ble to war fever and worship of leadership
10. The immortality of "Big Brother"
11. World of patriots v. enemies (uncritical love of country and leaders, *and* uncritical hatred of enemies)
12. Unthinking political orthodoxy
13. Infallibility of the Party
14. A perpetual, privileged Party elite
15. Political and social indoctrination
16. Children informing on parents
17. Torture by government as systematic policy
18. Thought police
19. Omnipresent surveillance
20. Doublethink (reality control) (with help of "blackwhite" and "duckspeak")
21. Falsification of history
22. Armaments consuming a people's livelihood
23. Brainwashing
24. Obliteration of standards of comparison
25. Omnipotence of Big Brother
26. Immoral ethics of the dedicated revolutionary
27. Loss of human integrity
28. Loss of a sense of beauty
29. Abuse/prostitution of language
30. Denial of independent critical thought and opportunity to pursue the truth
31. Absence of a rich, diverse plural society

□

[Author's answers: 1-10: N; 11-15: Y; 16-31: P.]

Forecasting Policy Decisions: An Expected Utility Approach to Post-Khomeini Iran*

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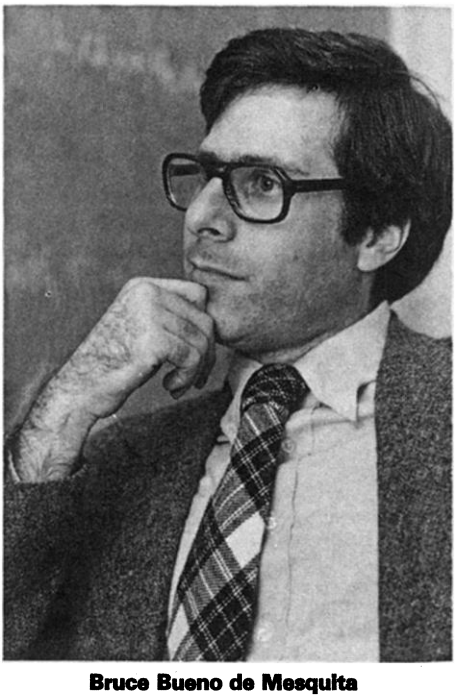
How a decision maker can predict political crises and/or policy decisions has



Bruce Bueno de Mesquita

*I would like to thank Data Resources Inc. and Policon Corp. for making the data used here available to me. I would also like to thank Douglas Beck and David Newman for helpful contributions to the development of this essay. I alone, of course, am responsible for the analysis and forecast contained here.

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been a central concern of political analysis for many decades. From the large-scale expropriations in Cuba in 1960 to the well-publicized downfall of the Shah in 1979, major political disruptions—and lesser policy shifts—have remained a significant source of study by academics and policy planners alike. Yet, despite the obvious importance of developing better forecasting capabilities, nearly all methods traditionally applied to this pursuit have exhibited serious shortcomings.

This approach involves mathematical, deductive models applied to broad questions of political analysis, combined with the use of the detailed knowledge of expert analysts, to offer strategies and answers directly relevant to forecasting problems.

By far the most commonly used method of policy forecasting is based on reliance on expert judgments. Such judgments, while often bringing substantial insights to a problem, do not provide a structured, analytical environment for reproducing and comparing conclusions under different assumptions or in different settings.

More recently, quantitative methods have been used to provide structured, but largely *ad hoc,* approaches to political assessments. Such, usually statistical, approaches do not benefit from the logic of a rigorously derived, internally consistent, theory. Furthermore, such approaches are often sharply limited by the availability of existing data.

In this essay, I discuss a forecasting method that I have developed over the past several years and that has been subjected to testing in hundreds of real-time forecasts. After discussing the method, I present a forecast of policy on two issues in post-Khomeini Iran. In that context, I also discuss likely developments regarding the selection of a successor to Khomeini.

The forecasting approach I take grows out of my research on international conflict. It is grounded in the axioms of expected utility theory. The approach merges critical elements of expert knowledge with a deductive decision-making orientation. The resulting analysis permits one to examine alternative scenarios about detailed policy outcomes under differing assumptions about the interests, capabilities and information available to key political actors in the country in question.

Unlike past modeling attempts, the expected utility approach does not "curve-fit" some measure of political change to variables selected out of a large data base. Rather, it models the choices made by political actors in the course of influencing domestic and foreign policies, based upon the tenets of expected utility theory. Thus, this approach involves mathematical, deductive models applied to broad questions of political analysis, combined with the use of the detailed knowledge of expert analysts, to offer strategies and answers directly relevant to forecasting problems.

The expected utility approach focuses upon the following questions:

- What are the policies that policy analysts or decision makers are interested in?
- Under what conditions could these policies shift? If there is a shift in policy, what will be the specific contents of the new outcome? Will the predicted changes in policy occur within the existing governmental framework, or will a new government come to power?

Note that the focus of the approach I take is on particular policies and their evolution rather than on whether a government crisis will occur. Crises are viewed as one of many conditions by which policies may change. Although the modeling procedure has proven successful at forecasting highly disruptive, crisis situations, it has also proven successful at forecasting policy shifts under normal conditions.

Components of the Expected Utility Approach

The components of the approach are twofold: (1) the basic data inputs to the structural models, and (2) the structural models themselves, which allow one to forecast and evaluate alternative scenarios and investigate detailed questions of political strategy.

The expected utility models employed here are sufficiently general to provide forecasts regarding almost any policy questions. These policies may, for instance, reflect areas of economic concern, such as currency control, or of more political concerns, such as foreign policy positions vis-a-vis the U.S.

For each policy the expected utility approach requires basic information on:

- Identification of the political actors within or outside the country who may wish to influence this policy.
- A specified range of policy alternatives that could encompass all possible outcomes.
- The policy preference of each group on the issue.
- Estimates of the relative political, economic or military capabilities that each group may employ to influence the policy decision.
- Estimates of the importance (salience) each group attaches to each issue, signifying the group's interest in influencing policy outcomes.

Note that the policy outcome is not a data requirement because that is one of the outputs of the decision models discussed below. Rather, these components represent the fundamental elements of policy analysis, whether or not a structured model is applied to evaluating these data. As such, they represent information over which there is generally a high level of agreement among experts, even when those same experts might disagree widely over likely policy outcomes.

The Expected Utility Decision Models

Identifying what positions are held by the government and other political groups supporting or opposing an issue, as well as the other policy elements, are critical to any decision. Such information is incomplete, however, unless there is a procedure to (a) analyze what policy choices are most likely to be made and implemented; (b) examine the process (whether it is orderly or violent) by which policy choices will be reached; (c) identify what political realignments may result from a forecasted policy decision and what the implications of these new alignments might be; and (d) evaluate the significance of alternative data inputs or assumptions in order to assess the confidence associated with derived policy forecasts.

The expected utility decision model outlined below attempts to address all of these issues. The theoretical framework for the decision model, based on the tenets of micro-economic theory of expected utility behavior, assumes that decision makers (individuals or groups) evaluate the costs and benefits associated with choices to obtain the largest net gain (expected utility) at an acceptable level of risk. This expected gain (utility) framework takes into account each group's perception of the likely actions of all other groups and recognizes explicitly that identical information, evaluated rationally and systematically by different groups, can result in different policy choices if the importance of the issue or the willingness to take risks should vary.

The expected utility framework implies a functional form, or model, that defines the environment in which policy choices are made. This functional form estimates the political decision maker's anticipated gains or losses from challenging policy positions preferred by other groups. This calculation of expected utility for each group relevant to a particular issue may be summarized as follows:

Expected Net Gain = (Probability of Success) * (Available Policy Gains) + (Probability of Failure) * (Possible Policy Setbacks) + (Net Marginal Expected Impact of Third Parties)

While this is a necessary simplification of the actual equation from my earlier work; it does indicate the basic structure by which data on groups' preferred positions and capabilities are used to repre-

sent the probabilities and potential policy gains involved in each political decision maker's calculations. Furthermore, there are two additional aspects of the expected utility methodology that add to its realism and forecasting accuracy:

1. The expected utility model endogenously estimates the risk propensity of each actor on each issue. Recognizing that political decision makers act on perceptions which may be distorted by the willingness to take risks, the model estimates the degree to which actors' risk profiles distort their cost and benefit calculations. These distortions allow for the possibility of actors misperceiving or perceiving situations differently from one another.

2. The equations take into account the salience (importance) of the policy to each actor. This determines the degree to which actors are likely to challenge an existing policy with which they differ, and what resources they will apply to resolve any disputes.

By calculating which groups expect to gain or lose by challenging existing policy, the expected utility decision models estimate whether an existing policy will change and, if so, by how much. In addition, the policy forecast also reveals the configuration of forces that will bring about a policy change and whether the change will be brought about through normal political channels or by more conflictual means that may signify a crisis.

Political Crisis: The Environment of Policy Change

Let us consider further how a given configuration of expected utility calculations by groups wishing to influence a certain policy may indicate how a policy will change, if at all. Will the change be strongly contested, or will the transition to a new policy be smooth? This question matches two important components: the level of security of the established policy against change and the magnitude of the expected gain of each group favoring a change. The combination of these two elements, the degree of security of the current government with its status quo policy and the expected utility for change, provide information on: (a) the depth of the struggle over a change of policy; (b) the likelihood that the policy will change; and (c) the nature and extent of the compromise that will result. Figure 1 represents the dynamics of this process in schematic form.

In this diagram, the values being plotted represent the net gain or loss of some groups (the "focal group" labeled on the X axis) versus the expected gain of each challenging group (as represented on the Y axis). These values are taken directly from the solved expected utility values of the model. The stability of the focal group's policy objectives rests on the value of the expected utility of that policy position against each group. Each group's perception of its ability to alter that policy depends upon its expected net gain against the focal group. Thus the location of each actor on the diagram establishes the likelihood that policy challenges will be resolved peacefully or through a conflict.

For the expected utility values plotted in each quadrant, we may interpret the results as follows:

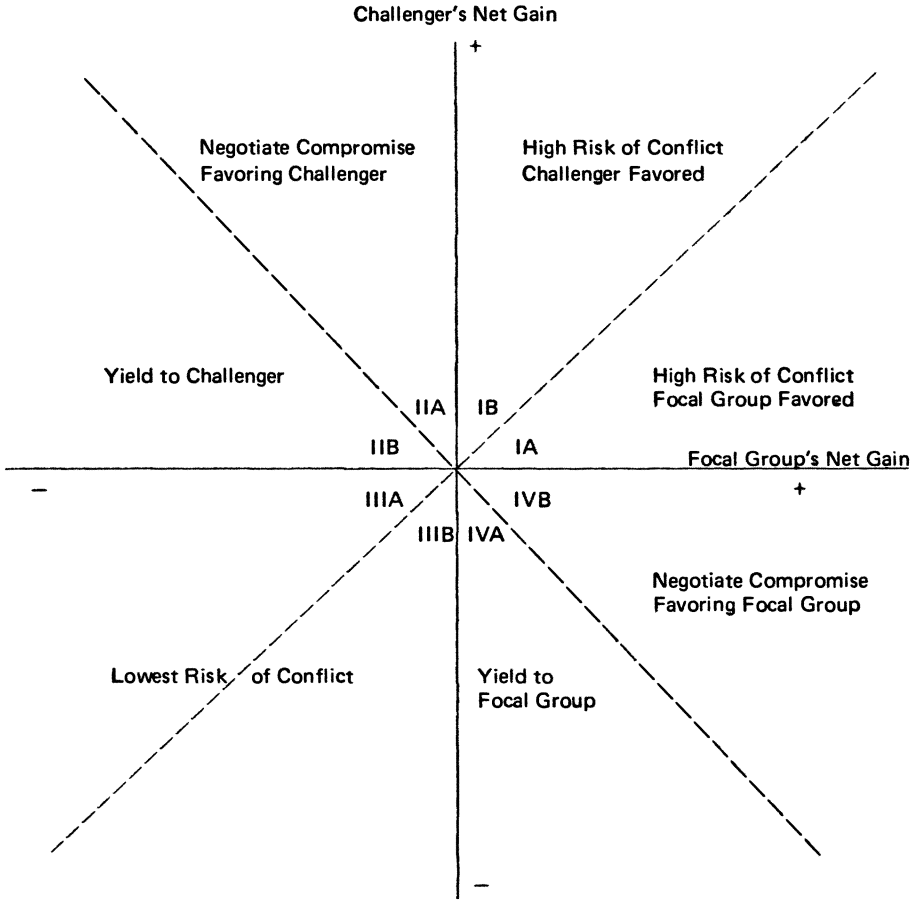
Quadrant I—The focal group (X-axis) and the challenger (Y-axis) each expect to gain against the other in a contest over this issue. This quadrant indicates a high risk of conflict. Therefore, it is this quadrant which marks the crisis zone. The outcome will generally favor the focal group if it falls into sector IA, favor the challenger if it falls into sector IB.

Quadrant III—In contrast to Quadrant I, both the challenger and the focal group expect to lose in a contest against one another. Conflict is highly unlikely in this case, whether the challenger falls into sector IIIA or IIIB.

Quadrant II—The challenger has the advantage in this quadrant. The focal group will yield if the challenger is plotted in sector IIB or negotiate a compromise favorable to the challenger if the plot is in sector IIA.

Quadrant IV—The focal group has the advantage in this quadrant. If the challenger

FIGURE 1



falls into sector IVB, a compromise favorable to the focal group is likely. If the challenger falls into sector IVA, the challenger will yield to the focal group.

For instance, if a group's name appears in Quadrant I, the focal group expects net gains against that challenger, while the focal group believes the challenger expects net gains vis-a-vis the focal group. This creates a strong likelihood of crisis whereby policy change is more likely to be violent and dramatic if the preferred positions of the challengers differ greatly from the focal group and if the challenger also perceives that it can win.

Knowing the expectations of each of the groups provides information on the likely behavior of the groups since it is assumed that decision makers act on their perceptions. The models permit us to distinguish between what the groups perceive to be the situation and what the input data indicate the objective situation is. Thus, we can distinguish between real conditions (as indicated by the input data) versus conditions perceived by each of the actors. In our approach these perceptions are determined by the risk orientations of the actors. Thus, we are able to assess what actions are likely to be taken by each of the groups and whether the actions taken will produce the anticipated outcome. For instance, a risk-acceptant decision maker may perceive gains from challenging the current

policy and as such act to change the policy. However, such actions may fail if the decision maker were so risk acceptant that objective losses were viewed as gains.

An example will illustrate how powerful this component of the model is. An individual considering whether to jaywalk across a street estimates the probability of crossing the street without getting a ticket for jaywalking. There is also a utility associated with not having to walk to the corner and wait for a green light. In addition, the individual estimates the likelihood of getting a ticket and the disutility associated with the ticket. These perceptions of the situation determine whether the decision maker jaywalks. If his expected utility is positive, he jaywalks. A decision maker with positive utility for jaywalking, however, may be greeted by a policeman when he gets to the other side of the street.

The expected utility models not only permit detailed evaluations of the environment of policy change. They also provide an ability to answer "what if" questions by varying data inputs and performing alternative simulations. One may wish to ascertain, for example, if a particular political group is able to encourage a political crisis even if no crisis is currently indicated from the available expert data. Simulations with changes in that group's policy positions or estimates of its political influence (that is, its capabilities) may indicate whether a crisis could arise under realistic conditions.

To illustrate how this expected utility approach has been applied to forecast and evaluate decisions, I will show a real time forecast of likely events in post-Khomeini Iran.

Iran Forecast

Ayatollah Khomeini is in his mid-eighties and allegedly in ill health. Consequently, it is likely that the resolution of the Iran-Iraq war and the reorganization of the Iranian economy will need to be faced by his successor. Here I forecast who the successor will be and what the relevant policy decisions are likely to look like.

Table 1 lists the groups identified by several Iranian experts as the key figures who will influence decisions on the issues in question. Estimates of the "overall influence" of each group, normalized to sum to 100, are also listed in Table 1. Table 2 depicts the policy preference of each group on the war issue, as well as the salience, or importance, each group attaches to the resolution of this policy question. Figures 2, 3, and 4 depict President Khamenei's perceptions, the perceptions of others, and the "objective" situation, respectively.

TABLE 1
Iran—Groups and Capabilities

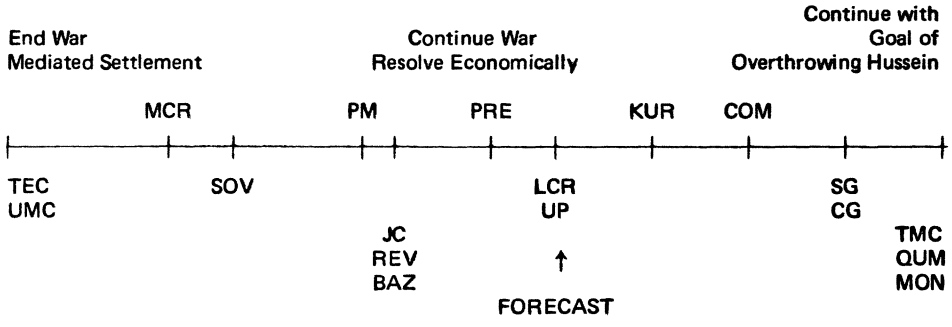
Group	Overall Influence
Afghan Refugees (AFG)	.5
Tudeh Party (TUD)	.6
Kurds (KUR)	2.3
Turkoman (TUR)	.3
Baluchis (BAL)	.6
Royalists (ROY)	.2
Bazaaris (BAZ)	5.6
Middle Class Rural Peasants (MCR)	.9
Lower Class Rural Peasants (LCR)	4.5
Urban Middle Class (UMC)	1.1
Urban Poor (UP)	4.5
Technocrats (TEC)	.6
Junior Clerics—Rafsanjani (JC)	11.3
President Khamenei (PRE)	10.7
Prime Minister Musavi—Khamenei (PM)	9.0
Tehran Militant Clerics (TMC)	3.4
Qum Clerics (QUM)	4.5
Supreme Court (SC)	4.5
Ayatollah Montezari (MON)	.1
Revolutionary Guards (REV)	12.4
Committees/Cabinet (COM)	11.8
Council of Guardians (CG)	9.0
Ayatollah Golpayegani (GOL)	.6
Ayatollah Shariat Madari (SHA)	.6
Ayatollah Sherazi (SHE)	0
Ayatollah Tabot Tabai (TAB)	0
Soviet Union (SOV)	.6

President Khamenei will dominate decision making concerning the resolution of the war with Iraq. Khamenei faces competing pressures from those who take a more moderate position and those who take a more extreme position. He perceives the preponderance of pressure comes from the relatively moderate inter-

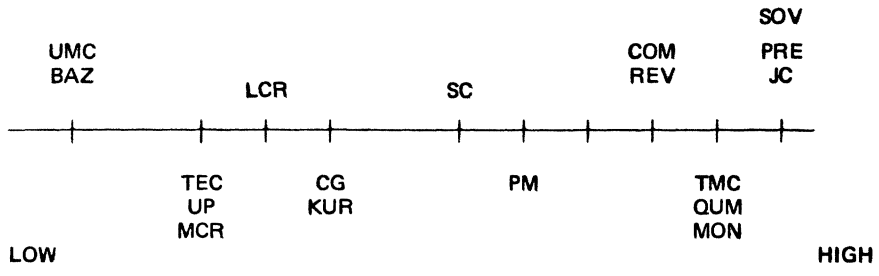
TABLE 2

Iran: Issue Positions and Salience

Issue: What is an acceptable settlement of the war with Iraq for each of the groups?



Salience:



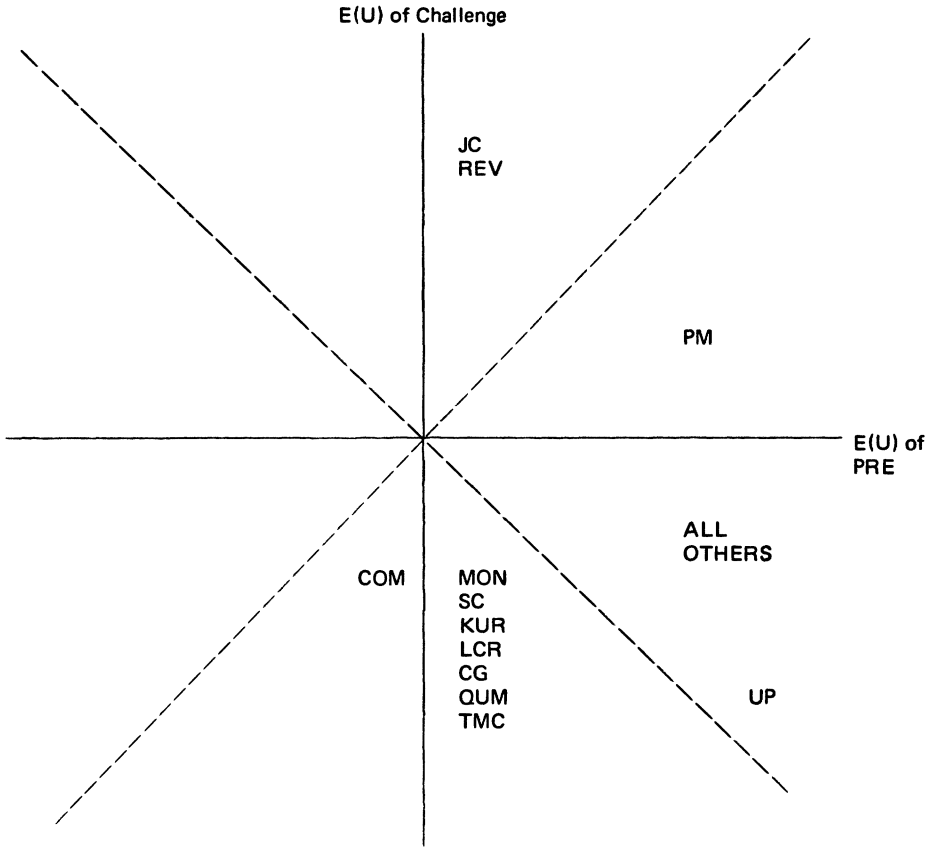
ests led by Prime Minister Musavi and by Rafsanjani, along with his supporters among the Revolutionary Guards and junior clerics. However, because these groups appear to be somewhat risk averse with respect to the war issue, they are not likely to seize the opportunity they have for influencing policy. Thus, the more extremist anti-Iraqi elements bent on pressing the war and overthrowing Saddam Hussein are accorded a bargaining advantage by the failure of other groups to press their advantage. The resulting forecast is for Iran to press the war effort, while abandoning the objective of overthrowing Saddam Hussein. Instead, the Iranians are likely to resort to economic disruptions against Iraq in an effort to force the Iraqis to yield.

With the war out of the way, Iran will have to turn to its internal economic problems. As Table 3 shows, a mixed economy, with a substantial regulatory element, is likely to emerge. A major division exists between the clerics, who seek an open economy, and the governmental bureaucratic interests, who, not surprisingly, seek a larger role for the government in running the economy. A serious dispute is likely to emerge, however, within the government which will take precedent over the government/clerical split. In particular, the technocrats (and their supporters in the Revolutionary Guards) are likely to challenge the authority of the Committee. As the simulations in Table 4 show, the technocrats will lose the internal governmental struggle but, together with less elite-centered groups and with the assistance of the clerics, will win the policy battle regarding the openness of the economy. However, their internal governmental defeat has important implications for the succession in post-Khomeini Iran.

The analysis indicates that the committees will defeat the technocrats because of crucial assistance from President Khamenei and from Rafsanjani, the head of the "junior clerics." These two are the

FIGURE 2

Iran-War Issue Perspective of President Combined Capabilities



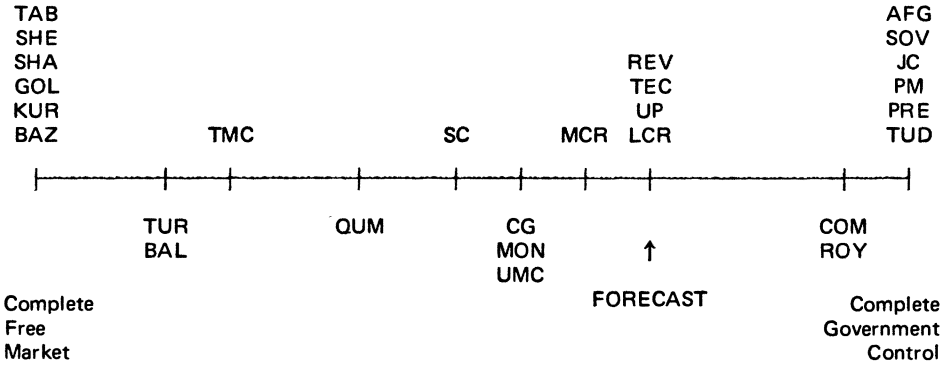
most likely successors to Khomeini, despite indications that Khomeini may have designated Ayatollah Montezari as his successor. What is more, although the policy decisions on both pursuit of the war and on economic structure are forecast to fall close to the preferences of Montezari, he is in a weak, uninfluential position. While he has positioned himself well, the ability to dominate Iran's politics resides with Khamenei and Rafsanjani. And between these two—though the contest is close—the advantage seems to lie with Khamenei.

The above political forecast is, of course, predicated on the assumption that Khomeini will leave the scene soon enough so that the preferences and power of the various groups will remain as it was specified in this analysis. A virtue of such a structured, deductive approach is that we can vary the assumptions regarding inputs and, thereby identify likely effects on outcomes. That such an approach is useful is reflected by the fact that around 90 percent of the real time forecasts based on this model have proven correct both with respect to the predicted policy decisions and the circumstances surrounding those decisions. Furthermore, the models have provided analysts with real "value added." According to many government and private-sector analysts, the models yielded more detail and more accurate forecasts than they were able to develop, even when they themselves provided the data inputs used by the expected utility approach. □

TABLE 3

Iran: Issue Positions and Salience

Issue: What is the attitude of each group toward the role of the government in the economy?



Salience:

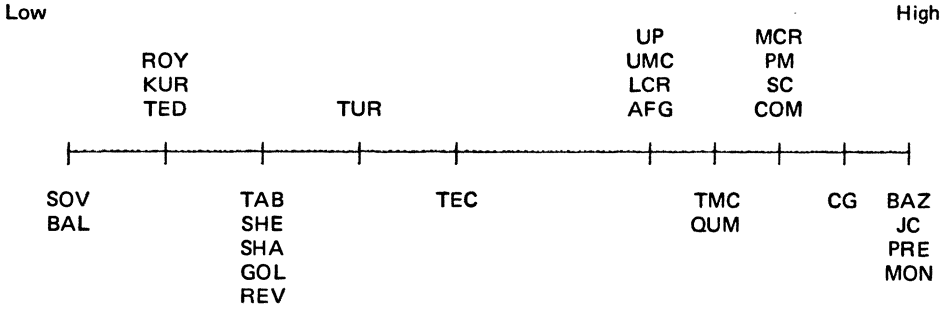


TABLE 4

Iran: Issue Positions Simulations

Issue: What is the attitude of each group toward the role of the government in the economy?

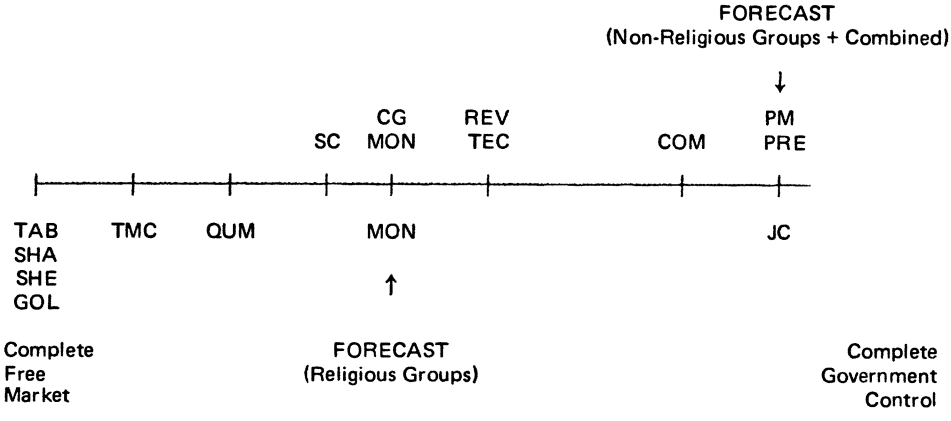


FIGURE 3

Iran-War Issue Perspective of Challengers Combined Capabilities

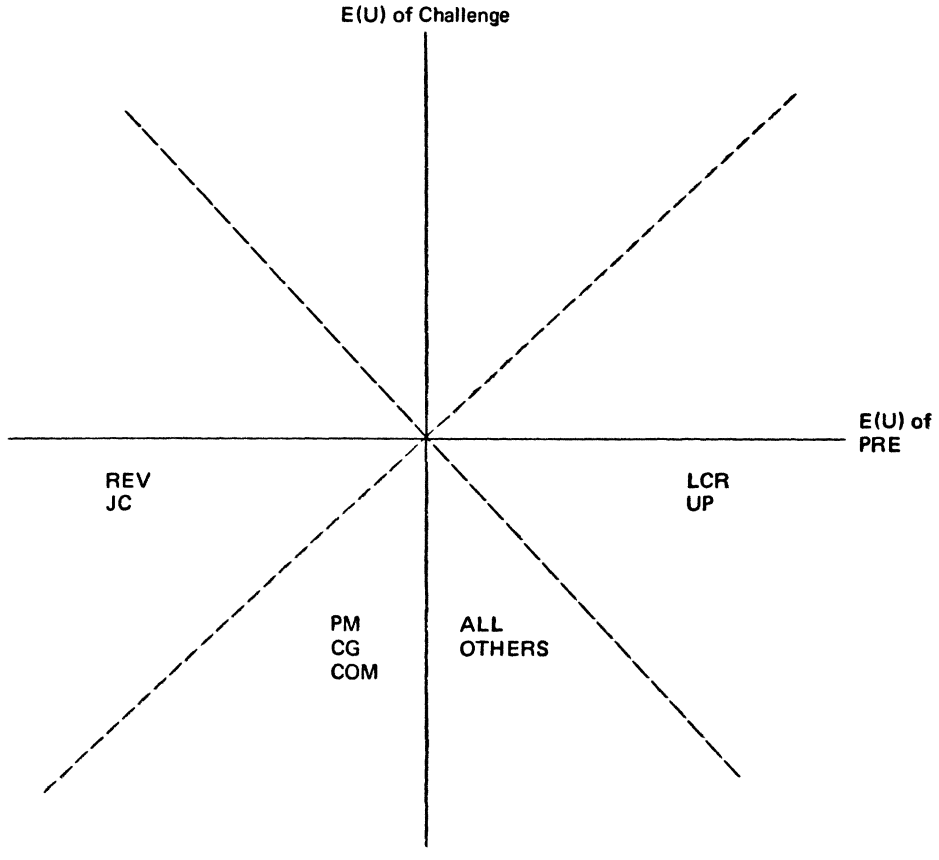


FIGURE 4
Iran Objective War Issue Combined Capabilities