of Governors. They serve 5-years terms and may be reappointed.[8]

We maintain that the process whereby central bank decision makers are selected has a meaningful effect on the composition of the FOMC. Well-intentioned, thoughtful candidates nonetheless might disagree with respect to the proper course of action. In that case, the President will select—and the Senate will confirm— Governors expected to produce the stream of seigniorage revenues consistent with their respective ends.[9] Governors who deliver the desired seigniorage will tend to be reappointed when possible, while those failing to deliver are replaced. Moreover, since the appointment of regional Reserve Bank presidents is subject to approval by the Board of Governors, we should expect the appointing of Governors to exert some influence on the composition of regional Reserve Bank presidents as well.[10] In such an environment, it is of little consequence that FOMC members are not *motivated* to support the fiscal authority's objectives; they are *selected* because their preferred policies are likely to be consistent with the preferences of the President and Senate in practice.[11]

One might be surprised to find support for the aforementioned mechanism in the context of the Fed, which most believe to be independent.[12] But such support exists. Chappell et al. (1993) find that partisan differences in monetary policy among members of the FOMC arise primarily through the appointment process. Similarly, Puckett (1984) finds that Governors dissent in predictable ways depending on whether they were appointed by a Democrat or Republican. At the very least, these studies suggest that the Fed can be influenced by politics—through the appointment process—despite its operational independence.

[8] Although Reserve Bank presidents are not bound by term limits, they are subject to mandatory retirement at age 65. If permitted by the Bank's board, a president appointed after turning 55 can serve for 10 years or aging out at 70, whichever occurs first.

[9] The effect is perhaps even stronger for positions of Chair and Vice Chair, insofar as they play more important roles in setting the agenda or building consensus. Along those lines, Kane (1988) models the president's decision to appoint the Chair as a financial portfolio investment.

[10] This is perhaps less important in recent years, when monetary policy has been conducted by varying the interest on excess reserves and the rate paid on reverse repurchase agreements. Both of these rates are determined exclusively by members of the Board of Governors. Jordan and Luther (2018) argue that the Fed's new operating regime reduces its independence.

[11] Our approach would seem to suggest that, if the President has the right ideas about maximizing social welfare, he will select central bankers with the right ideas about maximizing social welfare and the social-welfare-maximizing monetary policy will be adopted. However, it is important to remember that the President *also* is a product of selection mechanisms—and it is not obvious why one should assume that a candidate with the right ideas about maximizing social welfare will be selected as President. Indeed, a large literature following (Riker 1962) suggests that a President who concentrates benefits and disperses costs is more likely to prevail.

[12] We do not mean to imply that the appointment process is the *only* mechanism at play. For example, Shughart and Tollison (1983) consider the tradeoff Fed officials face between padding their budgets and purchasing autonomy from the Treasury by remitting more seigniorage. Grier (1991, 1996) finds that monetary policy is affected by the political views of the leadership on congressional oversight committees. Hess and Shelton (2016) find that, at least prior to 1982, the Fed adjusted monetary policy in response to bills credibly threatening its power. See also Kvasnicka (2005).

It might seem odd to worry about seigniorage.[13] Inflation rates around the world fall well-short of those that would maximize seigniorage; they are especially low in developed countries. From 2006 to 2016, annual inflation averaged just 1.74% in the United States. Seigniorage was relatively modest as well. The Fed transferred $91.5 billion—or, 2.58% of the federal budget—to the US Department of the Treasury in 2016, up from $29.1 billion—or, 1.03%—in 2006. If the fiscal authority exhibits undue influence through the appointment process, as we maintain, why are seigniorage revenues so low?

For starters, observing that seigniorage revenues are low does not imply that seigniorage is less than the relevant fiscal authority would prefer. It is costly to raise revenue by creating money (Auerbach 1956). Taxing non-interest-bearing assets and prompting businesses to adjust prices more frequently reduces output. Other revenue streams and the incumbents' electoral prospects might suffer as a result. Rather than simply maximizing seigniorage revenues, the fiscal authority will want to choose the optimal amount of seigniorage in a portfolio of taxes, given all its revenue-raising opportunities (Mankiw 1987).

Additionally, observing that seigniorage revenues are small does not imply that the welfare consequences are trivial; nor does it follow from our suggestion that the fiscal authority selects the optimal stream of seigniorage. The seigniorage decision is *conditionally* optimal. It is optimal *given the level of government spending*. If those expenditures are suboptimal, as Smith suggested, then the central bank might raise social utility by constraining the fiscal authority and thereby mitigating some of the damage done. It is a straightforward application of the theory of second best (Lipsey and Lancaster 1956).

We maintain that central banks encourage fiscal profligacy by debasing the currency—and do so despite being staffed with well-intentioned experts. In our view, the fiscal authority identifies its preferred stream of seigniorage revenues and selects central bank decision makers accordingly. As such, central bankers effectively (if not intentionally) pursue the fiscal authority's ends. If we are correct, the routine practice whereby a central bank creates money, purchases government bonds, and remits revenue to the treasury is not benign. It is, instead, the modern-day version of Adam Smith's juggling trick.

Of course, the much more common view is that a well-functioning central bank aims for something in the neighborhood of 2% inflation (with the corresponding stream of seigniorage) because that is what the bulk of monetary economics research—and, by extension, the bulk of monetary economists—suggests is ideal.[14] With that in mind, we argue in Sect. 3 that research in monetary economics is, itself, a product of an undesirable selection mechanism. Moreover, in Sect. 4, we show that considerable intellectual leeway exists at the central bank. Both suggest that ideas constrain central bank behavior insufficiently.

3 The consensus view in monetary economics

It is tempting to think of academic research as a continuous march towards truth. As academics, we are motivated to figure out how the world works. We assume that other academics share our motivations. But individual motivations are of little importance if

[13] We follow Wagner (1977) in focusing on seigniorage rather than more traditional accounts of a political business cycle, since the former allows incumbents to concentrate benefits through targeted spending efforts in swing districts as opposed to a broad-based reduction in unemployment or increase in output.

[14] Even that conclusion is debatable. If implemented, the oft-touted Friedman (1969) rule likely would generate mild deflation. See also Sanchez (2012).

selection mechanisms favor some behaviors over others. Sober reflection suggests adaptive value—that is, career-promoting value—exists in perpetuating the status quo. And, in the context of monetary economics research, the Fed influences the kinds and directions of research conducted. Hence, a consensus view affirming behaviors that have adaptive value at the Fed likely will be established—and, once established, it is likely to persist.

We begin by explaining the tendency for research to support the established view. According to Polanyi (1963, pp. 57–58), a community of scientists assesses a particular work's merit by considering its plausibility, value and originality. Scientists are more inclined to believe that a position is plausible when it is consistent with their own views. They are more likely to value works that deal with questions they happen to find interesting or employ methods they hold in high regard. As such, the first two factors encourage conformity.

Consider the publication process at elite economics journals. A submitted paper is first reviewed by the editor, who assesses whether it is plausible, valuable and original enough to send out for evaluation by the author's peers. A paper addressing the wrong question—that is, one the editor believes to be unimportant—or employing the wrong technique—one the editor does not find convincing—is rejected straight away. A paper making it past the editor's desk is sent to reviewers. Those reviewers are not selected at random, of course; they are selected because the editor believes them to be qualified to evaluate the paper's scientific merits. Perhaps the reviewer is cited in the paper. Perhaps the reviewer is merely someone the editor respects. In any event, the reviewer's conception of scientific merit is likely to conform, in some degree, to that of the editor.

Reviewers are charged with assessing whether the paper is plausible, valuable, and original enough to warrant publication in the elite journal as is; whether it might be revised to meet that standard; or, whether it should be destined to some lower ranked journal or never published at all. A reviewer is more likely to reject a paper addressing the wrong question—now defined as one the reviewer believes is unimportant—or employing the wrong technique—one the reviewer does not find convincing. At the very least, the reviewer will recommend revising such a paper in order to bring it more in line with his or her conception of scientific merit.

Once the editor receives the reviewers' recommendations, she takes them into consideration and makes a decision on the paper. In our experience, she rarely assigns equal weight to the recommendations. Instead, she discounts them in accordance with her own assessment of the reviewers' ability to gauge the paper's scientific merit. A reviewer whose conception of scientific merit conforms more closely to that of the editor is almost certainly given more weight in the review process.

While the intention of the relevant decision makers involved in the academic journal process is to review, accept, and publish papers of the highest scientific merit, the effect is to perpetuate the status quo. Scholars who coauthor with or build on the work of the profession's current elites are more likely to make it past the desk at an elite journal; receive a favorable review from current elites or their students; and receive a favorable decision from an elite editor.[15] In turn, scholars publishing articles in elite journals are more likely to become members of the elite themselves (Heckman and Moktan 2018). They will find it easier to publish in elite journals; secure and maintain prestigious positions; produce students who build on their work; become editors at elite journals; and move into leadership

[15] Colussi (2018) finds that around 43% of articles published in top general-interest economics journals are authored by scholars with an observable social tie to an editor of the journal at the time of publication.

roles, where they might earmark resources for the kind of research they believe is plausible, valuable and original. Hence, the publication process virtually ensures that, once established, the consensus view will exhibit considerable staying power.[16]

In monetary economics, the Fed wields considerable influence over the consensus view. For starters, consider that the Fed is a major player in monetary economics. White (2005, pp. 325–326) provides a concise summary:

> The Fed (the Board of Governors plus the twelve regional Reserve Banks) employed about 495 full-time staff economists in 2002. That year it engaged more than 120 leading academic economists as consultants and visiting scholars, and conducted some 30 conferences that brought 300-plus academics to the podium alongside its own staff economists. It published more than 230 articles in its own research periodicals. Judging by the abstracts compiled by the December 2002 issue of the *e-JEL*, some 74% of the articles on monetary policy published by US-based economists in US-edited journals appear in Fed-published journals or are co-authored by Fed staff economists. Over the past 5 years, slightly more than 30% of the articles by US-based economists published in the *Journal of Monetary Economics* had at least one Fed-based co-author. Slightly more than 80% had at least one co-author with a Fed affiliation (current or prior Fed employment including visiting scholar appointments) listed in an online vita. The corresponding percentages for the *Journal of Money, Credit and Banking* were 39% and 75%. The editorial boards (editors and associate editors) of these journals are even more heavily weighted with Fed-affiliated economists (9 of 11, and 40 of 46, respectively).

Simply put, the Fed dominates the market for monetary economics research.

As in the publication process, the relevant decision makers in the Fed's research departments must assess whether a given scholar's work is plausible, valuable and original. And, as in the publication process, employees of the Fed will tend to favor—and, hence, reward—works that resemble their own. As such, staff members working on issues Fed officials value are more likely to receive resources to develop or continue that work. Direct benefits include full-time or temporary employment at the Fed and invitations to present at or attend Fed conferences and seminars where one can network with Fed-affiliated scholars and receive feedback on their work. Those opportunities, in turn, increase the odds of publishing in Fed journals and periodicals, as well as journals edited by Fed-affiliated scholars; securing and maintaining employment in academic departments or think tanks, especially those housing Fed-affiliated scholars; and invitations to present at still more coveted conference sessions, panels, and departmental seminars. Along the way, the monetary economist will build relationships and receive feedback from Fed-affiliated scholars that improve her work in the context of the prevailing academic standards, thereby increasing her prestige and influence over other scholars. Indeed, if scholars inclined to produce research that Fed decision makers value are more likely to benefit from Fed resources, we might reasonably expect them to be more likely to enter the field of monetary economics in the first place.

What kind of work do Fed decision makers value? We maintain that Fed decision makers are likely to value work that is pertinent to and, indeed, advances the mission of the Fed. Correspondingly, those decision makers are less likely to value work that portrays Fed officials in

[16] Much the same could be said about the academic hiring process, wherein committee members are more likely to recommend and departments are more likely to extend offers to those candidates who correspond more closely to the prevailing conception of scientific merit.

a negative light; aims to constrain the Fed; or calls for alternative monetary policy regimes. After all, the decision makers were not selected randomly. They were chosen by still other Fed decision makers.

The pattern of the available evidence seems to align with our conjecture. For example, White (2005) finds twice as many articles appearing in Fed publications from 1998 to 2002 that support discretionary monetary policy than articles supporting constraining central banks with monetary rules. He also notes that efforts to consider alternative regimes are limited to a few "guardedly favorable comments" and fails to find "a single Fed-published article that calls for eliminating, privatizing, or even restructuring the Fed." Auerbach (1985) reports censorship at regional Reserve banks by clearing research with the Board of Governors. Moreover, Toma and Toma (1985) find "tentative support ...that the Board reacts to periods of demand-decreasing information exposure by reducing the budget allocations of the 'uncooperative' [regional Reserve] Banks." Taken together, the evidence suggests that Fed decision makers value work affirming behaviors that have adaptive value at the Fed and distribute resources accordingly.

It is difficult to determine the extent to which the Fed influences research in monetary economics more broadly. We acknowledge that much value is produced in the work being done at present—even in the work taking place at the Fed or generated by Fed-affiliated economists. Perhaps much of that research would take place even if the Fed were not a major player. Moreover, it is clear some scope exists for alternative views. For example, recent work by Selgin et al. (2012), Rotemberg (2013) and Hogan (2015) have questioned the Fed's performance. Nonetheless, the aforementioned mechanisms give us reason to suspect a systematic bias. Scholars who affirm behaviors with adaptive value at the Fed are more likely to receive resources from the Fed. Scholars who receive resources from the Fed are more likely to publish their research in elite journals. And the publication process systematically will favor building on that work.

In the event of any doubt, let us make two things clear before moving on. First, we are not suggesting that a nefarious plot is afoot. The pro-Fed bias does not depend on opportunistic scholars attempting to advance their own careers at the expense of other, more-deserving scholars. It does not depend on the conscious suppression of alternative views. We can assume that researchers act in good faith, purely motivated by the pursuit of truth. Our claim is that, if scientific merit is contested, the underlying process will tend to favor incumbents; and, given the Fed's resources, it is bound to influence the kinds of research in monetary economics that those incumbents conduct.

Second, we are not implying that a better way can be found. Much good is produced by the peer-review process at scholarly journals, to be sure. It weeds out the most ignorant cranks. We contend merely that good ideas might not be replaced by better ideas; the consensus view and the truth need not overlap perfectly. Perhaps the status quo is the best one can hope for.

4 Intellectual leeway

It is widely known that, under the chairmanship of Ben Bernanke, the Fed took unprecedented steps to stabilize the financial sector. One might debate the merit or legality of the Bernanke Fed's actions.[17] Instead, we use that experience to illustrate the extent to which ideas constrain central bank decision makers.[18] First, we describe the consensus view in monetary economics for dealing with a financial panic. Next, we show that Bernanke not only endorsed that view but explicitly used it to justify the Fed's actions. Finally, we demonstrate that the Bernanke Fed's actions were in fact inconsistent with the consensus view. Recent experience suggests that ideas impose, at most, a loose constraint. Central bank decision makers have considerable flexibility in pursuing actions with adaptive value, even if those actions are inconsistent with the consensus view.

A general consensus exists among monetary economists that, in order to stave off a financial crisis, a central bank should follow the classic lender-of-last-resort doctrine laid down by Walter Bagehot ([1873] 1896). In brief, a central bank following Bagehot's rules must (i) commit in advance to (ii) lend freely (iii) on good collateral (iv) at a penalty rate of interest.[19] By stating the policy in advance, the central bank anchors expectations: the public need not worry about a liquidity crisis since the central bank stands at the ready. Meanwhile, requiring good collateral and charging a penalty rate of interest limits the provision of liquidity to solvent banks, while allowing insolvent banks to fail. As such, Bagehot's rules avert a liquidity crisis without generating a severe moral hazard problem.

We will not go to the trouble of demonstrating that Bagehot's classic lender-of-last-resort doctrine is, in fact, the consensus view. We suspect that most monetary economists will accept our claim at face value.[20] It is telling, however, that—on multiple occasions—Bernanke (2008, 2012, 2013, 2015) thought it necessary to justify the Fed's actions by appealing to Bagehot. "When the financial system teetered near collapse in 2008 and 2009," Bernanke (2013) stated at a ceremony commemorating the 100th anniversary of the Federal Reserve Act, "we responded as the 19th Century essayist Walter Bagehot had advised, by serving as liquidity provider of last resort to financial firms and markets." Were the Fed's actions unprecedented? Sure. The Fed was acting "in an institutional environment that was very different, and in many ways much more complex, than the one that Bagehot knew." But it "found ways to carry out its traditional central bank functions in this environment"—ways that, according to Bernanke, were consistent with Bagehot's rules.

Despite Bernanke's claims, the Fed's actions in the crisis were not at all consistent with Bagehot's rules (Hogan et al. 2015). Instead of committing in advance, the Fed designed monetary policy *ad hoc*. It accepted questionable collateral. And it failed to charge a penalty rate of interest. It replaced Bagehot's rules to lend freely to solvent, but illiquid

[17] For example, Posner (2017) argues that, while the Fed acted without legal authority, its response was needed to resolve the crisis.

[18] Belongia (2007) argues that the public cannot monitor the Fed effectively. Mayer (2000) considers the extent to which academic research influences monetary policy. See also McCallum (1999).

[19] Humphrey (1989) provides a more complete summary of Bagehot's rules.

[20] Much disagreement exists, to be sure. For example, Kaufman (1991) argues that central banks should supply general liquidity through open market operations rather than specific liquidity to individual financial institutions. Nonetheless, Bagehot's classic lender-of-last-resort doctrine functions as a widely accepted baseline, from which departures might be considered.

financial institutions, assuming a much broader remit. It lent to any and all firms it thought systemically important to the financial system.[21]

We do not deny that Bernanke did what he thought was best for the public's interest. Moreover, we acknowledge that, as a first-rate macroeconomist and monetary historian, he had good reasons for doing what he did.[22] Nonetheless, we maintain that the actions of the Bernanke Fed had adaptive value. Those actions preserved the power, influence, and resources of the Fed's decision makers. As Salter (2016) explains, the Fed relies on its primary dealers to implement monetary policy. If the primary dealers fail, then the monetary transmission mechanism fails. Hence, the Fed "felt obliged to rescue several primary dealers, and to do so at the expense of solvent banks" (Selgin 2012, p. 310). Failing to take such action, in the view of Fed decision makers, would risk losing control of monetary policy. One should not expect central bankers to undertake a limited response, such as that dictated by Bagehot's rules, in such a situation.

To be clear, we are not claiming that a more constrained course of action would not have worked. Rather, we are saying that *it does not matter if it would have worked*. Central bank decision makers are unlikely to adhere to a doctrine that limits their responses when they perceive existential threats to the financial system. Indeed, being selected as a central banker practically requires a willingness to take any and all actions necessary for the continued operation of a financial system wherein the central bank is a dominant player. By his own admission, Bernanke (2015, p. xiii) "did not want to be remembered as the person whose decisions had led to the Fed's destruction." We contend that such a view is not unique to Bernanke. Because such actions have adaptive value, it is part of what it means to be a central banker.

We have shown that, despite Bernanke's claims, the Fed's response during the crises deviated significantly from the classic lender-of-last resort-doctrine. Rather than following Bagehot's rules, Fed decision makers crafted a policy response that—first and foremost—preserved the central bank.[23] The Great Recession suggests that central bank decision makers enjoy considerable intellectual leeway, especially during crises, allowing them to ignore the consensus view and act as they see fit. Obviously, we cannot rule out the possibility that ideas constrain action. Some actions are clearly beyond the pale.[24] But ideas seem to be a rather ineffective constraint. Central bankers are more or less free to act in ways that have adaptive value, so long as they can cloak their actions in the rhetoric of orthodox monetary economics. That their actions deviate from the orthodox view seems to be of little consequence.

[21] Our statement is, perhaps, a more charitable interpretation than is warranted. Blau et al. (2013) and Blau (2017) find that the Fed's lending decisions were influenced by political factors. See also Ramirez (2011).

[22] There probably never has been a tighter congruence between the actions of a Fed chair and his academic work. In a series of influential papers, Bernanke (1981, 1983) argued that the severity of the Great Depression could not be accounted for by the initial collapse in liquidity alone; that the failure of banks resulted in a breakdown of financial intermediation, further straining the system. Bernanke's public remarks (Bernanke 2008, 2009a, b) make clear that he feared a similar breakdown in the early days of the crisis; that the Fed's unprecedented actions were intended to fight contagion.

[23] Anderson et al. (1988) suggest the Fed's monetary policy response in the Great Depression expanded its control over the financial system. Shughart (2011) compares the policy responses in the Great Depression and Great Recession.

[24] In recent years, for example, the Fed has acted as if its 2% inflation target were a ceiling. Fed officials seem unwilling to risk 1970s-level inflation rates, despite the potential benefits of returning to the price level's original trend.

5 Conclusion

When considering decisions made at a central bank, most analyses adopt one of two views. The public interest view maintains that central bank decision makers act to maximize social welfare. The private interest view maintains that they act to maximize their own welfare. Both assume that motivations are key.

In contrast, we maintain that institutions do all of the work. We take it for granted that central bank decision makers have society's best interest at heart. We nonetheless find it appropriate to model central bank decision makers as agents maximizing private utility subject to constraint, such that the environment of central banking determines the objective function. We do so not on the grounds of accurately describing human nature, in accordance with the public interest view. Instead, we employ the standard public choice view, which merely aims at effectively modeling human behavior.

To illustrate, we show how the political appointment process selects for central bankers more inclined to assist the fiscal authority; how the academic publication process and the Fed's resources shape the consensus view in monetary economics; and how Fed officials have considerable intellectual leeway to act in ways that are not supported by the consensus view. Taken together, those ideas suggest that central bank decision makers will tend to exhibit behaviors that have adaptive value in the context of central banking.

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