

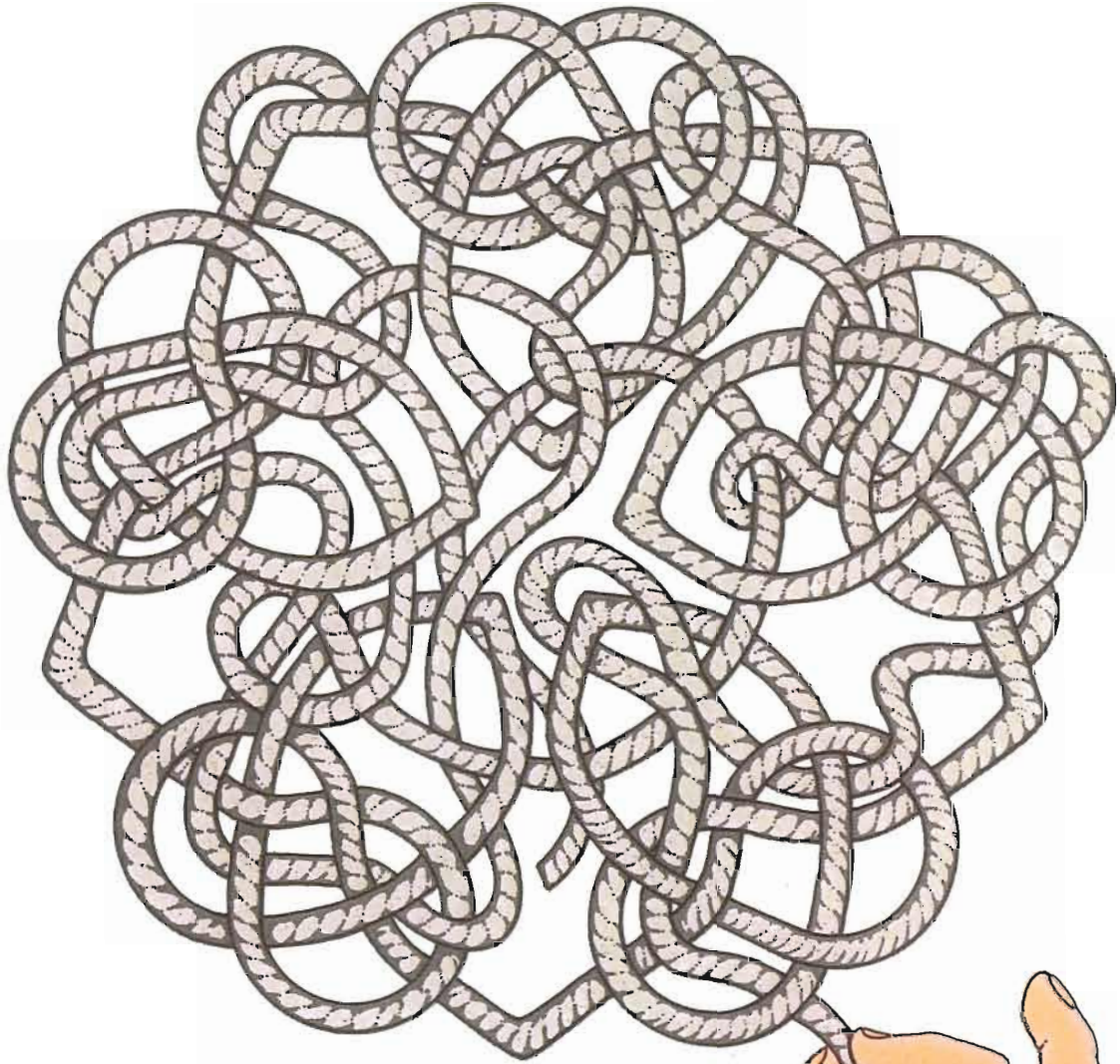
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Time Inconsistency:

A Potential Problem for Policymakers

Herb Taylor

Monetary Rules and Contracts:

Why Theory Loses to Practice

Donald J. Mullineaux



BUSINESS REVIEW

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This issue of the Business Review is devoted to discussing recent research on some particularly “knotty” problems faced by monetary policymakers—indeed, by policymakers of all types.

In the first article, Herb Taylor explains and analyzes a concept called “the time inconsistency of optimal plans.” According to this notion, policymakers sometimes find that, when the time comes to execute their original policy, they could do better if they were to follow a different policy. And, without a rule holding them to the original policy, they have the discretion to change. Unfortunately for policymakers, the ability to change policies is a two-edged sword, if achieving their goals also depends on influencing people’s behavior. For, if people know from the start that policymakers *can* change their plans, then people may behave as if policymakers *will* change their plans. This leaves policymakers with a difficult choice when the time comes to act. Either they change their policies to be consistent with their goals, given the new situation; or, they find that the longer-term benefit of having a reputation for sticking to their original plans outweighs the short-run advantages of altering the original plans.

The second article, by Donald J. Mullineaux, looks at what has been suggested as a solution to the policymakers’ problem: abolish discretion and impose a rule. There are various arguments in favor of a rule, coming from several different perspectives. But none of them considers the costs of putting a rule into practice. The literature on the theory of contracting analyzes these costs, which help explain why a monetary policy rule is not the order of the day. The contract literature provides an analysis of “rules for rules”—that is, what it takes to frame a rule and make it stick. These contractual requirements—namely, negotiation, specification, and enforcement—are costly transactions, however. And, for the parties involved in policymaking, they may represent costs too great to overcome in a constantly changing economic environment.

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Time Inconsistency: A Potential Problem for Policymakers

*Herb Taylor**

Many industrialized countries, including the United States, experienced high rates of inflation throughout the 1970s. In most of these countries prices have risen at more modest rates over the last several years, but concern over the long-term inflation outlook lingers. The fear usually expressed is that after a few years of low inflation everyone will forget how costly and disruptive

high rates of inflation are, and that as industrial economies slow, their central banks will be tempted to pursue inflationary monetary policies to boost real growth. But the difficulty with maintaining a low-inflation monetary policy over the long-term may be more fundamental than that. Using simple examples, economists have demonstrated that even when a central bank recognizes that inflationary monetary policies cannot stimulate real growth and it wants to achieve a low rate of inflation, it may *still* wind up pursuing a high-inflation policy. The problem is that low-inflation policies suffer from what has been called time inconsistency. As a result, even though low-

*Herb Taylor is a Senior Economist in the Macroeconomics Section of the Research Department of the Federal Reserve Bank of Philadelphia. The author would like to acknowledge his intellectual debt to Gary Gorton, while absolving him from any responsibility for errors.

inflation policies always seem best when the central bank lays its plans for the future, they never seem best when the time comes to act on them, and consequently they are not implemented.

Time inconsistency is not unique to monetary policy; the problem often arises in other policy-making situations. But the idea that time inconsistency keeps central banks, such as the Federal Reserve, from sustaining low-inflation monetary policies has generated a great deal of interest among monetary economists recently. This article presents the basic elements of the current debate: What is time inconsistency? How does it arise in the monetary policy context? Does it create a significant problem for monetary policymakers?

TIME INCONSISTENCY: AN UNFAMILIAR NAME FOR A COMMON PROBLEM

The “time inconsistency of optimal plans” is not a concept with which many are familiar, but the problem itself is very common.¹ In fact, time inconsistency problems are, as the game show host used to say, “something often found in the home.” Those exasperating situations in which parents find themselves with their children, for instance, frequently arise because parents’ policies are time inconsistent and their children know it. An example best illustrates the point.

The Case of George and Martha. George and Martha’s daughter, Betsy, is graduating from high school and wants to go to college in the fall. Betsy is willing to work in order to help pay her college expenses, but she cannot earn enough over the summer to pay all of them. So George and Martha discuss the situation and devise a plan.

After the high school graduation ceremony, George and Martha call Betsy into the living room and say to her, “Betsy, we want you to go to college and further your education, but we also want you to get a job and learn some responsibility. So if you get a job for the summer and save your pay, we will make up the difference between your savings and your college expenses in the fall. But if you don’t

get a job and save this summer, you’ll get nothing from us for college in the fall.”

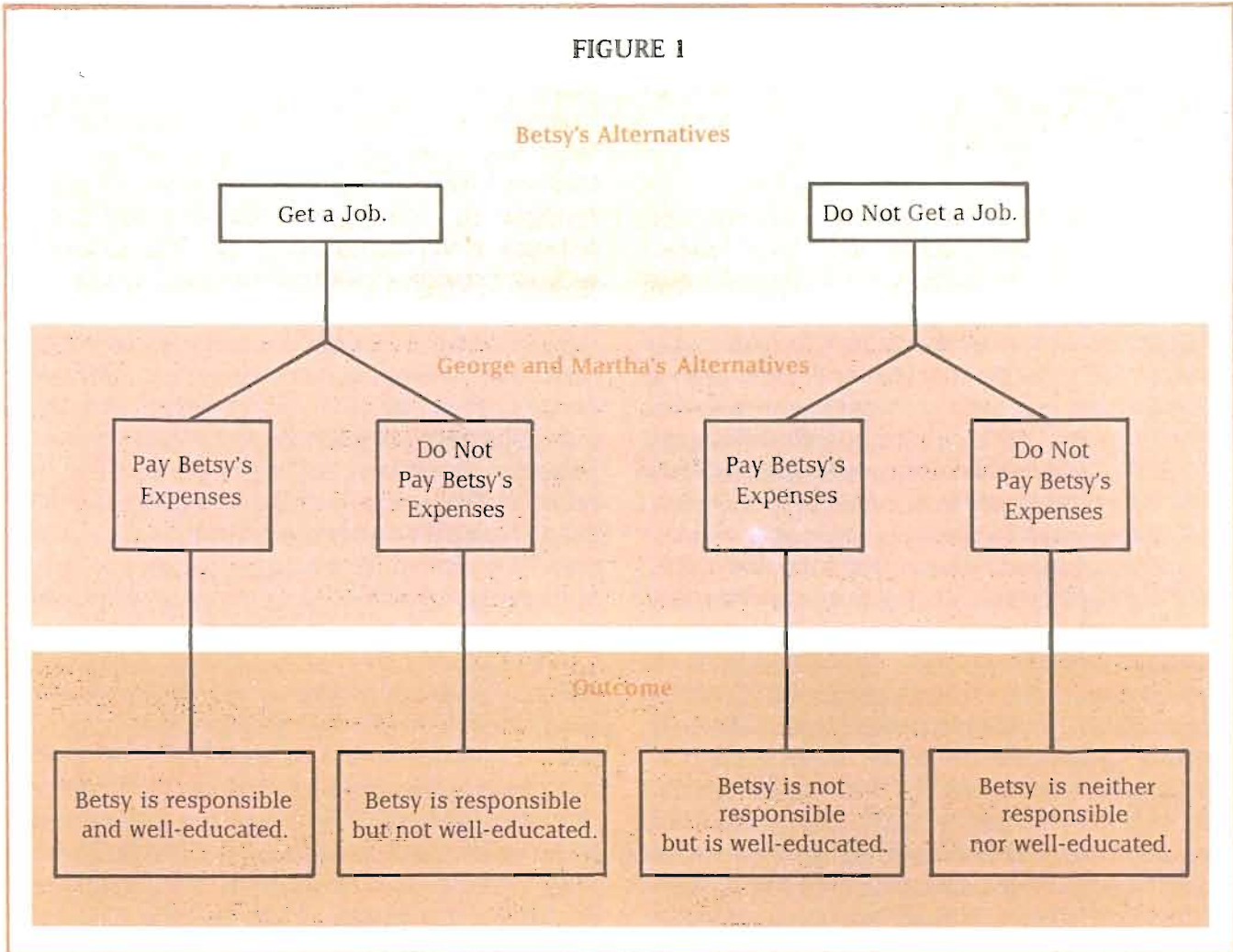
George and Martha are happy with the way they have handled the situation. They know that their daughter wants to go to college and is willing to work for it, so they are confident that she will work and save all summer, start college in September, and emerge from the whole experience a more responsible and better educated person. But things do not go according to plan. First, Betsy does not get a job that summer. In fact, she doesn’t even try very hard to find one. Second, when the fall comes, Betsy starts college anyway, and George and Martha pick up the tab.

What went wrong? Did George and Martha misjudge Betsy’s desire to go to college and her willingness to work? Did they then simply lose interest in developing Betsy’s sense of responsibility? No, it is not that George and Martha misunderstood Betsy, or that their commitment to certain principles suddenly weakened. George and Martha’s plan came apart because it was not time consistent—that is, it was not the plan that would serve their best interest when the time came for them to act—and because Betsy realized this from the beginning.

Dissecting George and Martha’s Plan. Right after Betsy’s parents explained their policy to her, Betsy went to her room and rationally assessed the situation. As a member of the Pac-Man generation, she recognized that her parents had set up a kind of game. In this game, Betsy would make the first move, choosing either to get a summer job or not to get a summer job. Her parents would get their turn in the fall, when they would choose whether or not to pay her college expenses. The game had four possible outcomes. Betsy knew her parents’ goals, so she knew how each outcome would measure up in their eyes. Figure 1 summarizes the situation.

Betsy’s parents had just told her how they *planned* to play the game and Betsy could see that the plan was optimal from their perspective. If Betsy chose “Get a Job” on her turn, her parents planned to choose “Pay Betsy’s Expenses” on their turn. If Betsy chose “Do Not Get a Job” on her turn, her parents planned to choose “Do Not Pay Betsy’s Expenses” on their turn. Thus, the plan, if followed, would force Betsy to choose between two possible paths: she could either get a job and go to college

¹Kydland and Prescott (1977) introduced the notion of time inconsistency. The paper provides a mathematical characterization of the problem as it confronts policymakers, and a number of examples, including a version of the monetary policy example discussed later in this article.



or not get a job and not go to college. Given that choice, she would take the former, producing what George and Martha saw as the optimal outcome: a responsible, well-educated daughter.

But Betsy realized that it did not matter how her parents *planned* to play the game in June. What mattered is how they would *actually* play the game in September. And since Betsy knew what her parents' goals were, she could figure out how they would actually respond when it came time for them to make their move. She thought:

Suppose I get a job over the summer. When the fall comes, will George and Martha better serve their goals by paying my college expenses or by not paying them? Well, I will already have worked and learned some responsibility, whether they pay my expenses or not. But by

paying my expenses, they will enable me to become well-educated too. So they will choose to pay.

Now suppose I don't get a summer job. When fall comes, will George and Martha better serve their goals by paying my college expenses or by not paying? Well, I will have been without work all summer and I will not have learned any responsibility. But whether they pay my expenses or not will not change that. It will be too late; the summer will be over. And if they do pay my college expenses, then at least I will get an education, which is better than nothing. So they will choose to pay.

Thus Betsy deduced that whether she chose "Get a Job" or "Do Not Get a Job" on her turn, her

parents would find it best to choose "Pay Betsy's Expenses" on their turn. So Betsy's choice was really between getting a job before going to college, and taking a vacation before going to college. Given this pair of alternatives, her decision was easy—she took the vacation.

The Perennial Problem of Time Inconsistency. Time inconsistency in George and Martha's optimal plan kept them from achieving their goal of getting Betsy to work for the summer. But the problem can affect anyone trying to influence the behavior of others—and that includes anyone making social or economic policy. For instance, the FDIC wants to maintain a sound financial system, so it tries to discourage people from depositing their funds with banks that undertake risky investments by announcing that it will not insure large deposits (those over \$100,000) in the event of a bank failure. But the public realizes that once a bank does fail, the FDIC's desire to maintain confidence in the financial system is likely to dictate that it insure the deposits, so they deposit their funds with risky banks. Similarly, national governments want to protect their citizens from terrorists, so they announce that they will not negotiate with skyjackers. But terrorists realize that once they have seized an airliner, the government's concern for the hostages is likely to dictate that the government negotiate, so the terrorists take the plane. Whatever the particulars of the situation, the problem created by time inconsistency follows the same pattern.²

A policymaker sets out to achieve goals which involve getting other individuals to behave in certain ways. The policymaker realizes that how these individuals choose to behave depends on how they expect him to react to their choices, and he takes this into account in formulating his optimal plan of action. (George and Martha want Betsy to get a summer job. They realize that how Betsy decides to spend her summer depends on how she expects them to react at tuition time, so they tell her that they plan to link what she does about a summer job with what they will do about her college expenses.)

But there is a difficulty. When it comes time to act, the policymaker will be free to reassess the situation and decide what course of action seems best *at that time*. And generally he will find that following the original plan is no longer in his best interest. Why? Because when the original plan was formulated, it took into account the impact of the policymaker's planned actions on the individuals' behavior. But when it comes time to act, taking the planned actions can no longer influence individuals' behavior. They have already chosen how to behave. Now the policymaker must choose the course of action that brings him closest to achieving his goals *given* the individuals' previous behavior. (So when the fall comes, George and Martha will abandon the plan designed to *influence* Betsy's summer behavior and select the original plan of action which best meets their goals *given* her summer behavior.)

Unfortunately for the policymaker, individuals realize from the beginning that the policymaker will take the time consistent plan of action—the plan which seems best *at the time the action is to be taken*—rather than the one which seemed optimal to the policymaker initially. So from the beginning, individuals' behavior deviates from that called for by the policymaker's optimal plan. (Betsy knows in June that her parents will pay her expenses in September no matter what, so she takes the summer off.)

In sum, time inconsistency is a general problem facing policymakers of all types. And recently economists have been giving serious consideration to the way in which time inconsistency can undermine central banks' abilities to contain inflation. But to appreciate how the problem arises for the makers of monetary policy, it is useful to consider what motivates central banks' choice of monetary policy actions and how the economy responds to them.

HOW TIME INCONSISTENCY CAN FOIL POLICYMAKERS' LOW INFLATION PLANS

Monetary policy is widely acknowledged to have a direct impact on the rate of inflation, but central banks are also held responsible, to varying degrees, for the level of real economic activity in their countries. Consequently, a central bank's goals generally include not only maintaining a low rate of inflation, but maintaining a low rate of

²Kydland and Prescott (1977) develop a tax policy example. Newberg (1981) discusses the problem of maintaining the oil cartel in the context of dynamic inconsistency.

unemployment as well. In the United States, for example, the Full Employment and Balanced Growth Act of 1978 requires that the Fed testify before Congress annually, indicating how its plans fit into Congress' long-term objectives of achieving zero inflation and a 4 percent unemployment rate.

Until about ten years ago, discussions of monetary policy were often predicated on the notion that the central bank faced a fairly stable tradeoff between achieving its inflation and unemployment goals: rapid growth of the money supply would bring low unemployment but high inflation; slow money growth would bring a low rate of inflation but a high rate of unemployment. However, the anomalous behavior of inflation and unemployment in the 1970s—high and even increasing inflation accompanied by high and sometimes increasing unemployment in most industrialized countries—prompted macroeconomists to reformulate their views about the economy's response to monetary policy. Perhaps the two most important ideas to emerge from the recent reformulation are the so-called "natural rate" and "rational expectations" hypotheses. Taken together, these two ideas imply that the growth rate of the money supply directly affects the rate of inflation in the economy, but it has no systematic impact on the unemployment rate. Consequently, to the extent that these two hypotheses are correct, there is no tradeoff between inflation and unemployment for the central bank. Its choice of a monetary policy influences only the inflation rate, not the unemployment rate.³

For some time now macroeconomists have been stressing the obvious implication of the natural rate and rational expectations hypotheses: regardless of the central bank's concerns about unemployment, the monetary policies which produce low inflation are generally optimal. It is

only recently that economists have paid much attention to a more subtle implication of the two hypotheses: because of the central bank's concerns about unemployment, monetary policies which produce low inflation may also be time inconsistent.

Choosing the Optimal Monetary Policy.

According to the natural rate hypothesis, the economy tends toward a natural rate of unemployment which is independent of the stance of monetary policy. It may be possible for monetary policymakers to keep the actual unemployment rate from settling at its natural rate, at least temporarily, but only if they are able to create rates of inflation that the public had not been expecting.

For instance, the monetary authority might consider the natural rate of unemployment too high, and so decide that it will stimulate the economy by increasing the growth rate of the money supply. More rapid money growth increases the growth in private sector demand for goods and services. The increased demand puts upward pressure on prices, and the inflation rate rises. But will the higher inflation rate bring a lower unemployment rate? Not necessarily, according to the natural rate hypothesis. It depends on the public's inflation expectations. If firms and workers had been expecting the central bank to generate a high inflation rate and had figured this into their current wage agreements, then the higher inflation will not induce firms to hire any more workers than they intended to, so unemployment will remain at its natural rate. It is only if firms and workers had been expecting the central bank to generate low inflation and had signed contracts for low wage increases that the high-inflation policy would give firms the incentive to hire additional workers, and thus push unemployment below its natural rate.

Conversely, if the monetary authority considered the current inflation rate too high, and so decided to reduce the growth rate of the money supply, the response of unemployment would likewise depend on inflation expectations. As long as firms and workers had expected a slowdown in money growth and inflation when they forged current wage agreements, unemployment will remain at its natural rate. Lower inflation would be accompanied by an increase in the unemployment rate only if labor market participants had signed contracts for

³Criticisms of the standard "Phillips Curve" tradeoff between inflation and unemployment, and development of the alternative notions of the natural rate hypothesis and rational expectations have become nearly standard components of textbooks in macroeconomics and monetary theory. See, for example, Ritter and Silber (1983), Chapter 2, for a good summary.

high wage increases and the lower inflation took them by surprise.⁴

The natural rate hypothesis leaves the door open for the central bank to affect the unemployment rate, if it can generate an inflation rate which the public does not expect. Proponents of the rational expectations hypothesis slam the door shut by arguing that the central bank cannot systematically engineer any inflation "surprises." According to rational expectations, the public knows as much about the way the central bank conducts monetary policy as the central bank does, so the central bank cannot count on doing anything that participants in the economy did not expect. Consequently, the central bank cannot plan on using monetary policy to drive the unemployment rate away from its natural rate.⁵

If the natural rate and the rational expectations hypotheses were perfectly accurate descriptions of the way the economy worked, then monetary policy would not affect the unemployment rate, and it clearly would be optimal for the central bank to concentrate its efforts on keeping the inflation rate low. Yet even in these circumstances the central bank may wind up pursuing a high-inflation monetary policy. How can this be? Because as long as the central bank would be willing to trade high inflation for low unemployment, the low-money-growth, low-inflation policy is not time consistent. A simple example demonstrates the central bank's predicament.

Dissecting the Optimal Plan For Monetary Policy. Suppose that at the beginning of the year all of the workers and firms in an economy are in the process of negotiating their annual wage agreements. Before the agreements are signed, the central bank announces that it intends to follow a low-money-growth, low-inflation monetary policy during the year. Having received the central bank's

statement, the firms and workers in the labor market must decide whether to sign contracts for low wage increases or for high wage increases. What should they do?

Labor market participants realize they are locked into a game with the central bank. In this game, they get the first move, at the beginning of the year, when they choose between signing labor contracts with low wage increases or signing contracts with high wage increases. The central bank takes its turn next, during the year, when it chooses between creating a low rate of money growth or creating a high rate of money growth. The game will produce one of four possible outcomes for the economy (see Figure 2).

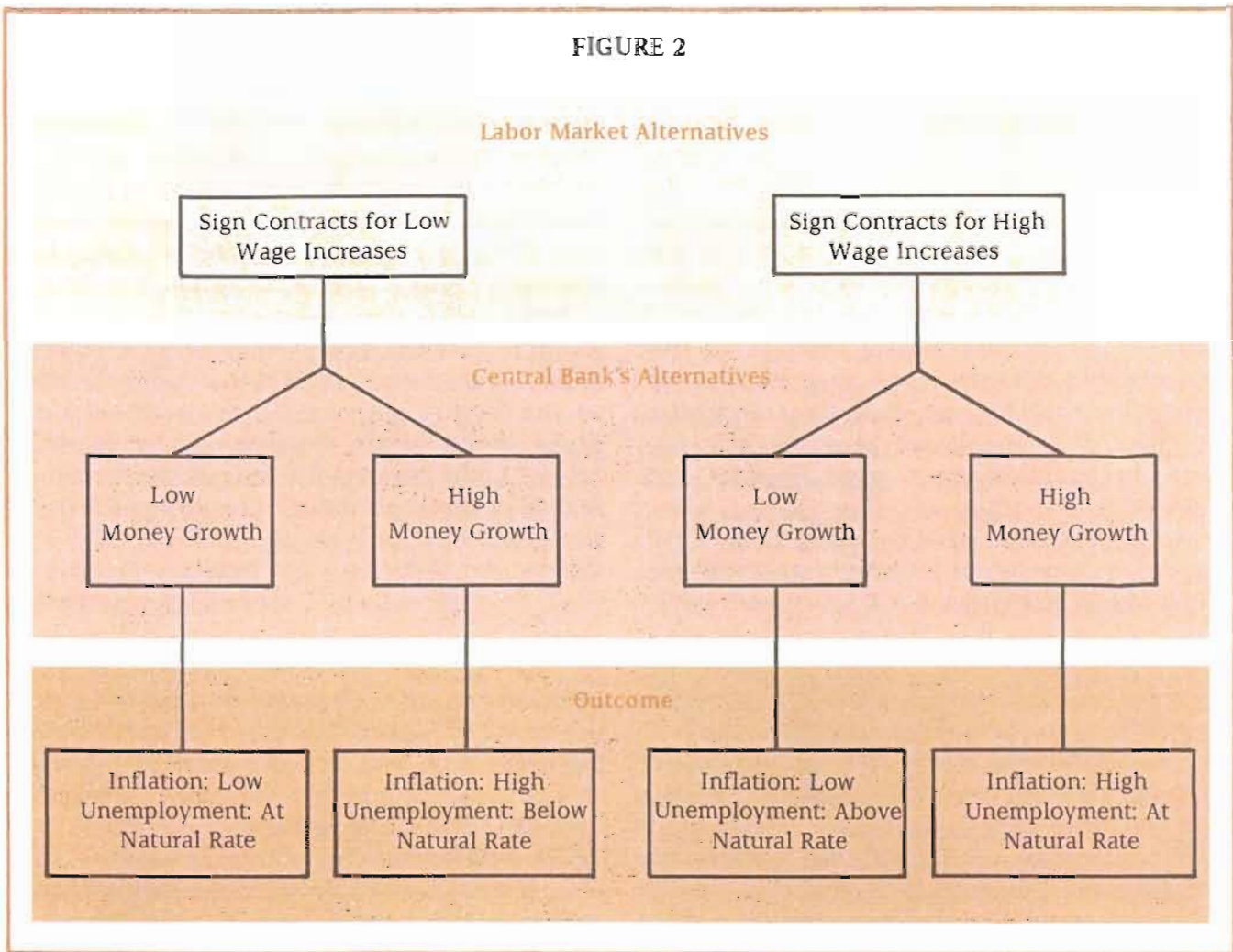
The firms and workers in the economy understand that the central bank's announced plan seems optimal under the circumstances. The blanket statement that it will pursue a low-money-growth policy seems to leave labor market participants with the choice between signing contracts for low wage increases which will match the rate of inflation and put unemployment at its natural rate, or signing contracts for high wage increases which will outstrip inflation and push unemployment above its natural rate. Since labor market participants will settle on wage increases which just keep pace with expected inflation, the central bank anticipates they will choose low wage increases. So, if all goes according to plan, workers and firms will sign for low wage increases, and the central bank will then follow with the low-money-growth policy which they had expected. As a result, inflation will come in low and unemployment will come in at the natural rate—the optimal outcome.

Of course, the question in the mind of labor market participants is "Will the central bank still see the low-money-growth, low-inflation policy as best after the contracts are signed and it is time for the central bank to carry out its policy?" And in this case, the answer is "No," because the central bank is willing to trade off higher inflation for lower unemployment.

Suppose, for instance, that the firms and workers in the economy were to agree on contracts specifying low wage increases. Now the monetary authority can choose between the low-inflation policy called for by the optimal plan and a high-inflation policy which will drive the unemploy-

⁴Analyses of the impact of surprise inflation on the unemployment rate based on the wage rigidity introduced by labor contracts are presented by Fischer (1977) and J. Taylor (1980). An alternative analysis based on a firm's initial inability to distinguish between general inflation and an increase in the demand for its product is developed by Lucas (1973).

⁵The conclusion that monetary policy systematically affects the inflation rate but has no systematic influence on real output or unemployment was given a clear exposition in Sargent and Wallace (1975).



ment rate below its natural rate. The central bank is presumed to be willing to pursue a high-inflation policy if it would reduce unemployment, and with low wage increases already locked in, the central bank would have its chance. So it would pursue the high-inflation policy.

On the other hand, suppose that labor market participants signed contracts specifying high wage increases for the year. Again, the monetary authority has to choose between the low-inflation policy called for by the optimal plan and a high-inflation policy. But this time the low-inflation policy would drive unemployment above its natural rate. And if the monetary authority is willing to run a high-inflation monetary policy to push unemployment below the natural rate, it is surely willing to do so in order to keep unemployment from rising above it. So the monetary authority would again pursue the high-inflation policy.

In short, the firms and workers of the economy enter into their wage negotiations with the realization that pursuing a high-money-growth, high-inflation policy is the only time consistent plan for the central bank to follow. So their choice is obvious—they sign contracts for high wage increases at the beginning of the year. During the year, the central bank pursues the high-money-growth policy that they expected, so inflation comes in high. And with both wage increases and inflation running high, unemployment settles at its natural rate. So, as a result of the time inconsistency of the optimal low-inflation policy, the central bank winds up creating a high rate of inflation even though it gains nothing on the unemployment front.⁶

⁶A mathematical presentation of the dynamic inconsistency in low-inflation monetary policies along these lines is carefully developed by Barro and Gordon (1983a).

A POSSIBLE SOLUTION: CREDIBLE PRECOMMITMENTS TO THE OPTIMAL PLAN

One weakness with the analysis thus far is that it seems to imply that individuals understand the policymaker's situation better than the policymaker does. But surely if Betsy can figure out that her parents' original plan is time inconsistent, so can her parents. Likewise if the workers and firms in the economy recognize that a low inflation policy is not time consistent, so must the central bank. And if policymakers are aware of the time inconsistency in their original optimal plans, isn't there something they can *do* about it? At least in principle, it seems there is—they can take measures to make their original plans time consistent.

In order for the original optimal plan to work it must be time consistent. Everybody must recognize *at the outset* that when the time comes for the policymaker to act, following the original optimal plan will still represent the policymaker's best course of action. The policymaker can ensure this by making some additional arrangements which will make deviating from the optimal plan very costly to him—so costly that he will not choose to deviate from the plan when he acts. Once the policymaker has established this *credible precommitment* to the original optimal plan, so that individuals (rightly) expect him to follow it in the future, they too will behave according to the optimal plan when they make their decisions.

George and Martha might apply this approach to overcoming the time inconsistency in their optimal plan: before talking to Betsy they can have all of their savings put into a trust account with the provision that the trust manager not disburse funds to finance Betsy's education unless she can document that she has worked a summer job. Then when they tell Betsy that they will help her with her college expenses only if she gets a summer job, Betsy will get the job, because she knows that they are committed to the optimal policy and they will not pay her expenses if she does not get a job.

Similarly, one solution to the time inconsistency problem in our simple economic example is for the central bank to begin the year, not simply by announcing that it considers a low-inflation policy optimal, but by establishing a credible commitment to the low-inflation policy. For example, the central bankers themselves may

agree to forfeit their position or their personal wealth if money growth or the inflation rate exceeds some announced percent for the year. Once firms and workers realize that it will still be in the central bank's best interest to run a low-inflation monetary policy during the year, they will sign contracts for low wage increases at the beginning of the year, and the economy can achieve the natural rate of unemployment at a low inflation rate.⁷

While arrangements establishing a credible precommitment to low inflation monetary policies can be devised, such arrangements are not likely to be implemented. Governments seem to be unwilling to impose the necessary system of penalties on their central banks, and central bankers are unlikely to do so themselves (see Donald J. Mullineaux's "Monetary Rules and Contracts: Why Theory Loses to Practice" in this issue of the *Business Review*). But all is not lost. Even in the absence of formal arrangements, there are forces at work to push the time consistent policy closer to the original optimal low-inflation rate.

THE ADVANTAGE OF HAVING A GOOD REPUTATION

Both the family example and the monetary policy example consider only a single interaction between the policymakers and the individuals they were trying to influence. But parents try to influence their offsprings' behavior, and central banks try to influence economies' performances, every day. And this repeated interaction itself may help bridge the gap between the optimal plan and the time consistent one.

When the encounter between the policymaker and other individuals is part of a long sequence of encounters, the policymaker becomes concerned about how the present encounter will affect his "reputation"—others' expectations about how he will act in the future. Adhering to the optimal plan in the current encounter presumably will enhance the policymaker's reputation, so that in future encounters, when he announces that he intends to follow the optimal plan, people are more likely to

⁷The role of the monetary authority's credibility in the disinflation process is discussed in J. Taylor (1982).

believe him and behave in accordance with that plan. On the other hand, deviating from the optimal plan in the current encounter will impair the policymaker's reputation, so that his announcement of an intent to follow the optimal plan in the future will be less credible, and people will be more likely to act on the assumption that he will deviate from it. In short, adhering to the announced optimal policy today improves the policymaker's prospects for obtaining optimal outcomes tomorrow. Thus, building a reputation functions in the same way as an explicit precommitment to the optimal policy; it raises the relative cost of deviating from the optimal policy, and so keeps the policymaker to the original optimal policy when the time comes to act. Individuals realize this, anticipate the policymaker following the optimal plan, and so behave in accordance with the optimal plan from the beginning.

For example, suppose George and Martha realize that by adhering to their optimal plan and refusing to pay for Betsy's freshman year in college unless she gets a summer job, they will reap the benefit that Betsy will find that policy credible during the summers before her sophomore, junior, and senior years. She may even find similar policies credible on other occasions. And maybe Betsy's younger brothers and sisters will do the same. On the other hand, by abandoning the optimal plan after that first summer and paying Betsy's tuition bill when she does not work, George and Martha forgo all the benefits of having a reputation for adhering to their optimal plans. If the long-run benefits of sticking with the optimal plan and maintaining a reputation outweigh the short-run benefits of sending Betsy to college on schedule, George and Martha will stick to their optimal plan. Betsy will realize this, she will find their optimal policy credible, and she will get a summer job.

Similarly, in the case of monetary policy, suppose that by sticking with the optimal low-inflation policy one year, the central bank reaps the benefit of convincing the public that it will stick with this policy in future years. As long as the central bank weighs this future benefit more heavily than any current benefits from a high-inflation policy, it will stick to its optimal plan. Firms and workers realize this, and, seeing the announced low-inflation policy as credible, sign

contracts for low wage increases at the beginning of the year.

There is no guarantee that the central bank's concern about preserving its reputation will work as well as an explicit precommitment to keep the central bank to low-inflation policies. The central bank in our example has a simple choice: high inflation or low inflation. Either the perceived benefits of building its reputation are sufficient to make the low-inflation policy time consistent or they are not. In reality, the central bank chooses from a continuum of possible inflation rates and the greater the benefits of building its reputation the closer the inflation rate associated with the time consistent policy will be to the inflation rate associated with the optimal policy. For instance, if the central bank takes a long-run view of its policies' impacts and sees prospects of high inflation in the future as a serious problem, then it will value its reputation more highly. Similarly, if the central bank knows that the public's confidence is easy to lose and hard to regain, then it will weigh reputation considerations more heavily in its policy decisions. Such considerations will push the time consistent monetary policy closer to the optimal one, and hence push the actual inflation rate closer to the optimal one. A central bank might consider that adherence to the optimal monetary policy today pays a rich enough dividend in terms of lower inflation tomorrow to warrant sticking with that policy, but that would be the extreme case.⁸

CONCLUSION

Decisionmakers charged with setting social policy, from parents to Presidents, often face the problem that their optimal plans are time inconsistent—the plans will no longer seem optimal when the time comes for the policymaker to act. The individuals whose behavior the plans are supposed to affect realize this and, as a result, behave in a way that keeps the policymakers from achieving their original goals.

Some economists are now exploring the notion that the Fed's efforts to reduce inflation are

⁸Barro and Gordon (1983b) emphasize the role of reputation in helping to reduce the impact of dynamic inconsistency problems on inflation.

plagued by time inconsistency problems. Simple examples have been developed to show how a central bank that is willing to use inflationary monetary policies to drive unemployment below its natural rate may find itself producing chronic high inflation and never reducing unemployment.

No one is quite ready to argue that time inconsistency spells an inevitable return to double-digit inflation. There are ways around the problem. First of all, time inconsistency can be overcome if the central bank can establish a credible precommitment to follow a low-inflation policy. Admittedly, this solution has yet to be

adopted by any country today, but a more practical solution or near-solution may be at work already. A central bank which realizes that its current policy actions influence the public's expectations about the future course of monetary policy will find it nearly as much in its self-interest to pursue a low inflation policy as it would if an explicit precommitment had been made. Viewed from this perspective, the recent emphasis that preserving the central bank's reputation has been given in monetary policy discussions, both in the United States and abroad, represents a substantive step forward in containing inflation over the long term.

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