Voting Rules for the FASB

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1. Introduction

Committees are one of the most common decision-making mechanisms used in our society—ranging from the Supreme Court to a company’s board of directors to teams in organizations. An understanding of the effects of various governance rules for committees is therefore of great importance. Considerable research on committee decision making has been conducted, using both theoretical and empirical methods (Amershi, Demski, and Wolfson [1982]; Mueller [1989]). Ordeshook (1991), however, argues that to be useful in a complex setting, the theory will have to be able to incorporate vast amounts of information, much of it hardly amenable to mathematical analysis. Given the impossibility of such a task, Ordeshook suggests three courses of action. The first is to incrementally explore alternative models that are driven by the development of new analytic technologies; the second is to construct wholly integrated models that add as many features of reality as possible. Ordeshook notes that we have learned a great deal about committee decisions from both of these methods. However, the first approach provides limited answers to the “real-world” questions, whereas the second, even if possible, requires vast assumptions, and even then, would not yield generalizable or clear-cut results. Therefore, to advance this area of research, Ordeshook (1991, pp. 20–21) recommends a third alternative: “the construction of models informed by theory ... [and explored using] ... computer simulation.” It is this third approach that we employ in this research.

In particular, we focus on one particular committee, the Financial Accounting Standards Board (FASB), a seven-member board responsible for promulgating accounting rules. We focus on this committee because the FASB has undergone a recent change in its voting rules (see Appendix A for a discussion). Effective January 1, 1991, the FASB was required by its oversight committee (the Financial Accounting Foundation [FAF]) to use the super majority voting rule (five or more of the seven members assenting) rather than the simple majority rule previously used (four or more members assenting). At the time of the change, an active debate emerged in the business and accounting press regarding the effects of this institutional change, usually by way of voicing support or opposition to the change. Unfortunately, for the purpose of reasoned debate, the positions of the authors were

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generally unsubstantiated. In fact, although recent research in the social choice literature (Ordeshook [1988]) has shown that the appropriateness of social choice institutions (such as the FASB) depends to a large extent on the design of institutions, little research exists in the accounting literature describing the effects of alternative voting requirements. We hope to provide some evidence by investigating the nature of the differences between the simple and super majority voting rules.

The specific computer simulations of committee decision making we employ are based on the model of Amershi, Demski, and Wolfson (1982) who specify the standard-setting process as a game of incomplete information with a multiperiod horizon. Each simulation incorporates the input of eight agents, which are categorized into three different agent roles. The first agent role represents the Securities Exchange Commission (SEC), the second role represents the Chairman of the FASB (CHR), and the third agent role represents the six members of the FASB. The SEC is modeled to have the power to select the status quo (SQ), the CHR has the power to set the agenda, and the CHR and the six members each individually vote to select an outcome. Two levels of information (perfect and imperfect) about the preference of the other agents were tested for both simple and super majority voting rules.

The results of the simulations provide support for the prediction that, with imperfect information, super majority committees will not move from the SQ as often as simple majority committees. Also, the SEC’s utility was found to be higher and the FASB’s utility to be lower in super majority committees, regardless of the level of information. Support was found for the hypothesis that the margins of victory would not differ between the two voting rules. The hypothesis that the economy would be better off with the super majority was not supported.

The primary implication of the results is that the voting rule change can precipitate important differences in the FASB’s decision-making process. Overall, our results provide support for the basic argument put forth in the popular press that the super majority will reduce the number of new standards that will be promulgated by the FASB. In addition, the results suggest the SEC has an increased influence on the standard-setting process with the super majority voting rule.

1. The arguments put forth both supporting and resisting the change may lead to ambiguous implications. For example, using the super majority may reduce the number of “new” standards, but it also decreases the FASB’s ability to modify standards that currently exist. Some standards are passed by the FASB that are considered transitory, with the expectation that additional standards will be pursued later to improve the accounting treatment of a particular issue (e.g., pensions; see Burton and Sack [1990]).

2. See Dopuch and Sunder (1980) and Selto and Grove (1983) for research addressing general issues related to the standard-setting process.

3. This last result is in contrast to Newman (1981), who uses cooperative game theory to investigate how changing the voting rules for the FASB affects the power of various constituent groups. He finds that the SEC’s a priori voting power was increased when the FASB’s voting requirement was changed from a super to a simple majority. The contrast in predictions appears to be due to the different solution concepts used and possibly because he assumes the SEC has veto power rather than the power to set the SQ.
VOTING RULES FOR THE FASB

TABLE 1

Notation

Agents: \[ N = \{0,1,2,3,4,5,6,7\} \]
\[ 0 = \text{SEC}, \ 1 = \text{CHR}, \ 1, 2, 3, \ldots, 7 = \text{board members} \]

Issues: \[ A = \{a,a'\} \]
\[ B = \{b,b'\} \]

Outcomes: \[ A \times B = \{(a,b),(a,b'),(a',b),(a',b')\} \]

Utility Functions: \[ U_x, U_{xx}, U_{mm}, U_x, x \in N \]
\[ U_x: A \times B \rightarrow R \]

Status Quo: \[ SQ \in A \times B \]

Vote Functions: \[ V_x: y \rightarrow z, \ x \in N, \ y \in \{A,B\}, \ z \in y \]

Decision: \[ D = (d_1,d_2) \in A \times B \]
\[ d_1 \in A \]
\[ d_2 \in B \]

the following sections we present a description of the model, the computer simulation, the hypotheses, the results, and finally a discussion.

2. Model

2.1 Agents

As mentioned, three different agent roles are employed in our model. The first agent role represents the SEC, the second role represents the CHR, and the third agent role is that of the six members of the FASB. These agents are indexed as \[ N = \{0,1,2,3,4,5,6,7\} \], with the SEC designated as agent 0, the CHR as agent 1, and the other six FASB committee members as agents 2 through 7. See Table 1 for a complete list of notation used.

2.2 Agent Preferences and Beliefs

The eight agents make a series of decisions. The decision process is modeled to parallel the setting used by Amershi, Demski, and Wolfson (1982).4 Each decision requires the resolution of two binary (and interrelated) issues. The two issues are denoted as \( A \) and \( B \) and the alternatives of the issues are denoted as \( A = \{a,a'\} \)

\[ 4. \text{Amershi, Demski, and Wolfson (1982) (ADW) discuss the potential problems associated with interpreting actions of agents in the accounting standard-setting process when considered in a multi-period perspective. They demonstrate examples in which agents who voted with the majority in the first vote of a two-vote sequence (a "winner" in ADW's terminology) ended up as a "loser" (smaller payoffs than possible) after the second vote. Conversely, an agent who voted against the majority (a "loser") in the first vote could eventually receive a higher payoff after the second vote was taken. They also found examples in which the voters unanimously choose one alternative when there was another alternative that was unanimously preferred to it.} \]
and \( B = \{b,b'\} \). This leads to four possible decision outcomes, \( A \times B = \{(a,b),(a,b'),(a',b),(a',b')\} \). One of these four outcomes must be chosen by the eight agents. This final decision is denoted by \( D = (d_1,d_2) \in A \times B \), with \( d_1 \in A \) and \( d_2 \in B \). The two issues are voted on separately, but they may be related in that an agent's preference for issue \( A \) may depend on the expected decisions made about issue \( B \). \(^5\)

The utility function of agent \( x \) is denoted as \( U_x: A \times B \rightarrow R \), where \( x \) is the agent number (0–7). \(^6\) That is, \( U \) maps the committee decision into the real numbers. \(^7\) The agents' utility functions are restricted to three types (denoted by I, II, and III). \(^8\) A set of utility functions could thus be specified graphically as a matrix of possibilities, such as the ones that follow:

<table>
<thead>
<tr>
<th>Utilities for Type I Agent</th>
<th>Utilities for Type II Agent</th>
<th>Utilities for Type III Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>( b )</td>
<td>( b' )</td>
<td>( b )</td>
</tr>
<tr>
<td>( 1 )</td>
<td>( 2 )</td>
<td>( 4 )</td>
</tr>
<tr>
<td>( 2 )</td>
<td>( 3 )</td>
<td>( 1 )</td>
</tr>
<tr>
<td>( 3 )</td>
<td>( 4 )</td>
<td>( 2 )</td>
</tr>
<tr>
<td>( a )</td>
<td>( a' )</td>
<td>( a )</td>
</tr>
<tr>
<td>Issue ( B )</td>
<td>Issue ( B )</td>
<td>Issue ( B )</td>
</tr>
</tbody>
</table>

The first matrix on the left represents type I's preferences. The horizontal dimension is for issue \( A \) and the vertical dimension is for issue \( B \). For example, an agent who is of type I receives utility of 1 if the outcome is \((a,b)\), 2 if the outcome is \((a',b)\), 3 if the outcome is \((a,b')\), and 4 if the outcome is \((a',b')\). A similar interpretation can be used for types II and III. The only difference among agent types is the utility function. Information, voting power, and so on are held constant across the three types.

In two of the four computer simulation settings, agents do not have perfect information about the type of the other agents, and agents begin with a common prior distribution over the three possible types. These priors shall be denoted with three dimensional arrays \((i,j,k)\). For example, if agent 2's priors for agent 1 are \((\frac{1}{2},\frac{1}{4},\frac{1}{4})\), agent 2 believes there to be a 50 percent chance that agent 1 is of type I, and a 25 percent chance each that he is of type II or III. Obviously, it is necessary that \( i,j,k \geq 0 \) and \( i + j + k = 1 \).

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5. For example, the two issues might be method of asset valuation and revenue recognition timing.
6. Utilities here need not necessarily be thought of as pure economic payoffs. For example, they could be considered to relate to ideological preferences.
7. Thus \( U_3(a,b') = 2 \) would indicate that an outcome of \((a,b')\) would provide agent 3 with a utility of 2.
8. \( U_5 \) would then be the utility function of any type II agent. Extending the notation above, \( U_5(a',b) = 2 \) would mean that any type I agent would receive 2 units of utility from an outcome of \((a',b)\). The notation could also be used as \( U_5 = U_{10} \) to indicate that agent 5 is a type III agent.
2.3 Agents' Actions

A game will be comprised of a series of phases, and a phase will be comprised of a set of five stages in which the eight agents make a single decision (one outcome selected). The five stages of each phase are

Stage 1 SEC chooses the SQ.
Stage 2 CHR chooses the order in which the issues will be voted on.
Stage 3 Agents 2–7 update over the CHR's choices.
Stage 4 Agents 1–7 vote on the two issues in the order specified in stage 2.
Stage 5 All agents update over committee members' votes.

In the first stage the SEC determines the SQ, which is the outcome that will obtain in the event that the committee cannot agree on any other.9 The SQ is selected from the set $A \times B$.10 In the second stage, the CHR decides on the agenda to be used by the committee. The agenda determines which issue (A or B) will be decided first.

In stage 3, each agent updates his or her beliefs about the types of the CHR based on the agent's choice in stage 2.11 In the fourth stage the seven committee members (agents 1 through 7) vote and determine the actual outcome of the two issues. The vote function will be denoted by $V: y \rightarrow z$, with $x \in N0, y \in \{A,B\}$, and $z \in y$. That is, the vote function $V$ maps from each of the two issues to the alternative voted on by the voter. For example, $V_3(A) = a'$ indicates that agent 3 voted in favor of $a'$. The manner in which the agents select their votes to optimize their utility is discussed in the solution section below.

The order and process of the voting is determined after the first two stages. For example, if the SEC's and the CHR's choices were (a',b) and B, the process begins with a vote to move from b to b'. If it passes then b' will have been selected (denoted $d_2 = b'$), but if it is blocked, b will remain the outcome ($d_2 = b$). Then, a vote will be held on moving to a from a'. If this vote is blocked a' will be the final outcome ($d_1 = a'$), and if it is passed, a will be selected ($d_1 = a$). The final outcome is denoted $D$, with $D \in A \times B$.

In the fifth and final stage, the eight agents update their priors over the possible

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9. In the simple majority setting, the SEC's power to set the SQ is not important because the location of the SQ is irrelevant. This is because the majority of the members can always implement some alternative in each vote.

10. Although the SEC's influence on the FASB can be characterized in numerous ways, our approach is consistent with various SEC-FASB interactions. For example, the SEC prohibited firms from capitalizing costs of developing computer software for sale or lease to others until the FASB could issue specific accounting guidance (Sprouse [1987]). After Statement 86 was issued, the SEC required firms to follow that statement. Similar patterns existed for accounting for interest costs (Statement 34) and extinguishment of debt (Statement 76). In both cases, the SEC specified a reporting method until the official standards were promulgated by the FASB (Thomas [1983]). Several papers characterize the SEC/FASB relationship as one where the SEC has veto power over financial standards (Newman [1981]). In reality, the SEC may exercise various powers, including veto and SQ setting.

11. As the SEC moves only at the very beginning of each game, the other seven agents gain no advantage from their information regarding the SEC's type. Therefore, it is not necessary to update based on the SEC's decisions.
types based on the votes. After this is done, a new phase begins. A new (and completely unrelated) decision is brought forth, a new SQ and agenda are set, and a new vote occurs.\(^1\) The utility functions, however, remain constant during the entire sequence of phases (and thus information either increases or remains the same as the number of phases completed increases). Thus, a game would consist of the preceding sequence repeated indefinitely. Of course, once the outcome becomes constant, the sequence of events becomes repetitive. In general, this could occur after any number of repetitions. In our specific case, we found that virtually all games in the simulation reached an information equilibrium after only one or two phases. Therefore, our analysis concentrates on the first phase of each game. We also noted no significant differences in the rate of convergence over our different experimental treatments.

### 2.4 Solution

All agents are modeled as rational utility maximizers.\(^3\) The probabilities arise because of the uncertainties as to the types of the other agents. All aspects of the model other than the types of the other agents are public knowledge. The agents are modeled in such a way as to avoid indifference, and all cooperative strategies are prohibited (i.e., a high cost to enforce contracts).\(^4\)

Consistent with Amershi, Demski, and Wolfson (1982) the solution process follows the Harsanyi procedure, in that under imperfect information, the uncertainty concerning other agents' types is modeled as a previous secret move by nature, which chooses the game the agents face. For each possible vote that could be made (e.g., a versus a'), the utility of the resulting outcome in each game of perfect information is determined (this would include the results of the vote on the second issue). This utility is then multiplied by the probability of that game being chosen by nature (the product of the appropriate priors). The weighted utilities are summed to provide an expected utility for each of the two votes. The decision that produces the highest expected utility is chosen by the agent.\(^5\) In the event of equal expected

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\(^1\) Note that each phase involves two interrelated issues (A and B), and that agents will decide a series of unrelated phases (i.e., [A,B], then [C,D], then [E,F]).

\(^2\) Thus agent i attempts to maximize \(\sum \Pr(D)U(D)\) over all \(D \in A \times B\). Note that all analysis assumes that agents are risk neutral. Assuming other risk preferences would not significantly change the inferences.

\(^3\) This disallows strategies such as logrolling or coalition formation.

\(^4\) This can also be expressed mathematically, with each agent simply maximizing their utility as follows:

\[
\max \sum_{d, r} \Pr(r) \Pr(y(d_i, r)) U(y), \quad d_i \in A, \quad y \in A \times B,
\]

where \(i\) is the agent's number, \(r\) ranges over all possible combinations of types of the other players 1 through 7, and \(y\) ranges over all possible outcomes. Of course \(d_i\) and \(r\) together determine a single \(y\), so, letting \(Y(d_i, r) \in A \times B\) be the function that takes \(d_i\) and \(r\) to the unique \(y\), the above can be rewritten as

\[
\max \sum_{d_i} \Pr(r) U(Y(d_i, r)), \quad d_i \in A.
\]
utilities, one decision is randomly selected. The general process is the same for each agent, and the results differ only because of different information about their own types (i.e., a type I agent knows that there is at least one type I on the committee, whereas a type II knows that there is at least one type II, etc.).

Updating in the model is simple Bayesian updating. As explained, each agent type in any given situation acts (essentially) deterministically. That is, all agents of type I in any given set of circumstances will always make the same decision. For example, assume \( V_2(A) = a, V_2(B) = b \), and the SEC's priors for player 2 are \((1/3,1/3,1/3)\). That is, agent 2 voted in favor of \( a \) and \( b \), and the SEC's priors for agent 2 are 1/3 that they are type I, 1/3 type II, and 1/3 type III. To update, the SEC must determine what agent 2 would have done had they been a type I, a type II, and a type III.\(^{16}\)

For example, assume that the SEC determines that, hypothetically:

\[
(V_2(A) \mid (U_2 = U_1)) = a' \quad \text{and} \quad (V_2(B) \mid (U_2 = U_1)) = b'.
\]

This indicates that if agent 2 was type I he would have voted for \( a' \) over \( a \) and for \( b' \) over \( b \). The SEC knows the priors of all the other agents, and thus can "simulate" their decisions, under different assumptions about their actual type. Using the same method, the SEC can also deduce that

\[
(V_2(A) \mid (U_2 = U_{II})) = a \quad \text{and} \quad (V_2(B) \mid (U_2 = U_{II})) = b,
\]

\[
(V_2(A) \mid (U_2 = U_{III})) = a \quad \text{and} \quad (V_2(B) \mid (U_2 = U_{III})) = b.
\]

Finally, the SEC can look at the actual decisions made by agent 2 in the phase just completed: \( V_2(A) = a, V_2(B) = b \). Agent 2 voted for \( a \) and \( b \), while a type I in the same position would have voted for \( a' \) and \( b' \). Therefore agent 2 is not of type I.\(^{17}\) As agents of type II or III would have both voted for \( a \) and \( b \) in the same circumstances agent 2 found himself in, there is no way for the SEC to determine whether agent 2 was of type II or of type III. The new priors are calculated by simply redistributing (proportionally) the old priors over the set of possibilities which has not been disproved (types II and III). Thus the SEC's posteriors for agent 2 are:

\[
\left(0, \frac{(1/3)}{(1/3 + 1/3)}, \frac{(1/3)}{(1/3 + 1/3)}\right) = (0,1/2,1/2),
\]

and the SEC's new beliefs about agent 2 are that there is a 50 percent chance of him being a type II and a 50 percent chance of him being type III.

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16. Notice that as initial priors are common, and updating is based solely on agent actions that are observable, each agent knows all the other players' beliefs.

17. The additional complexity of allowing the possibility of agents misrepresenting their types in one phase to gain advantage in a subsequent phase was not considered. It is beyond the scope of this project to consider all the possibilities of rational misrepresentation, and rational responses to such strategies. It is possible, however, for an agent to misrepresent their preferences during a phase (i.e., between votes \( A \) and \( B \)).
2.5 Example of Model

To further clarify the model used in this paper, we now provide a brief example. For this purpose, we shall discuss a two-phase game with perfect information, a simple majority rule, and a three-member board (rather than the seven used in the simulations). The reduction in size is done only for ease of exposition. Additionally we shall assume that the SEC (agent 0) is type III, the CHR (agent 1) is type I, and the other two board members (agents 2 and 3) are type II and III, respectively. The type I and III payoffs and a random type II payout are shown below:

<table>
<thead>
<tr>
<th>Utilities for</th>
<th>Utilities for</th>
<th>Utilities for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent 1</td>
<td>Agent 0</td>
<td>Agent 2</td>
</tr>
<tr>
<td>Issue B</td>
<td>Issue B</td>
<td>Issue B</td>
</tr>
<tr>
<td>b, 1, 2</td>
<td>b, 3, 2</td>
<td>b, 4, 3</td>
</tr>
<tr>
<td>b', 3, 4</td>
<td>b', 1, 4</td>
<td>b', 2, 1</td>
</tr>
<tr>
<td>a, a'</td>
<td>a, a'</td>
<td>a, a'</td>
</tr>
<tr>
<td>Issue A</td>
<td>Issue A</td>
<td>Issue A</td>
</tr>
</tbody>
</table>

To determine the solution to this game, it is necessary to work backward. As there are four possible SQs, two possible agenda orders, and two possible decisions for each of two issues (A and B), it is possible to consider the game to be played on a game tree with 32 branches, as shown in Figure 1. From this diagram, and a review of the preceding payoffs, one can start eliminating equilibrium branches. For example, it is apparent from the payout tables that if the first decision ($d_1$) is $a$, the second decision (which is nonstrategic because it is the last move of the game) will be for $b$ (agents 2 and 3 prefer it) and if $d_1 = a'$, then $d_2 = b'$ (agents 1 and 2 prefer it). Similarly, if the order is $B$ then $A$, $d_2 = b$ leads to $d_1 = a$; and $d_2 = b'$ leads to $d_1 = a'$. Because there is perfect information, and this is therefore common knowledge, the agents in the first vote will be deciding between $\{a, b\}$ and $\{a', b'\}$. Because agents 1 and 2 prefer the latter, the vote will always result in $\{a', b'\}$. Agents 0 and 1, in making their SQ and order decisions, are therefore indifferent, and will choose the SQ and order randomly. Note that in more complex cases with seven board members, super majority rules and/or imperfect information, the situation is not necessarily cut and dried. The basic process, however, is the same.

3. Simulation

The analysis was implemented using four computer simulations, one for each combination of perfect information versus imperfect information and simple ma-
FIGURE 1
Example of Game Tree

<table>
<thead>
<tr>
<th>Status Quo</th>
<th>Order</th>
<th>Vote 1</th>
<th>Vote 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>{a, b}</td>
<td>A</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a'</td>
<td>b'</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>b</td>
<td>a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b'</td>
<td>a'</td>
</tr>
<tr>
<td>{a, b'}</td>
<td>A</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a'</td>
<td>b'</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>b</td>
<td>a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b'</td>
<td>a'</td>
</tr>
<tr>
<td>{a', b}</td>
<td>A</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a'</td>
<td>b'</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>b</td>
<td>a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b'</td>
<td>a'</td>
</tr>
<tr>
<td>{a', b'}</td>
<td>A</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td></td>
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<td>a'</td>
<td>b'</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>b</td>
<td>a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b'</td>
<td>a'</td>
</tr>
</tbody>
</table>
The various decision steps in the simulation paralleled the agents' actions described in the preceding model section. The simulation program calculated all expected utilities for the agents, updated probabilities in the manner described, and simulated the votes based on the Har-Py method as discussed in the model section.

The parameters for each simulation were set as follows. The initial priors \((1/3,1/3,1/3)\), and the rules of the game were exogenously specified. The utility tables for types I and III were also specified, as:

<table>
<thead>
<tr>
<th>Utilities for Type I Agent</th>
<th>Utilities for Type II Agent</th>
<th>Utilities for Type III Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b) (1,2) (a) (a') (b') (3,4)</td>
<td>(b) (?,?) (a) (a') (b') (?,?)</td>
<td>(b) (4,3) (a) (a')</td>
</tr>
</tbody>
</table>

The utility table for the type II agents, as well as the actual types of the eight players, was determined by a pseudorandom sampling method (the fixed interval method). Thus, the type II utility table varies from run to run, and cannot be specified in advance. The selection is accomplished in the following manner. First, all the possible games are listed in a countable manner. Then, the computer passes through the list, running games of those parameters at fixed intervals. Large prime numbers were chosen to get an effectively pseudorandom sample. We used every sixty-first and every twenty-ninth game. This generated a data set of 308 games (98 and 210 games—approximately 6,048 divided by 61 and 29, respectively).

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18. The simulation was implemented using Pascal programs run on IBM ATs.
19. Note that in the simple majority setting the SEC and CHR decisions were exogenously specified, as \((a',b')\) and \(A\), respectively. This was done because the decisions matter only under the super majority situation, under which the status quo allows the formation of blocking coalitions.
20. This was done so that our results would not be driven by our decision as to the type II utility table. The types I and III were chosen to be diametrically opposed (on the theory that issues on which a general consensus exists automatic passage/rejection should occur), so the type II's preferences are very important. By sampling over all possible utility tables for the type II players, our results have greater generality.
21. The coding of each game is accomplished as follows. The first four digits are the utilities for the type II utility table. The next eight digits are the types for each of the eight players. These 12-digit numbers can then be placed in order. Some sets of parameters were eliminated as they produced identical games. For example, switching the types of players 4 and 5 produces no change in the game. As a result there are only 28 unique combinations of types for players 2 through 8. Crossed by the three each possibilities for the SEC and the CHR, and the \(4! = 24\) possibilities for the type II utility table, one can see that there are \(28 \times 9 \times 24 = 6,048\) unique sets of parameters.
4. Hypotheses

We now introduce the hypotheses that are based on the model discussed. These hypotheses are tested in both the perfect and imperfect information settings. We present two classes of hypotheses: hypotheses relating the outcome itself and hypotheses relating to utility of the agents.

4.1 Hypotheses Relating to the Outcome

We first focus on the probability that the committee is unable to move from the SQ outcome. The natural analogue to this is the probability that the FASB is unable to overturn a previously established Financial Accounting Standard (FAS) (or no FAS is adopted). This is one of the most commonly cited effects of the super majority voting rule used to support or oppose the voting rule change.

Hypothesis 1 predicts that under conditions of imperfect information, the SQ will be maintained more frequently under a super majority rule than under a simple majority rule. This occurs because the decision is the SQ only when no coalition can be found to move from the SQ. Under the super majority institution, five votes are necessary as compared to four under the simple majority. This could also be viewed as requiring a smaller blocking coalition under super majority, to prevent a change.

Under perfect information, however, this will not happen. This is due to the fact that in many of the initial settings, several SQ settings result in the same outcome (e.g., if all seven board members prefer \{a,b\}, the SQ does not affect the outcome). Under imperfect information, the uncertainties ensure that the SEC is rarely indifferent between two or more SQs. Under perfect information, however, the SEC often knows for sure that its opinion will not matter. In these cases, the SEC chooses an SQ randomly. As a result of these cases, no significant difference between the voting rules is expected under perfect information.

\(H_1\): A super majority rule will increase the probability that the SQ is maintained, but only under the assumption of imperfect information.

Hypothesis 2 considers the issue of consensus. Much has been written concerning the effect of the super majority on the board’s consensus. Since a larger margin of victory (5–2 versus 4–3) is required to “win” under the super majority institution, one would expect that the margins of victory would be higher in the super majority. This would be true, of course, only when one looks at decisions where the outcome is not the SQ. Otherwise, for the entire population of decisions, one would not expect the changing institutions to significantly effect the distribution of votes, and thus the average margin of victory. We predict that the level of information will not have any impact on this hypothesis.
Super majority rules increase the margins of victory in both the first and second votes when the vote results in moving away from the SQ. However, overall, the super majority rule does not affect the margins of victory.

4.2 Hypotheses Relating to Utility

In looking at the debate over the committee’s institutional rules, it is important to keep in mind the results of the change on the player’s utility. Remember that utility here is not defined in a monetary sense, but in terms of the psychological satisfaction of the rules conforming to what the player believes to be the “best” rules.

Our third hypothesis follows directly from \( H_3 \), and involves the SEC’s utility. We predict that under imperfect information, the SEC will receive a higher average payout under the super majority than under the simple majority. This follows because the SEC has an effective power to set the SQ, and it is therefore likely that the SQ is favorable to the SEC. But from \( H_1 \), the SQ is more likely to be chosen as the final outcome under the super majority. Therefore, the SEC is more likely to obtain a favorable outcome under the super majority.

Under perfect information, \( H_3 \) is not predicted. As noted in the discussion of \( H_1 \), this is a result of the SEC’s “giving up” in the large number of cases where there are enough votes on one side or the other that the SQ does not matter. However, the SEC still does better under super majority rule because of its ability to select the SQ in the remaining cases. As a result, this and all remaining hypotheses are expected to hold true under both imperfect and perfect information.

\[ H_3: \text{A super majority rule increases the utility to the SEC.} \]

The next question is whether or not the SEC’s increased utility is at the expense of the other players or whether the economy as a whole is better off under the super majority rule. We predict that, because the SEC has more ability to choose in the super majority, the seven-member board must have less power, and will therefore receive lower utility.

\[ H_4: \text{A super majority rule will decrease the average utility to the seven-member board.} \]

We also predict, however, that the SEC’s gain is less than the aggregate loss of the board members. That is, irrespective of the trade-offs between the various types of players, there will be an overall reduction of the total payout under the super majority rule. We define the total payout to the economy as the utility to the eight players divided by the maximum possible payout: \( \frac{\sum_{i \in N} U_i(T)}{\max_{x \in X} \sum_{i \in N} U_i(j)} \). Since, per \( H_2 \), the SEC earns a higher utility under super majority, and because the other seven players are randomly distributed, giving the SEC more than proportional representation would lead to the expectation that the group of eight as a whole would be worse off. We also test this hypothesis using a statistic defined over a random population of 1/3 of each type (I, II, and III). That is,
The same logic applies here, because the SEC has more than proportional power in the institutional setting, but the difference would be expected to be more pronounced, because in the prior case the fact that the SEC was made better off was somewhat reflected in the statistic, whereas in this case that is not true.

H₅: A super majority rule decreases the overall utility.

5. Results

5.1 Perfect Information

We ran the simulation under the perfect information assumption and under each voting rule option each 308 times.²² Fifteen games were discarded in the super majority setting and five in the simple majority setting due to the existence of ties, which were not handled by the model. The remaining pairs of runs were used for our testing. As a result, we were able to use paired t-tests to compare the results of the two settings. See Tables 2 and 3 for a summary of the results (perfect and imperfect information, respectively).

H₁: Status Quo

Under the assumption of perfect information, we found that the selection of the SQ as the final decision was not significantly affected by the voting rule (shown in Table 2, row 1 as 38.3% and 37.0% under simple and super majority rules, respectively). This result supports the speculation in the popular press that a reduction in new standards would result from the change in voting rules. However, as discussed later, the assumption of perfect information is critically important.

H₂: Consensus

Our consensus hypothesis was supported. As we expected, there were no significant differences in the margin of victory between simple and super majority when all votes are considered, regardless of the level of information. For both the first and second votes, the differences are not significant at the 5 percent level (see Tables 2 and 3). Again, as expected, when only the votes that moved the outcome away from the SQ are considered, we found that the super majority had larger differences (4.507 compared to 3.890 and 4.588 compared to 3.853 for the first and second votes, respectively). These differences are interpreted as follows: a difference of 4.588 in the second vote under super majority means that, on average, when the second vote passed (i.e., moved away from the SQ), the vote was 5.794 in favor and 1.206 opposed. In the simple majority, the consensus statistic of 3.853 implies an average vote of 5.4265 to 1.5735. As the observations cannot, in this

²² All of the data presented in the results section of this paper refer to first-phase data. The hypotheses were also tested using second-phase data, and no significant differences were found.
TABLE 2

Summary of Results: Perfect Information—Results of Simulations
Comparing the Super and Simple Majority Voting Rules

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Super Majority</th>
<th>Simple Majority</th>
<th>Difference (Col 1 - Col 2)</th>
<th>t Statistic</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1:</strong> Status quo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pr(D = SQ)*</td>
<td>0.370</td>
<td>0.383</td>
<td>-0.013</td>
<td>-0.326</td>
<td>0.37</td>
</tr>
<tr>
<td><strong>H2:</strong> Consensus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV* - A (all)</td>
<td>3.695</td>
<td>3.747</td>
<td>-0.052</td>
<td>-0.404</td>
<td>0.34</td>
</tr>
<tr>
<td>MV - B (all)</td>
<td>3.734</td>
<td>3.695</td>
<td>0.039</td>
<td>0.298</td>
<td>0.38</td>
</tr>
<tr>
<td>MV - A (D ≠ SQ)</td>
<td>4.507</td>
<td>3.890</td>
<td>0.617</td>
<td>4.266</td>
<td>0.001</td>
</tr>
<tr>
<td>MV - B (D ≠ SQ)</td>
<td>4.588</td>
<td>3.853</td>
<td>0.735</td>
<td>5.002</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>H3:</strong> SEC’s utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U(D)</td>
<td>3.185</td>
<td>2.763</td>
<td>0.422</td>
<td>4.272</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>H4:</strong> Board’s utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%max - 7</td>
<td>0.973</td>
<td>0.994</td>
<td>-0.021</td>
<td>-5.413</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>H5:</strong> Utility to economy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>%max - 1/3</td>
<td>0.913</td>
<td>0.909</td>
<td>0.004</td>
<td>0.503</td>
<td>0.31</td>
</tr>
<tr>
<td>%max - 8</td>
<td>0.989</td>
<td>0.990</td>
<td>-0.001</td>
<td>-0.258</td>
<td>0.40</td>
</tr>
</tbody>
</table>

*Pr(D = SQ) denotes the probability the outcome selected is the status quo.
*MV denotes margin of victory.

instance, be paired, the paired t test would be inappropriate. Using a regular t test, however, the differences are both significant at a 0.001 level.

**H3:** SEC’s Utility

This hypothesis was also supported; the SEC performed significantly better under the super majority rule. Under simple majority the SEC has an average utility of 2.763 and under super majority an average utility of 3.185. The resulting paired t statistic is significant at the 0.001 level. This is consistent with the expectation that the SEC would support a super over simple majority institution as this increases its power and importance.

**H4:** Board Member’s Utility

The fourth hypothesis was also supported; the super majority rule decreased the average utility to the committee. The seven board members had average utilities of 20.1 and 19.8 under simple and super majority institutions respectively. Table 2 shows a statistic for the average payout as a percentage of maximum for the seven committee members, which was 0.973 and 0.994 for the two settings. That is, the average payout to the seven members is about 97.3 percent and 99.4 percent of the maximum. The difference, although small in an absolute sense, is significant at the 0.001 level due to the low variances of the variables. Board mem-
TABLE 3
Summary of Results: Imperfect Information—Results of Simulations
Comparing the Super and Simple Majority Voting Rules

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Super Majority</th>
<th>Simple Majority</th>
<th>Difference (Col 1 - Col 2)</th>
<th>t Statistic</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Status quo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pr(D = SQ)*</td>
<td>0.583</td>
<td>0.351</td>
<td>0.232</td>
<td>5.748</td>
<td>0.001</td>
</tr>
<tr>
<td>H2: Consensus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MV* – A (all)</td>
<td>3.868</td>
<td>3.799</td>
<td>0.069</td>
<td>0.805</td>
<td>0.21</td>
</tr>
<tr>
<td>MV – B (all)</td>
<td>3.708</td>
<td>3.805</td>
<td>-0.097</td>
<td>-1.114</td>
<td>0.13</td>
</tr>
<tr>
<td>MV – A (D ≠ SQ)</td>
<td>4.608</td>
<td>3.846</td>
<td>0.762</td>
<td>3.32</td>
<td>0.001</td>
</tr>
<tr>
<td>MV – B (D ≠ SQ)</td>
<td>4.451</td>
<td>3.805</td>
<td>0.646</td>
<td>2.80</td>
<td>0.001</td>
</tr>
<tr>
<td>H3: SEC’s utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$U_o(D)$</td>
<td>3.042</td>
<td>2.663</td>
<td>0.379</td>
<td>6.751</td>
<td>0.001</td>
</tr>
<tr>
<td>H4: Board’s utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$% \text{max} - 7$</td>
<td>0.973</td>
<td>0.992</td>
<td>-0.019</td>
<td>-4.745</td>
<td>0.001</td>
</tr>
<tr>
<td>H5: Utility to economy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$% \text{max} - 1/3$</td>
<td>0.908</td>
<td>0.913</td>
<td>-0.005</td>
<td>-0.882</td>
<td>0.19</td>
</tr>
<tr>
<td>$% \text{max} - 8$</td>
<td>0.988</td>
<td>0.989</td>
<td>-0.001</td>
<td>-0.279</td>
<td>0.39</td>
</tr>
</tbody>
</table>

*Pr(D = SQ) denotes the probability the outcome selected is the status quo.
*MV denotes margin of victory.

bers are therefore less likely to "get their way" under the super majority than under the simple majority. One would therefore expect that they would be, as a group, opposed to the super majority institution.

These last two hypotheses suggest that the FASB members would oppose the change to the super majority, but that the SEC would favor it. In fact, both groups opposed the change. The SEC may have been opposed because of political pressure. The inability of our utility concept to capture such external political issues may explain this difference.

$H_5$: Utility to the Economy

This hypothesis was not supported; the super majority rule did not decrease the overall utility. The statistic for the average payout as a percentage of optimum to the economy made up of 1/3 each of types I, II, and III, was 0.913 under super majority and 0.909 under simple majority. That is, in both cases, the average payout to all as a whole is about 91 percent of what that payout would have been if an omniscient and infallible deity had enforced the optimal choice on the economy. The difference is not significant with an alpha of 5 percent. Similarly, using the percentage of maximum for the eight players in the game, the average utilities are 0.989 and 0.990 for the super and simple majority respectively. This difference was not significant at the 5 percent level. Therefore, although the super majority
appears to shift wealth from the board members to the SEC (the chairman is not significantly better off under either voting rule), it seems that the total utility remains unchanged. This surprising result suggests that in terms of "good" decisions versus "bad" decisions, the voting institution does not have a significant effect.

This is consistent with the arguments made by John Ruffle, Coopers & Lybrand, Peat Marwick, the AAA's Financial Accounting Standards Committee, and the FAF that consensus is improved by the new rule (Cowherd [1990a]). However, this does not address the question of whether the increased consensus is an improvement in the quality of decision. As has been pointed out, many of the most controversial statements in the FASB's history have passed by a 5-2 or better margin.

5.2 Imperfect Information

A review of Tables 2 and 3 shows that adding the complexity of imperfect information yields very similar results to those obtained under perfect information. There are no significant changes in our results for Hypotheses 2 through 5. However, the expected difference between perfect and imperfect information in Hypothesis 1 was supported.

Under imperfect information, we found that the SQ was selected as the ultimate outcome approximately 35.1 percent of the time under simple and 58.3 percent of the time under super majority. The difference is significant at the 0.001 level. Therefore, the imperfect information portion of $H_1$ is supported. As expected, when imperfect information is accounted for, a super majority institution is more conservative than a simple majority institution, in that new standards are harder to create, and old ones more difficult to overturn.

This result suggests that the super majority would indeed reduce the number of new FASs issued by the FASB. The results are consistent with the Business Roundtable's expectation that the super majority would slow down the flow of new rules (Cowherd [1990b]).

5.3 Other Settings

To test the sensitivity of the analysis to our assumptions, several additions to the two institutional settings discussed were investigated. In one set of simulations, the SEC did not have the authority to set the SQ. Instead, the SQ was determined randomly and exogenously. Also, in other simulations the CHR did not determine the agenda; instead the determination was made randomly and exogenously. Other settings gave the SEC SQ setting power, but did not allow the CHR to determine the agenda.

23. Note that we are interested in the descriptive side of such arguments. Whether fewer standards would improve or worsen the FASB's influence is an important question. We, however, are interested in determining whether or not a change from simple to super majority institution would in fact reduce the number of standards.
VOTING RULES FOR THE FASB

Under these different institutional rules, the basic results were the same. The only notable difference was that when the SEC did not have SQ setting power, the SEC did not do significantly better under either super or simple majority rules. As a result, the economy as a whole did significantly worse under the super majority when the economy was assumed to be made up of the eight agents involved. When the economy was considered to be a 1/3, 1/3, 1/3 mix of agent types, it was not significantly worse off under either institution.

A further test was made to ensure that our results were not driven by the payoff tables we chose. The primary settings were run with more extreme differences in the utility tables. Instead of payoffs of 1, 2, 3, and 4, as used in the body of this paper, we used 1, 2, 3, and 50 and 1, 2, 3, and 200. Under these assumptions, one would expect that compromise would be very difficult, as everyone greatly prefers their first choice to their second. We found, however, that these alternate assumptions regarding the utility functions did not substantially affect our results. We also compared the settings in terms of the number of voting anomalies (a la Amershi, Demski, and Wolfson [1982]) and found that the settings did not differ significantly. These tests are suggestive that our results may apply to more general committee settings, and that specific assumptions about the role and preferences of the SEC or the FASB chairman do not drive our results.

6. Discussion

Committees are prevalent throughout our society and their decisions can activate significant wealth transfers. Proposed modifications to committees can have important implications and should be evaluated with an understanding of how the modifications will affect decision-making and agent preferences. While the thrust of this paper is on a fundamental level, it is hoped that the results will be useful in addressing practical questions of the effect of changing the institutional rules of committees such as the Financial Accounting Standards Board.

This research uses computer simulations to investigate the effects of two different voting rules: simple and super majority. The simulations support the prediction that the super majority voting rule maintains the status quo more often than does the simple majority voting rule, so long as there is imperfect information about other agents' preferences. The utility of an SQ setting body (such as the Securities Exchange Commission) was found to be higher and that of the committee members to be lower under the super majority rule, therefore suggesting that super majority rule dilutes the power of the committee to the benefit of the agency setting the SQ. The hypothesis that the economy as a whole would be better off with the super majority was not supported. The implication of the results is that the recent change to the super majority does appear to increase the SQ setter's influence on the process without increasing the overall benefit to economy.

We have attempted to simulate a rich setting by including salient elements of the FASB's current standard-setting process. Those elements include allowing the SEC to select the SQ and allowing the FASB chairman to select an agenda. The
analyses, however, are subject to various caveats, which require that the data be interpreted with care. The modifications of these features may be addressed in future research.

First, strategic behavior is much more complex than modeled in the simulations. For example, cooperative strategies between agents (e.g., logrolling or vote trading) and long-term strategic misrepresentation (agents acting to prevent others from learning their type) are not incorporated. The complexity of strategic behavior is important because committee members incorporate many variables in their decision processes. Most human elements have been ignored in this model in that individuals are modeled to vote based solely on utility maximization. Trust, uncertainty, doubt, charisma, persuasiveness, and so on are all ignored in the simulations.

The institutional setting has also been simplified. The SEC’s interaction with the FASB is much more complicated than simply the selection of the SQ.\textsuperscript{24} In addition, the agenda-setting process in the current standard-setting institution is much more involved than allowing the chairman to unilaterally set it. The role of auxiliary institutions, such as the Financial Accounting Foundation or the Emerging Issues Task Force, also may be important to consider in future work. The role of the FAF in selecting FASB members would be of particular interest.\textsuperscript{25} The influence of the organizations that fund the FASB could also be of considerable importance. Future research in the area of standard-setting appears to offer great challenge and promise.

\textbf{APPENDIX A}

\textbf{Background for the Voting Rule Changes for the FASB}

At its inception in 1973, the Financial Accounting Foundation, the Financial Accounting Standards Board’s oversight board, required the FASB to achieve a super majority to adopt standards. In 1977, the FAF changed the super majority requirement to a simple majority,\textsuperscript{26} and in 1990 the FAF reversed this decision and again required a super majority for FASB to adopt standards.\textsuperscript{27}

\textsuperscript{24} In an ideal model, the SEC would not be considered a single agent, but as a committee itself, interacting with both constituents and the various branches of the federal government.

\textsuperscript{25} The problem of the FAF is to select the rules of the standard-setting institution and the individuals to carry out the tasks. Thus the FAF’s role is one of the most important in the standard-setting process.

\textsuperscript{26} Kirk (1990) suggests the FAF made the 1977 change because congressional committees were pressuring the board to promulgate more reporting standards. For example, the FASB was facing a congressional deadline for dealing with oil and gas accounting and there were not five FASB members who could agree on any proposed standard.

\textsuperscript{27} The simple majority voting requirement was reconsidered by the FAF in 1979 and again in 1981 and was found, on both occasions, to be satisfactory. In 1989 the FAF found itself in the middle of a controversy concerning the number and complexity of standards that the FASB was promulgating. It responded to the controversy by forming three committees to investigate various procedural practices for the FASB, including the voting requirement. Of the three committees, one recommended retaining the simple majority, one was evenly divided over the voting issue, and the third recommended a switch
The rationale given by the FAF for the 1990 reversal was that the super majority voting requirement would enhance the public’s perception that adopted standards had broad consensus support from the FASB (Cowherd [1990a]). Although not explicitly stated, it was implied that the super majority rule would decrease the promulgation of new standards. This is considered important because some statement preparers believe that the U.S. disclosure requirements are greater than those of other countries and that U.S. firms may be at a competitive disadvantage because of the additional disclosure requirements.

Members of the FASB took a contrary position to that of the FAF, however, arguing the super majority requirement would make the board less responsive to the changing needs of its diverse constituency. The voting requirement change (and the underlying issues that caused the change) stirred up considerable debate, which caused some individuals to question whether it was time to consider a different standard-setting board (Burton and Sack [1990]; Sommer [1990]). Gerboth (1973), Horngren (1973), and more recently Kirk (1990) concluded that the accounting profession must make efforts to understand the effect that political influences and social choice issues (including voting requirements) have on standard setting.

REFERENCES


to the super majority voting requirement. It was the third recommendation that the FAF circulated for public comments.