1

Rational Expectations and the Reconstruction of Macroeconomics

> The government has strategies. The people have counterstrategies.
>
> Ancient Chinese proverb

Behavior Changes with the Rules of the Game

In order to provide quantitative advice about the effects of alternative economic policies, economists have constructed collections of equations known as *econometric models*.[1] For the most part these models consist of equations that attempt to describe the behavior of economic agents—firms, consumers, and governments—in terms of variables that are assumed to be closely related to their situations. Such equations are often called *decision rules* because they describe the decisions people make about things like consumption rates, investment rates, and portfolios as functions of variables that summarize the information people use to make those decisions. For all of their mathematical sophistication, econometric models amount to statistical devices for organizing and detecting patterns in the past behavior of people's decision making, patterns that can then be used as a basis for predicting their future behavior.

As devices for extrapolating future behavior from the past under a given set of rules of the game, or government policies, these models appear to have performed well.[2] They have not performed well, however, when the rules changed. In formulating advice for policymakers, economists have routinely used these models to predict the consequences of historically unprecedented, hypothetical

[1] Lucas and Sargent (1979) provide a brief explanation of econometric models and their uses in macroeconomics.

[2] This evidence is cited by Litterman (1979) and his references.

government interventions that can only be described as changes in the rules of the game. In effect, the models have been manipulated in a way that amounts to assuming that people's patterns of behavior do not depend on those properties of the environment that government interventions would change. The assumption has been that people will act under the new rules just as they have under the old, so that even under new rules, past behavior is still a reliable guide to future behavior. Econometric models used in this way have not been able to predict accurately the consequences of historically unparalleled interventions.[3] To take one recent example, standard Keynesian and monetarist econometric models built in the last 1960s failed to predict the effects on output, employment, and prices that were associated with the unprecedented large deficits and rates of money creation of the 1970s.

Recent research has been directed at building econometric models that take into account that people's behavior patterns will vary systematically with changes in government policies—the rules of the game.[4] Most of this research has been conducted by adherents of the so-called hypothesis of rational expectations. They model people as making decisions in dynamic settings in the face of well-defined constraints. Included among these constraints are laws of motion over time that describe such things as the taxes people must pay and the prices of the goods they buy and sell. The hypothesis of rational expectations is that people understand these laws of motion. The aim of the research is to build models that can predict how people's behavior will change when they are confronted with well-understood changes in ways of administering taxes, government purchases, aspects of monetary policy, and the like.

[3]Sims (1980) and Lucas (1976) describe why econometric models can perform well in extrapolating the future from the past, assuming no changes in rules of the game, while performing poorly in predicting the consequences of changes in the rules.

[4]For an example of such research and extensive lists of further references, see Hansen and Sargent (1980) and Lucas and Sargent (1981a).

THE INVESTMENT DECISION

A simple example will illustrate both the principle that decision rules depend on the laws of motion that agents face and the extent that standard macroeconomics models have violated this principle. Let k_t be the capital stock of an industry and τ_t be a tax rate on capital. Let τ_t be the first element of z_t, a vector of current and lagged variables, including those that the government considers when it sets the tax rate on capital. We have $\tau_t \equiv e^T z_t$, where e is the unit vector with unity in the first place and zeros elsewhere.[5] Let a firm's optimal accumulation plan require that capital acquisitions obey[6]

$$\begin{aligned} k_t &= \lambda k_{t-1} - \alpha \sum_{j=0}^{\infty} \delta^j E_t \tau_{t+j} \\ \alpha &> 0, 0 < \lambda < 1, 0 < \delta < 1 \end{aligned} \tag{1.1}$$

where $E_t \tau_{t+j}$ is the tax rate at time t that is expected to prevail at time $t+j$.

Equation 1.1 captures the notion that the demand for capital responds negatively to current and future tax rates. However, equation 1.1 does not become an operational investment schedule or decision rule until we specify how agents' views about the future, $E_t \tau_{t+j}$, are formed. Let us suppose that the actual law of motion for z_t is

$$z_{t+1} = A z_t \tag{1.2}$$

[5]Here T denotes matrix transposition.

[6]The investment schedule can be derived from the following dynamic model of a firm. A firm chooses sequences of capital to maximize

$$E_0 \sum_{t=0}^{\infty} \beta^t \left[f_1 k_t - \frac{f_2}{2} k_t^2 - f_3 k_t \tau_t - \frac{d}{2} (k_t - k_{t-1})^2 \right]$$

where $f_1, f_2, f_3, d > 0; 0 > \beta > 1$; and E_0 is the mathematical expectation operator conditioned on information known at time 0. The maximization is subject to k_{t-1}, τ_t being known at time t. Maximization problems of this kind are analyzed in Sargent (1979a). The parameters λ, α, and δ can be shown to be functions of f_1, f_2, f_3, and d.

where A is a matrix conformable with z_t.[7] If agents understand this law of motion for z_t, the first element of which is τ_t, then their best forecast of τ_{t+j} is $e^T A^j z_t$. We impose rational expectations by equating agents' expectations $E_t \tau_{t+j}$ to this best forecast. Upon imposing rational expectations, some algebraic manipulation implies the operational investment schedule

$$k_t = \lambda k_{t-1} - \alpha e^T (I - \delta A)^{-1} z_t \tag{1.3}$$

In terms of the list of variables on the right-hand side, equation (1.3) resembles versions of investment schedules that were fit in the heyday of Keynesian macroeconomics in the 1960s. This is not unusual, for the innovation of rational expectations reasoning is much more in the ways equations are interpreted and manipulated to make statements about economic policy than in the look of the equations that are fit. Indeed, the similarity of standard and rational expectations equations suggests what can be shown to be true generally: The rational expectations reconstruction of macroeconomics is not mainly directed at improving the statistical fits of Keynesian or monetarist macroeconomics models over given historical periods and that its success or failure cannot be judged by comparing the R^2's of reconstructed macroeconomics models with those of models constructed and interpreted along earlier lines.

Under the rational expectations assumption, the investment schedule (equation (1.3)) and the laws of motion for the tax rate and the variables that help predict it (equation (1.2)) have a common set of parameters, namely, those of the matrix A. These parameters appear in the investment schedule because they influence agents' expectations of how future tax rates will affect capital. Further, notice that all of the variables in z_t appear in the investment schedule, since via equation (1.2) all of these variables help agents forecast future tax rates. (Compare this with the common econometric practice of using only current and lagged values of the tax rate as proxies for expected future tax rates.)

The fact that equations (1.2) and (1.3) share a common set of parameters (the A matrix) reflects the principle that firms' optimal

[7]The eigenvalues of A are assumed to be less than δ^{-1} in absolute value.

decision rule for accumulating capital, described as a function of current and lagged state and information variables, will depend on the constraints (or laws of motion) that firms face. That is, the firm's pattern of investment behavior will respond systematically to the rules of the game for setting the tax rate τ_t. A widely understood change in the policy for administering the tax rate can be represented as a change in the first row of the A matrix. Any such change in the tax rate regime or policy will thus result in a change in the investment schedule (equation (1.3)). The dependence of the coefficients of the investment schedule on the environmental parameters in matrix A is reasonable and readily explicable as a reflection of the principle that agents' rules of behavior change when they encounter changes in the environment in the form of new laws of motion for variables that constrain them.

To illustrate this point, consider two specific tax rate policies. First, consider the policy of a *constant* tax rate $\tau_{t+j} = \tau_t$ for all $j \geq 0$. Then $z_t = \tau_1, A = 1$, and the investment schedule is

$$k_t = \lambda k_{t-1} + h_0 \tau_t \tag{1.4}$$

where $h_0 = -\alpha/(1-\delta)$. Now consider an investment tax credit *on-again, off-again* tax rate policy of the form $\tau_t = -\tau_{t-1}$. In this case $z_t = \tau_1, A = -1$, and the investment schedule becomes

$$k_t = \lambda k_{t-1} + h_0 \tau_t \tag{1.5}$$

where $h_0 = -\alpha/(1+\delta)$. Here the investment schedule itself changes as the policy for setting the tax rate changes.

Standard econometric practice has not acknowledged that this sort of thing happens. Returning to the more general investment example, the usual econometric practice has been roughly as follows. First, a model is typically specified and estimated of the form

$$k_t = \lambda k_{t-1} + h z_t \tag{1.6}$$

where h is a vector of free parameters of dimension conformable with the vector z_t. Second, holding the parameters h fixed, equation (1.6) is used to predict the implications of alternative paths for

the tax rate τ_t. This procedure is equivalent to estimating equation (1.4) from historical data when $\tau_t = \tau_{t-1}$ and then using this same equation to predict the consequences for capital accumulation of instituting an on-again, off-again tax rate policy of the form $\tau_t = -\tau_{t-1}$. Doing this assumes that a single investment schedule of the form of equation (1.6) can be found with a single parameter vector h that will remain fixed regardless of the rules for administering the tax rate.[8]

The fact that equations (1.2) and (1.3) share a common set of parameters implies that the search for such a regime-independent decision schedule is misdirected and bound to fail. This theoretical presumption is backed up by the distressing variety of instances in which estimated econometric models have failed tests for stability of coefficients when new data are added. This problem cannot be overcome by adopting more sophisticated and more general lag distributions for the vector h, as perhaps was hoped in the 1960s.

Are Government Deficits Inflationary?

A second example that well illustrates our general principles about the interdependence of the strategic behavior of private agents and the government concerns the inflationary effects of government deficits. We can discuss this matter with the aid of a demand function for base money of the specific form

$$\frac{M_t}{p_t} = \alpha_1 - \alpha_2 E_t \frac{p_{t+1}}{p_t} \quad \alpha_1 > \alpha_2 > 0 \tag{1.7}$$

where M_t is the stock of base money at time t, p_t is the price level at time t and $E_t(\cdot)$ is the value of $(\cdot)$ expected to prevail at time t. Equation (1.7) is a version of the demand schedule for money that Phillip Cagan (1956) used to study hyperinflations. It depicts the demand for base money as decreasing with the expected gross rate of inflation, $E_t p_{t+1}/p_t$. A variety of theories imply a demand function for base money with this property.

[8]This is analogous to assuming that Houston's propensity to punt on fourth down does not depend on the number of downs per series determined by the NFL rules.

Equation (1.7) is a difference equation, a solution of which is

$$p_t = \frac{1}{\alpha_1} \sum_{j=0}^{\infty} \left(\frac{\alpha_2}{\alpha_1}\right)^j E_t M_{t+j} \tag{1.8}$$

which expresses the price level at t as a function of the supply of base money expected to prevail from now into the indefinite future. We shall use equation (1.8) as our theory of the price level.

According to equation (1.8), if government deficits are to influence the price level path, it can only be through their effect on the expected path of base money. However, the government deficit and path of base money are not rigidly linked in any immutable way. The reason is that the government can, at least to a point, borrow by issuing interest-bearing government debt, and so need not necessarily issue base money to cover its deficit. More precisely, we can think of representing the government's budget constraint in the form

$$\begin{aligned} G_t - T_t &= \frac{M_t - M_{t-1}}{p_t} + B_t - (1 + r_{t-1})B_{t-1} \\ r_{t-1} &\geq 0 \end{aligned} \tag{1.9}$$

where G_t is real government expenditures at t, T_t is real taxes net of transfers (except for interest payments on the government debt), B_t is the real value at t of one-period government bonds issued at t, to be paid off at $t+1$ and to bear interest at the net rate r_t. For simplicity, equation (1.9) assumes that all government interest-bearing debt is one period in maturity. Equation (1.9) must hold for all periods t. Again for simplicity, we shall also think of equations (1.8) and (1.9) as applying to an economy with no growth in population or technical change.

Under the system formed by equations (1.8) and (1.9), the inflationary consequences of government deficits depend sensitively on the government's strategy for servicing the debt that it issues. We consider first a strict Ricardian regime in which government deficits have no effects on the rate of inflation. In this regime, the government always finances its entire deficit or surplus by issuing or retiring interest-bearing government debt. This regime can be

characterized by either of the following two equations, which are equivalent in view of equation (1.9):

$$M_t - M_{t-1} = 0 \tag{1.10}$$

$$B_t = E_t \sum_{j=0}^{\infty} R_{tj}^{-1}(T_{t+j+1} - G_{t+j+1}) \tag{1.11}$$

where $R_{tj} = \prod_{i=0}^{j}(1 + r_{t+i})$. Equation (1.10) states that the supply of base money is always constant, while equation (1.11) states that the real value of government debt equals the present value of prospective government surpluses. In this regime a positive value of interest-bearing government debt signals a stream of future government budgets that is in surplus in the present value sense of equation (1.11). Increases in government debt are temporary in a sense made precise in equation (1.11).

In the Ricardian regime, government deficits have no effects on the price path because they are permitted to have no effects on the path of base money. For the path of base money to be unaffected by government deficits, it is necessary that government deficits be temporary and be accompanied by exactly offsetting future government surpluses.

Since the Ricardian regime may seem remote as a description of recent behavior of the US federal government, it is worthwhile to recall that cities and states in the United States are constitutionally forced to operate under a Ricardian rule, since they have no right to issue base money.

There are alternative debt-servicing strategies under which government deficits are inflationary. To take an example at the opposite pole from the Ricardian regime, consider the rule recommended by Milton Friedman (1948) under which

$$B_t = 0 \text{ for all } t \tag{1.12}$$

$$G_t - T_t = \frac{M_t - M_{t-1}}{P_t} \tag{1.13}$$

According to this rule, deficits are always to be financed entirely by issuing additional base money, with interest-bearing government debt never being issued. In this regime, the time path of government deficits affects the time path of the price level in a rigid and immediate way that is described by equations (1.8) and (1.13). Under this regime it is possible for the government budget to be persistently in deficit, within limits imposed by equations (1.13) and (1.7). Deficits need not be temporary.

Bryant and Wallace (1980) and Sargent and Wallace (1981) have described debt-servicing regimes that are intermediate between Ricardo's and Friedman's. In all versions of these regimes, interest-bearing government debt is issued, but is eventually repaid partly by issuing additional base money. In the regime studied by Sargent and Wallace, the deficit path $G_t - T_t$ is set in such a way, and the demand schedule for interest-bearing government debt is such that eventually the inflation tax must be resorted to, with increases in base money eventually having to be used to finance the budget.

In all regimes of the Bryant-Wallace variety, increases in interest-bearing government debt are typically inflationary, at least eventually because they signal prospective increases in base money. Sooner or later these eventual increases in base money will affect the price level, how soon depending on the coefficients α_1 and α_2 in equations (1.7) and (1.8).

This discussion indicates that the observed correlation between the government deficits and the price level depends on the debt-repayment regime in place when the observations were made. It would be a mistake to estimate the relationship between the deficit and the price path from time-series observations drawn from a period under which a Ricardian regime was in place, and to assert that this same relationship will hold between the deficit and inflation under a regime like the one described by Bryant and Wallace. It would be a mistake because private agents' interpretations of observed deficits, and consequently the impact of observed deficits on the price level, depend on the debt-servicing regime they imagine to be in place. This can thus be viewed as another example of our principle that private agents' rules of behavior depend on their perceptions of the rules of the game they are playing.

General Implications of the Examples

These two examples illustrate the general presumption that the systematic behavior of private agents and the random behavior of market outcomes both will change whenever agents' constraints change, as when government policy or other parts of the environment change. To make reliable statements about policy interventions, we need dynamic models and econometric procedures that are consistent with this general presumption. Foremost, we need a new and stricter definition of the class of parameters that can be regarded as *structural*. The body of doctrine associated with the simultaneous equations model in econometrics properly directs the attention of the researcher beyond reduced-form parameters to the parameters of structural equations that are meant to describe those aspects of people's behavior that remain constant across a range of hypothetical environments. Although such structural parameters are needed to analyze an interesting class of policy interventions, most often included among them have been parameters of equations describing the rules of choice for private agents. Consumption functions, investment schedules, and demand functions for assets are all examples of such rules of choice. In dynamic settings, regarding the parameters of these rules of choice as structural or invariant under policy interventions violates the principle that optimal decision rules depend on the environment in which agents believe they are operating.

If parameters of decision rules cannot be regarded as structural or invariant under policy interventions, deeper objects that can must be sought. The best that can be hoped for is that parameters characterizing private agents' preferences and technologies will not change when changes in economic policy change the environment. If dynamic econometric models were formulated explicitly in terms of the parameters of preferences, technologies, and constraints, in principle they could be used to predict the effects on observed behavior of changes in policy rules. In terms of our investment example with equations (1.2) and (1.3), the idea would be to estimate the free parameters of the model $(\lambda, \alpha, \delta, A)$. With these estimates, economists could predict how the investment schedule

would change if different A's occurred.[9]

New Econometric Methods

Private Agents' Strategies Reflect Government's Choice of Rules of the Game

A major research effort is currently under way by economists to develop theoretical and econometric methods capable of isolating parameters that are structural in the above sense, that is, they are invariant under government interventions in the form of changes in the rules of the game. This is a very ambitious undertaking, one that is in many ways more difficult and ambitious than was the impressive effort of the Cowles Commission in the late 1940s that created the econometric methods that made Keynesian econometric models possible. For what is required is a theoretical and statistical framework that permits the economist to estimate how private agents' decision rules or strategies depend on the decision rules or strategies used by the government. Any successful version of this research effort will embody the principle that the parameters of private agents' decision rules are not among the free parameters of the model, but are themselves functions of (among other things) parameters describing the rules used by the government. Achieving success in this endeavor requires that many new methods and results be achieved in technical aspects of econometrics and dynamic economic theory.

Lucas and Sargent have formalized the ideas behind this research effort in the following way. They let h denote a collection of decision rules of private agents. Each element of h is itself a function that maps some private agent's information about his state at a particular point in time into his decision at that point in time. Consumption, investment, and demand functions for money are all examples of elements of h. Lucas and Sargent let f denote a collection of elements that forms the "environment" facing private agents. Some elements of f represent rules of the game or decision

[9] As claimed in note 8, the parameters λ, α, δ can be shown to be functions of the parameters f_1, f_2, f_3, d of the present value function being maximized in the equation.

rules selected by the government, which map the government's information at some date into its decisions at that date. For example, included among f might be decision rules for fiscal and monetary policy variables. The fundamental principle that we are concerned with can be summarized as stating that the elements of h are partly functions of f. Lucas and Sargent represent this mapping formally by

$$h = T(f) \tag{1.14}$$

The mapping T represents "cross-equation restrictions," since each element of h and of f is itself a decision rule or equation determining the choice of some variable under an agent's control.

The new econometric methods have been aimed principally at utilizing time series of observations on an economy that was operating for some period under a *single* set of government rules or strategies.[10] The idea is to impose sufficient structure on the observations (i.e., sufficient structure on the mapping T in equation (1.14)) that by observing the decisions h of private agents and f for the government, we can isolate the free parameters of agents' preferences and constraints that determine T and that will enable us to predict how private agents' decision rules h would change if the government were to adopt some new and perhaps historically unprecedented rules f. The theoretical models that enable one to hope to carry off this task are characterized by "cross-equation restrictions," across equations for the decision rules of private agents and the decision rules of the government. These restrictions summarize the dependence of private agents' strategies on the government's strategies. To understand the economic process, in the sense of being able to predict the consequences of changes in the rules of the game set by the government, is to understand these restrictions. The hope is that by utilizing these restrictions, observations on an economy operating under a single set of rules

[10]If sufficient data are available, these same econometric methods can be readily modified to pooling observations on h_i, f_i from several regimes $i = 1, \cdots, n$ in order to estimate T. The reader of Hansen and Sargent (1980) can immediately see how samples of data drawn from different h_i, f_i can be pooled using either the maximum likelihood or method of moments estimator.

can be interpreted and used to make predictions about how the economy would behave under brand new rules. Possessing the ability to do this is a *sine qua non* for scientific and quantitative evaluation of alternative government rules.

Impressive technical progress is being made in this research endeavor, and there are grounds for being reasonably optimistic that economists will eventually be able to deliver econometric methods that are useful for predicting the effects of changes in government policy rules. However, it is wise to keep in mind what an ambitious task this is. It requires several leaps of faith in economic theory to hope that this line of research will realize all of its aims, although the success of this research line will eventually have to be judged not in absolute terms but vis-à-vis alternative lines of research designed to achieve the same objectives.

Though they are being developed rapidly, the new methods described above are still in their infancy, and as yet capable of handling only relatively small and simple dynamic systems. We now have several interesting empirical applications of these methods, which demonstrate their feasibility. But we are still some way from a model suitable for analyzing many interesting questions of macroeconomic policy. This is one reason that it is useful to pursue alternative styles of analysis that try to reflect the basic principle that private agents' behavior depends on the rules of the game set by the government. This brings us to economic history.

Historical and Cross-Country Analysis

History provides a number of examples of economies that have apparently operated for more or less extended periods of time under alternative rules of the game or government strategies for selecting fiscal, monetary, and regulatory actions. By studying records of these economies, one can hope to find direct evidence of the dependence of private agents' decision rules h on those aspects of the environment f selected by the policy authorities. These historical records amount to distinct pairs of observations $h_1, f_1; h_2, f_2; \cdots; h_n, f_n$ that can be viewed as observations at different points of the mapping T given by equation (1.14). In a concrete

sense such a collection of cross-regime observations permits direct observations on at least parts of the T mapping.

These are the evident advantages of the historical or cross-country analysis. There are also evident disadvantages. The observations on different h_i, f_i pairs usually come in the form of observations from distant times and/or places. For this reason, the data are often so fragmentary and questionable in quality that they are incapable of supporting the kind of formal time-series econometric analysis described above. Less formal methods of analysis must be used for such data. To the extent that these less formal methods require more judgment, discretion, and cleverness from the analyst, they are in a sense less reproducible and automatic than are the formal methods. The weaving of plausible heuristic stories this style of analysis involves is one of the things that the formal time-series methods developed by rational expectations analysts and their econometric predecessors sought to avoid. Furthermore, it is often an arguable matter to identify alternative countries or historical periods as operating under distinct government policy regimes or rules of the game f.

Despite these genuine disadvantages of the historical and cross-country method of study, it is my belief that such studies are well worth the effort. The hope of getting some direct peeks at distinct observations, however fragmentary and noisy, on the $h = T(f)$ mapping easily justifies appreciable efforts in this direction. It is this hope that motivated the three historical chapters that comprise the heart of this book. Besides, the practical success of the rational expectations approach to macroeconomics perhaps ultimately depends on whether it can become a routine device that can be used to think about macroeconomic problems informally and on the backs of envelopes. These chapters represent attempts to put the theory into practice in such an informal context.

Implications for Policymakers

These ideas have implications not only for theoretical and econometric practices but also for the ways in which policymakers and their advisers think about the choices confronting them. In particular, the rational expectations approach directs attention away from particular isolated actions and toward choices among feasible rules of the game, or repeated strategies for choosing policy variables. While Keynesian and monetarists macroeconomic models have been used to try to analyze what the effects of isolated actions would be, it is now clear that the answers they have given have necessarily been bad, if only because such questions are ill-posed.

In terms of our investment example, by selecting different values for the first row of A, we can analyze the effects on current and subsequent investment of switching from one well-understood policy for setting the tax rate to another—that is, we can analyze the effects of different *strategies* for setting the tax rate. However, we cannot analyze the effects on current and subsequent investment of alternative *actions* consisting of different possible settings for the tax rate τ_t at a particular point in time $t = t$. For in order to make predictions, we must specify agents' views about the law of motion A, and this is not done when we simply consider actions consisting of alternative settings for τ_t at one isolated point in time. This idea is so widely accepted as to be uncontroversial among decision theorists (and football fans); but even today practicing macroeconomists often ignore it.

To take a concrete example, in the United States there was recently interest in analyzing what would happen to the rate of domestic extraction of oil and gas if the tax on profits of oil producers increased a lot on a particular date. Would supply go up or down if the tax were raised to X percent on July 1? The only scientifically respectable answer to this question is "I don't know." Such a rise in the oil-profits tax rate could be interpreted as reflecting one of a variety of different tax strategies (A matrices), each with different implications for current and prospective extraction of oil.

For example, suppose that oil companies had reason to believe that the increase in the tax is temporary and will be repealed after the election. In that case, they would respond by decreasing their

rate of supply now and increasing it later, thus reallocating their sales to periods in which their shareholders get a larger share of profits and the government a smaller share. Yet suppose that oil companies believed that the increase in the tax rate on July 1 is only the beginning and that further increases will follow. In that case the response to the tax rate increase would be the reverse: to increase supply now and decrease it later in order to benefit companies' shareholders. This example illustrates that people's views about the government's strategy for setting the tax rate are decisive in determining their responses to any given actions and that the effects of actions cannot be reliably evaluated in isolation from the policy rule or strategy of which they are an element.

Another version of this example can easily be constructed for our deficit example around the question "Are large current government deficits accompanied by tight monetary policy actions inflationary?" This question is also ill-posed because it fails to specify the debt repayment strategy to be used by the government. The way in which current deficits are correlated with inflation depends sensitively on what debt repayment regimes is in place.

What policymakers (and econometricians) should recognize, then, is that societies face a meaningful set of choices about alternative economic policy regimes. For example, the proper question is not about the size of tax cut to impose now in response to a recession but about the proper strategy for repeatedly adjusting tax rates in response to the state of the economy, year in and year out. Strategic questions of this nature abound in fiscal, monetary, regulatory, and labor market matters. Private agents face the problem of determining the government regime under which they are operating, and they often devote considerable resources to doing so. Whether governments realize it or not, they do make decisions about these regimes. They would be wise to face these decisions deliberately rather than ignore them and pretend to be able to make good decisions by taking one seemingly unrelated action after another.