Is transparency to no avail?*

Otto H. Swank, Erasmus University Rotterdam, Rotterdam, 3000DR, The Netherlands, swank@ese.eur.nl

Bauke Visser, Erasmus University Rotterdam, Rotterdam, 3000DR, The Netherlands, bvisser@ese.eur.nl

Abstract: Transparent decision-making processes are widely regarded as a prerequisite for the working of a representative democracy. It facilitates accountability, and citizens may suspect that decisions, if taken behind closed doors, do not promote their interests. Why else the secrecy? We provide a model of committee decision-making that explains the public's demand for transparency, and committee members' aversion to it. In line with case study evidence, we show how pressures to become transparent induce committee members to organize pre-meetings away from the public eye. Transparency does not improve accountability, but may improve the decision.

Keywords: Committee decision-making, reputation, pre-meetings.

I. Introduction

Transparent decision-making processes are widely regarded as a prerequisite for the working of a representative democracy. One reason is that transparency facilitates democratic accountability. Another reason is that when representatives make decisions behind closed doors, the citizens may suspect that their interests are not fully promoted. Why else the secrecy? Against the background of these potential advantages, it is hardly surprising that legislation tries to foster transparency. In the United States, the goal of the federal Government in the Sunshine Act is to "provide the public with information regarding the decision-making processes of federal agencies, and to improve those processes"[1]. At the state level, Open Meetings Laws allow citizens to attend deliberations, while Freedom of Information

*We are grateful to various seminar audiences, to Rudolf Kerschbamer, Francesco Lippi, Marco Ottaviani, Michael Raith, and Peter Norman Sørensen, and to two anonymous referees for excellent comments. Visser gratefully acknowledges the financial support and hospitality the EUI offered through a Fernand Braudel fellowship. Swank and Visser are Tinbergen Institute fellows.

[1]Special Committee, Administrative Conference of United States (1997), p. 421.

Acts regulate access to information on which past decisions are based.[2] Such legislation is not limited to the United States. As Roberts (2006, p. 15) notes, "[b]y the end of 2004, fifty-nine countries had adopted right to information laws".

However, it is not always clear that this type of legislation succeeds in safeguarding transparency. Stiglitz (1998) was shocked by the focus on secrecy in the Clinton administration when he served as the chairman of the Council of Economic Advisers. Roberts (2006) documents various ways in which governmental bodies in, among others, the United Kingdom and Canada have adapted to demands for more transparency, ranging from formal challenges through changes in record-keeping to outright failure to create records.

Moreover, even when a process is formally transparent, it is not always the case that the actual decision-making process is truly open. Illustrative in this respect is Greenspan's response to the pressure from U.S. Congress that the Federal Open Market Committee (FOMC) should become more transparent. He conjectured that the request of Congress would induce an important change: "[a] tendency would arise for one-on-one pre-meeting discussions, with public meetings merely announcing already agreed-upon positions or each participant to enter the meeting with a final position not subject to the views of others" (Greenspan, as quoted in Meade and Stasavage 2008, p. 704). Before 1993, the Federal Open Market Committee (FOMC) of the U.S. Fed deliberated and voted in closed meetings. As a result of Congressional pressure, the FOMC had to publish verbatim transcripts with a five-year time lag starting in 1993. It was alsoforced to publish such transcripts about past meetings, i.e., about meetings of which members at the time thought that they would be closed. Using this data, Swank, Swank and Visser (2008) find evidence that the change in requirements leads to a change in the locus of the real debate, away from the formal FOMC meetings to pre-meetings. The emergence of a pre-meeting also explains why after 1993

[2]The legislative declaration of the New York State Open Meetings Law states that "It is essential to the maintenance of a democratic society that the public business be performed in an open and public manner and that the citizens of this state be fully aware of and able to observe the performance of public officials and attend and listen to the deliberations and decisions that go into the making of public policy". The legislative declaration of the New York State Freedom of Information Law states that "the public, individually and collectively and represented by a free press, should have access to the records of government".

deliberation became more scripted, as observed in the transcripts.[3] The Special Committee to Review the Government in the Sunshine Act of the Administrative Conference of the United States concluded that there is widespread consensus that the Act has not achieved its goal. Rather than ensuring that committees actually deliberate in public with candor, the Act has had the effect that, generally, members reach decisions and prepare statements before the public meeting. In the words of one observer, "officials use public meetings to simply present carefully scripted statements memorializing decisions that in effect occured outside the public eye".[4] Such conclusions and observations are not limited to meetings ruled by the Government in the Sunshine Act. Cawley (1992) and Johnson (2004), among others, provide evidence that discussion was thwarted by the above mentioned state acts. These consequences are not only observed in the United States. When discussing decision-making within the European Council of Ministers, Stasavage (2006) also points to the possibility that more transparency may lead to more backroom discussions or deals over lunch.

In this paper, we present a model that explains why the public finds transparency appealing, why decision-makers are averse to it, and why pre-meetings and scripted public meetings emerge. That is, we provide an explanation for why "there remains an obsession with secrecy despite America's social consensus in favor of openness" (Stiglitz 1998, p.17). We then ask the question whether there is a difference between the quality of a decision reached in a closed process and one reached in a transparent process preceded by a pre-meeting. That is, is transparency to no avail, or does it improve or hurt the final decision reached?

Our analysis builds on Visser and Swank (2007) who developed a model in which a committee has to make a choice between implementing a project and maintaining status quo. Each committee member would like to take the decision that is best from the public's perspective (maximizing expected project value), but also cares about how the "market" perceives his ability to foresee the consequences of a decision (reputation or career concerns).

[3] Meade and Stasavage (2008) argue that transparency has given rise to more consensus because of stronger incentives to herd at the FOMC. However, increased incentives to herd imply less scripted meetings, contrary to what has been observed.

[4] See May (1997, p. 418). Randolph May was the chairman of the Special Committee.

By the market we mean the person(-s) about whose belief regarding his competence a member cares. An important feature of their model is that information exchange and voting take place outside the public eye (the decision process is "closed"). When forming an impression about the members' abilities, the market only observes the final decision on the project. Visser and Swank show that in this setting reputational concerns prompt committee members to distort the decision on the project. In their model, agreement among committee members boost reputations and disagreement damages them. The reason is that smart members are more likely to share the same view than mediocre members. The implication is that the decision that requires agreement, the unconventional decision, improves reputations. Thus, reputational concerns may lead committees to take unconventional decisions.

The present paper deviates from Visser and Swank (2007) in two important respects. First, it assumes a transparent decision process, in which communication and voting take place in public. We show that if committee members do not have private information about their abilities, transparency removes members' incentives to distort the implementation decision.[5] Second, we allow members to organize a pre-meeting before the formal meeting in order to precook the decision on the project. We show that members have incentives to organize such a pre-meeting. The purpose is to conceal disagreement. As in a closed decision process, in case of a transparent formal meeting preceded by a closed pre-meeting, reputational concerns may lead to distorted implementation decisions. There is an important difference between a closed decision process on the one hand, and a transparent meeting preceded by a secret pre-meeting on the other, however. A decision precooked in a pre-meeting has to be endorsed in the formal meeting. We show that this may discipline committee members, potentially leading to a better decision.

The next section discusses related literature. Section 3 presents the model of transparency, and Section 4 contains the analysis of it. Next, in Section 5, we allow members to organize pre-meetings. Sections 6–8 present the analysis of the model allowing for pre-

[5] In Section 9, we show that if committee members do have private information about their own abilities, transparency may lead to posturing.

meetings. In Sections 9 and 10, we discuss two alternative settings. Section 11 concludes.

II. Related Literature

Legislation like the Government in the Sunshine Act and Open Meetings Laws aims to increase the quality of decision-making and accountability by reducing the information asymmetry between decision-makers and citizens. The main result of the present paper is that making decision processes transparent gives an incentive to committee members to organize pre-meetings, and that those pre-meetings may diminish the potential (accountability) benefits of transparency. Our paper is to the best of our knowledge the first to analyse the change of the locus of committee decision-making (the emergence of pre-meetings) due to transparency, and its consequences for the quality of group decision-making.

More generally, our paper contributes to the literature on the costs and benefits of transparent decision-making processes. There is a long history to the debate on transparency in the political science literature on democracy, see Stasavage (2007) for a concise overview. As transparency is needed for accountability and may increase the legitimacy of decisions taken, it has typically been viewed as beneficial. In line with this positive view, Gersbach and Hahn (2004) show that real transparency may lead committee members to act more in line with the principal's interests to increase their reappointment chances. Besides, transparency facilitates the proper selection of committee members over time. Gersbach and Hahn (2008) show that transparency provides incentives to members to exert more effort to become informed. The contribution of our paper is not on the consequences of real transparency. Rather, we show that real transparency is hard to accomplish.

Recently, economists and rational choice political scientists have focused on the possibility that transparency induces committee members to distort their behaviour. Stasavage (2007), for instance, examines a situation where committee members want to develop a reputation for having the same preferences as those of their constituents.[6] He shows that under

[6] In Stasavage (2007), members thus differ in the extent to which their preferences are congruent with those of their constituents. In Ottaviani and Sørensen (2001) and Visser and Swank (2007), committee members differ in levels of expertise. In those papers, reputation is related to the probability of being a

transparency such reputational concerns may prompt members to posture. In our model, members' preferences are known – what is unknown are their precise ability levels.

Another important paper related to ours is Levy (2007). Levy examines the effect of transparency on committee decision-making when committee members have better information on their ability than the market. She shows that reputational concerns induce hiding under transparency. In her model a member should only vote for the less likely option when his signal is sufficiently accurate. As a result, voting for the less likely option signals that a member's information is accurate. In a secretive committee, members tend to conform to preexisting biases. Key for this result is that in Levy's model the public learns less about members' signals when the status quo is chosen than when a change of the status quo is chosen. This gives a less able member an incentive to vote for status quo. Our paper deviates from that of Levy in our focus on pre-meetings. Moreover, in our model members exchange information before they vote.

Prat (2005) addresses the question which aspects of a process should be transparent, rather than addressing the question whether transparency is good or bad in general. In a single-agent framework he shows that transparency on the true state is beneficial, while transparency on actions may be harmful. Of course, in his single-agent setting the concept of a pre-meeting does not make sense. In Section 10, however, we show that our result that committee members have an incentive to organize pre-meetings is independent of whether the market learns the true state of the world.

Legislation in many other areas equally aim at reducing the costs created by information asymmetries by imposing disclosure requirements. Such requirements are part of, e.g., corporate governance laws, laws on product labeling, product and workplace standards, and advertising. Doubts about the efficacy of such government-mandated disclosure policies also exist. For instance, on the topic of corporate governance, Hermalin and Weisbach (forthcoming) point out that, although additional information does strengthen the ability of

highly able expert.

shareholders and boards to monitor their managers, these benefits often have to be shared with management, and may lead management to posture at the cost of firm value. Fung et al. (2007) discuss eight disclosure policies in the United States that are meant to improve information consumers have. They argue that some are (moderately) effective, while others have been ineffective. Winston (2008) provides an assessment of the same policies in his discussion of Fung et al. He argues that no persuasive evidence exists for the effectiveness of the disclosure policies.

III. Model 1: Transparency

The decision problem. On behalf of the public, a committee of two members, $i \in \{1, 2\}$, has to decide whether to maintain the status quo, $X = 0$, or to implement a project, $X = 1$. By normalization, status quo delivers a project payoff equal to zero. Project payoff in case of implementation is uncertain and state dependent. It equals $p + \mu$, where $\mu \in \{-h, h\}$ with $\Pr(\mu = h) = 1/2$. μ represents both the state and the state dependent value. The parameter p is the ex ante expected payoff from $X = 1$. We assume that (i) $p < 0$, implying that the committee has a bias against project implementation; (ii) $p + h > 0$, implying that the optimal decision depends on the state.

Information. The game starts with an *information stage*. In this stage, each member receives a signal $s_i \in S = \{s^b, s^g\}$ about the state μ. A signal refers to a member's assessment, forecast or view of μ (b is bad and g is good). The quality of the signal member i receives depends on his ability, $a_i \in \{\underline{a}, \bar{a}\}$, with $\Pr(a_i = \bar{a}) = \pi$, independent of i. If i is of high ability, $a_i = \bar{a}$, he always receives an informative signal about μ, $\Pr(s^g \mid \mu = h, \bar{a}) = \Pr(s^b \mid \mu = -h, \bar{a}) = 1$. If i is of low ability, $\underline{a}$, he always observes an uninformative signal about μ, $\Pr(s^g \mid \mu = h, \underline{a}) = \Pr(s^b \mid \mu = -h, \underline{a}) = 1/2$. The ex ante signal quality equals $q = \Pr(s^g \mid \mu = h, \bar{a}) \Pr(\bar{a}) + \Pr(s^g \mid \mu = h, \underline{a}) \Pr(\underline{a}) = \pi + \frac{1}{2}(1 - \pi)$.[7]

[7] At the cost of more notation, but without affecting our results in any qualitative sense, we could have opted for a more general environment, like $\Pr(s^g \mid \mu = h, \bar{a}) = \Pr(s^b \mid \mu = -h, \bar{a}) = \bar{q}$ and $\Pr(s^g \mid \mu = h, \underline{a}) = \Pr(s^b \mid \mu = -h, \underline{a}) = \underline{q}$ with $\bar{q} > \underline{q}$

We assume that there is no ex ante information asymmetry among members and the market concerning a member's ability: nobody knows a member's exact type, not even the member himself.[8] This is a common assumption in the literature on career concerns, see e.g. Holmström (1999), Prat (2005), and Scharfstein and Stein (1990).

Objectives of committee members. Each member cares both about the value of the project and about his reputation (career concerns). The reputation of member i is defined as the posterior belief held by the market that i is highly able. This belief is formed on the basis of any information the market receives that can be used to update its prior belief π. Member i's preferences are represented by:

$$\begin{aligned} U_i(X=1) &= p+\mu+\lambda_i\hat{\pi}_i(\omega) \\ U_i(X=0) &= \lambda_i\hat{\pi}_i(\omega), \end{aligned} \tag{1}$$

where $\hat{\pi}_i$ denotes the posterior belief held by the market that committee member i is highly able, $\hat{\pi}_i = \Pr(a_i = \bar{a}|\omega)$. This reputation is based on observed behaviour, ω. We assume that the market can base its belief on the decision on X. However, it cannot base its belief on the state μ. By making this assumption we do not want to claim that the market *never* observes μ.[9] Rather, it means that at the moment the market updates its belief, say because a decision has to be made that may affect a member's career, it does not know μ. In reality, the consequences of many important decisions are often only known with a substantial time lag. The parameter λ_i measures how much committee member i cares about his reputation. Committee members trade off project value and reputation in different ways, $\lambda_1 < \lambda_2$. We use (1) with $\lambda_i = 0$ as the public's payoff function. Throughout, we assume that $p + E(\mu|s_1 = s_2 = s^g) = p + \frac{2\pi}{1+\pi}h > 0$. As a result, from an expected project value perspective, it is first-best to implement the project if $(s_1, s_2) = (s^g, s^g)$. Moreover,

[8] See Section 10 for an analysis of the case in which committee members have better information about their abilities than the market.

[9] In Section 10, we briefly discuss the case in which the market observes μ when updating its beliefs.

as $p + E(\mu|s_1 \neq s_2) = p$, and $p < 0$, the project should be rejected in case of conflicting signals (and thus also if $(s_1, s_2) = (s^b, s^b)$). Hence, the assumption implies that the *first-best outcome*, the mapping from signals (s_1, s_2) to decision X that maximizes expected project payoff, equals $X = 1$ if $(s_1, s_2) = (s^g, s^g)$ and $X = 0$ otherwise.[10]

The Decision-making Process. In this paper, we study two decision-making processes. We start with a transparent process, which we describe here. Next, we study a pre-meeting process, which we describe in section 5.

In a transparent process, the decision on X is made in two stages, a *deliberation stage* followed by a *voting stage*. In the deliberation stage, member i sends a message $m_i \in M = \{m^b, m^g\}$. We assume that members truthfully reveal their private information: $m_i = m^g$ if $s_i = s^g$ and $m_i = m^b$ if $s_i = s^b$. Thus, after the deliberation stage both members know (s_1, s_2). In the voting stage, members simultaneously cast a vote on the project, $v_i \in V = \{v^b, v^g\}$, where $v_i = v^b$ ($v_i = v^g$) denotes that i votes for $X = 0$ ($X = 1$). With two members, two voting rules are possible, unanimity and "majority". In case of unanimity, only $\mathbf{v} = (v_1, v_2) = (v^g, v^g)$ leads to project implementation. Majority lowers the bar to one favourable vote. In a transparent decision process the market observes members' messages and votes, v_1 and v_2.

We make the usual assumption that all players, including the market, have common knowledge of the above.

The Equilibrium Concept in the Transparent Process. As private information is truthfully revealed in the deliberation stage, there is complete information among members in the voting stage. An equilibrium consists of a pair of voting strategies, one for each member, and market beliefs such that:

(i) for given (s_1, s_2), given market beliefs, and given voting strategy of $-i$, the voting strategy of i is a weakly dominant strategy;

[10] We implicitly assume that from a social welfare point of view all that counts is the expected value of the implemented project. As Gersbach and Hahn (2004) point out, a social planner can also be interested in sorting committee members.

(ii) Market beliefs are obtained from voting strategies using Bayes' rule whenever possible.

There are three reasons why we impose truthful revelation of information, $m_i = s_i$, among committee members. First of all, we feel that in many committees an expert may find it hard to misrepresent his private information while communicating with other experts. Moreover, time to discuss in the meeting should help in establishing the truth. The second reason is that information manipulation in committees of experts is at the heart of another paper (Visser and Swank 2007). In that paper we deal with so-called closed meetings, i.e., meetings of which the outside world does not directly observe their inner workings (deliberation and voting). Finally, the game with a pre-meeting becomes quite complicated to analyse once one allows for information manipulation. This is generally the case in dynamic games of incomplete information (like a dynamic oligopoly game with privately known cost). Indeed, in such games the analysis is typically simplified by limiting attention to second period equilibrium decision strategies (e.g., quantity to offer) that only depend on public information (rather than on public information concerning the other players and the privately held information about oneself), so-called public strategies (see Fudenberg, Levine and Maskin 1994). We simplified the analysis by assuming that information cannot be manipulated among committee members.

IV. Analysis of Model 1

In this section, we show that irrespective of the voting rule in the unique equilibrium the committee always acts in the public interest. The equilibrium implements the first-best outcome. Let us first derive how the market updates its beliefs about members' abilities, given that each member votes for $X = 1$ if and only if $s_1 = s_2 = s^g$. When updating its beliefs, the market knows m_1, m_2, v_1, v_2 and X. As X depends on v_1 and v_2, and v_1 and v_2 in turn depend on $m_1 = s_1$ and $m_2 = s_2$, the market can update its beliefs solely on the basis of m_1 and m_2. The reason why messages contain information about members' abilities is that the signals of highly able members are correlated, whereas the signals of less able

members are not correlated. For example, if the market observes that $m_1 \neq m_2$, it infers that at least one member is of the low ability type. Two members of the high ability type would have received the same signal. Using Bayes' rule, one can establish that

$$\hat{\pi}(m_1 = m_2) = \frac{1+\pi}{1+\pi^2}\pi > \pi \tag{2}$$

$$\hat{\pi}(m_1 \neq m_2) = \frac{\pi}{1+\pi} < \pi \tag{3}$$

The above equations show that agreement boosts reputations, whereas disagreement damages them.

As reputations depend neither on voting nor on the decision on X, they do not affect voting behaviour. As a result, voting behaviour is determined by concerns about the project. The unique weakly dominant strategy is for each player to vote for implementation if implementation is expected to yield a higher payoff than status quo. This requires that $s_1 = s_2 = s^g$. Proposition 1 summarizes the above discussion.

Proposition 1 *In a transparent process, the unique equilibrium in weakly dominant voting strategies is:*

$$v_i = \begin{cases} v^g & \text{if } (s_1, s_2) = (s^g, s^g) \\ v^b & \text{otherwise.} \end{cases} \tag{4}$$

Posteriors are given by $\hat{\pi}(m_1 = m_2) = \frac{1+\pi}{1+\pi^2}\pi$ *and* $\hat{\pi}(m_1 \neq m_2) = \frac{\pi}{1+\pi}$. *This equilibrium implements the first-best outcome rule.*

For the purpose of the present paper, the most important result of Proposition 1 is that signal concurrence boosts members' reputations, while lack of concurrence damages them. This gives incentives to members to find ways to conceal disagreement. One obvious way is sharing information away from the public, and to feign consensus if disagreement exists. We explore those incentives in the next section.

In our model of transparency, members share information ($m_i = m^g$ if $s_i = s^g$ and $m_i = m^b$ if $s_i = s^b$) in the communication stage by assumption. They cannot manipulate

information. It is worth emphasizing that if we had allowed members to manipulate information, an equilibrium exists in which they would share information. In this equilibrium the deliberation strategy equals $m_i = m^g$ if $s_i = s^g$ and $m_i = m^b$ if $s_i = s^b$; the voting strategies equals $v_i = v^g$ if $(s_i, m_{-i}) = (s^g, m^g)$ and $v_i = v^b$ otherwise; and market beliefs equal $\hat{\pi}(m_1 = m_2) = \frac{1+\pi}{1+\pi^2}\pi$ and $\hat{\pi}(m_1 \neq m_2) = \frac{\pi}{1+\pi}$. To see that these strategies form an equilibrium, consider the incentives of member i to deviate. Sharing private information leads to a decision on X that is optimal from a project value perspective. Deviating can only distort it. Thus, from a project point of view, i has no incentive to deviate. From a reputational point of view, the posteriors imply that each member wants to maximize the probability that the market observes agreement. Disagreement damages reputations. Given that in the imputed equilibrium member $-i$ honestly reveals his signal, member i maximizes the probability of agreement by honestly revealing his signal. The reason is that it is more likely that member $-i$ received the same signal as i did than the other signal (as each signal is more likely to be correct than incorrect). Hence, manipulating information is bad, both from a reputation perspective and from a project perspective.

V. Model 2: Pre-meetings

In this section, we extend the model that describes a transparent process. In this extended model, we allow the committee members to organize a pre-meeting. Once each member has received his private signal, member 1 can invite member 2 for a pre-meeting, $r_1 \in \{0, 1\}$, where $r_1 = 1$ denotes that member 1 invites member 2, and $r_1 = 0$ denotes that member 1 does not invite member 2. Member 2 can accept the invitation, $r_2 = 1$ or reject it $r_2 = 0$. If $r_1 = r_2 = 1$, a pre-meeting is held, otherwise it is not held. None of this is observed by the market.

In the previous section, we have shown that committee members want the market to observe that both members' signals are in line with the ultimate decision. Disagreement damages reputation. In our model, a pre-meeting is a face-saving device. It owes its existence

to members' desire to conceal disagreement. We assume that in a pre-meeting, if held, the members (i) share information, and (ii) make a decision on the project. As the actual decision is made in the formal meeting, we refer to the decision made in the pre-meeting as the intended decision, $X^P \in \{0,1\}$. As to how committee members arrive at X^P, we assume that member $d \in \{1,2\}$ is dominant in the pre-meeting and determines X^P. The dominant member bases X^P on s_1 and s_2, $X^P(s_1, s_2)$. For ease of reference, we call the non-dominant member the conceding member, c.

Key in the present model is that in case a pre-meeting is held, members enter the formal meeting with information about both signals and the intended decision. X^P serves as a coordination device. It enables committee members to form a united front. We model this as follows. We assume that in the communication stage of the formal meeting, each agent makes a claim about which signal he has received, $m_i \in \{m^b, m^g\}$. In case no pre-meeting is held, we simply assume that $m_i = s_i$.[11] In case a pre-meeting is held, s_1, s_2 and X^P map into a claim, $m_i \in \{m^b, m^g\}$. At the end of the formal meeting, each member votes on the project. In the absence of a pre-meeting, s_1 and s_2 map into a vote $v_i \in \{v^b, v^g\}$. In case a pre-meeting is held, s_1, s_2, X^P, m_1 and m_2 map into a vote $v_i \in \{v^b, v^g\}$. The intended decision X^P indicates how member d wants both members to talk and vote in the formal meeting. For example, $X^P = 1$ can be interpreted as a messsage to the other member stating "I will talk and vote in favor of implementation, and I expect you to do the same."

The market observes claims, votes and the implementation decision. In addition, it knows that members have the opportunity to organize a pre-meeting. Moreover, in case a pre-meeting is held, the market knows (1) that members share information; (2) who is the dominant player; and (3) that claims in the formal meeting may differ from signals. Figure 1 summarizes the time line.

Figure 1 about here.

[11] A motivation for this assumption can be found in the previous section, where we have argued that under transparency it is optimal for an agent, both project and reputation wise, to honestly reveal his signal.

To solve the model, we focus on equilibria that meet four requirements. First, X^P has to be credible. Following Farrell and Rabin (1996), we say an intended decision is credible if it is both self-committing and self-signalling. The intended decision is called self-committing if, for every pair (s_1, s_2), d has an incentive to carry out (his part of) $X^P(s_1, s_2)$ given that he expects it to be believed. This means that intended play should be equilibrium play in the formal meeting. The intended decision is called self-signalling if, for a given pair (s_1, s_2), d wants c to believe that d intends to carry out (his part of) $X^P(s_1, s_2)$ if and only if d actually carries it out. Second, we focus on equilibria in which each member claims and votes as if her claim and vote are pivotal. This requirement rules out uninteresting equilibria in which claims and votes never matter. Third, the intended decision strategy should maximize d's expected utility, given anticipated behaviour in the formal meeting, and posterior beliefs. Finally, given d's intended decision strategy, and members' message and voting strategies, beliefs are formed on the basis of Bayes' rule, whenever possible.

VI. Equilibria of the Model with a pre-meeting

In this section we assume that a pre-meeting is held, $r_1 = r_2 = 1$. In the next section, we show that a pre-meeting is part of an equilibrium.

We start the analysis by identifying the conditions under which the equilibrium outcome equals the first-best outcome, and in the formal meeting members form a united front in favour of this first-best outcome. To this end, suppose that (i) the intended decision strategy equals: choose $X^P(s_1, s_2) = 1$ if $s_1 = s_2 = s^g$, and choose $X^P(s_1, s_2) = 0$ otherwise; and furthermore (ii) if $X^P = 0$, then $m_1 = m_2 = m^b$ and $v_1 = v_2 = v^b$, while if $X^P = 1$, then $m_1 = m_2 = m^g$ and $v_1 = v_2 = v^g$. Moreover, if for some reason $X^P = 0$ but $(m_1, m_2) \neq (m^b, m^b)$, then $v_1 = v_2 = v^b$, while if $X^P = 1$ but $(m_1, m_2) \neq (m^g, m^g)$, then $v_1 = v_2 = v^g$. An important feature of such imputed equilibrium behaviour is that the market never observes disagreement. Moreover, claims and votes do not add anything to the information about members' abilities that is not already contained by the decision on X. As

a result, only two equilibrium beliefs exist: one in case of implementation and one in case of status quo. We denote these beliefs by $\hat{\pi}(X=1)$ and $\hat{\pi}(X=0)$, respectively. Under the imputed equilibrium strategies, the market infers from $X=1$ that $s_1 = s_2 = s^g$ and from $X=0$ that $s_1 = s_2 = s^b$ or $s_1 \neq s_2$. Application of Bayes' rule leads to

$$\hat{\pi}(X=1) = \frac{1+\pi}{1+\pi^2}\pi > \pi \text{ and} \tag{5}$$

$$\hat{\pi}(X=0) = \frac{3-\pi}{3-\pi^2}\pi < \pi \tag{6}$$

Clearly, $X=1$ yields a better reputation than $X=0$. The reason is that $X=1$ is the result of signal concurrence, while $X=0$ can also be the result of disagreement. It is natural to assume that when the market observes any kind of disagreement in the formal meeting, $m_1 \neq m_2$ or $v_1 \neq v_2$, it concludes that $s_1 \neq s_2$. We denote the corresponding out of equilibrium belief by $\hat{\pi}(s_1 \neq s_2)$. Application of Bayes' rule yields $\hat{\pi}(s_1 \neq s_2) = \frac{\pi}{1+\pi}$.[12]

Let us now establish whether given beliefs and a pair of signals (s_1, s_2) the intended decision strategy is credible, i.e., self-committing and self-signalling. To see that it is *self-committing*, note that for every pair of signals (s_1, s_2), if c believes that d carries out $X^P(s_1, s_2)$, it is optimal for c to claim and vote in line with $X^P(s_1, s_2)$: this leads to the first-best decision on the project and to a united front (which is good for reputations). As a result, the best-reply for d is to carry out $X^P(s_1, s_2)$, and the intended decision is therefore self-committing. To see that X^P is *self-signalling* for every (s_1, s_2), suppose d is actually going to support the intended decision $X^P(s_1, s_2)$ in the formal meeting. He then wants c to believe that he indeed is going to support that decision. Any other belief of c would lead to a broken front, and therefore a reduction in reputation, and cannot improve the decision on X – afterall, the imputed equilibrium strategy implements the first-best outcome.[13] Vice versa, if for a pair of signals d is *not* going to support $X^P(s_1, s_2)$ in the formal meeting, say

[12] Had we assumed that $p > 0$, then the first-best decision rule would be to accept the project in case of $s_1 \neq s_2$. Hence, $X=0$ would command the higher reputation. The decision $X=0$ plays the same role for $p>0$ as does $X=1$ for $p<0$ in the analysis that follows.

[13] Nor can it hurt the decision on X, as the pivotal vote is to support the decision on X that is first-best.

by either stating $m_d = m^b$ or by voting $v_d = v^b$ in case of $X^P = 1$, then he does *not* want c to believe that he *is* going to support $X^P(s_1, s_2)$. Again, this would lead to a broken front, and cannot improve the decision on X. That is, X^P is self-signalling for every (s_1, s_2).

Second, it is straightforward to check that each member claims and votes as if her claim and vote are pivotal. Third, given that members support X^P in the formal meeting, does the imputed intended decision strategy maximize member d's payoff? An implication of the posterior beliefs is that from a reputational point of view, $X^P = 1$ is more attractive for member d than $X^P = 0$. In the pre-meeting, the dominant member has the strongest incentive to deviate from the imputed intended decision strategy if $s_1 \neq s_2$. For $s_1 \neq s_2$, $X^P = 0$ yields at least as much as $X^P = 1$ if[14]

$$\begin{aligned} \lambda_d \hat{\pi}(X=0) &\geq p + \lambda_d \hat{\pi}(X=1) \Leftrightarrow \\ \lambda_d &\leq \bar{\lambda} = \frac{-p}{\hat{\pi}(X=1) - \hat{\pi}(X=0)} \end{aligned} \tag{7}$$

If (7) is satisfied, the intended decision strategy corresponding to the first-best implementation rule maximizes member d's utility.

We have now identified the condition under which the first-best implementation rule is an equilibrium outcome. The above analysis suggests that for values of $\lambda_d > \bar{\lambda}$, the dominant member may have an incentive to choose $X^P = 1$ if $s_1 \neq s_2$. We now show that the intended decision strategy choose $X^P(s_1, s_2) = 0$ if and only if $s_1 = s_2 = s^b$ cannot be part of an equilibrium. Suppose it would, and that the members form a united front in favor of X^P in the formal meeting. Then, $X = 0$ would suggest signal concurrence and would yield a better reputation than $X = 1$. But then in case of $s_1 \neq s_2$, member d has an incentive to deviate: $X^P = 0$ is better from both a project value perspective and a reputation perspective. This suggests that an equilibrium in mixed strategies exists.

[14] Equation (7) is a sufficient condition for the first-best implementation rule to be part of an equilibrium. It is based on the assumption that a distorted decision will be honored in the formal meeting. Below we argue that if a distorted decision were to lead to a broken front in the formal meeting, member d would not have an incentive to deviate from the first-best implementation decision at all.

Therefore, suppose an intended decision strategy $X^P(\beta; s_1, s_2)$ such that

$$X^P(\beta; s_1, s_2) = \begin{cases} \Pr\left(X^P = 1\right) = 1 & \text{for } (s_1, s_2) = (s^g, s^g) \\ \Pr\left(X^P = 1\right) = \beta & \text{for } (s_1, s_2) \in \left\{\left(s^g, s^b\right), \left(s^b, s^g\right)\right\} \\ \Pr\left(X^P = 0\right) = 1 - \beta & \text{for } (s_1, s_2) \in \left\{\left(s^g, s^b\right), \left(s^b, s^g\right)\right\} \\ \Pr\left(X^P = 0\right) = 1 & \text{for } (s_1, s_2) = \left(s^b, s^b\right). \end{cases} \tag{8}$$

where the probability β captures the degree to which the mapping from signals to a decision on the project is distorted relative to the first-best mapping. The equilibrium value of β is not observed by the market; instead it is only known in equilibrium. If $\beta > 0$ in equilibrium, the first-best outcome is not implemented due to the organization of a pre-meeting. Assuming that the members form a united front in favor of X^P in the formal meeting, the intended decision strategy implies the following market beliefs,

$$\hat{\pi}(X = 1; \beta) = \frac{(1+\pi) + 2(1-\pi)\beta}{(1+\pi^2) + 2(1-\pi^2)\beta}\pi, \tag{9}$$

$$\hat{\pi}(X = 0; \beta) = \frac{3 - \pi - 2(1-\pi)\beta}{3 - \pi^2 - 2(1-\pi^2)\beta}\pi. \tag{10}$$

Note that in equilibrium we must have that $\beta < \frac{1}{2}$ such that $\hat{\pi}(X = 1; \beta) > \pi > \hat{\pi}(X = 0; \beta)$. If $\beta > \frac{1}{2}$ were the case, $X = 0$ would improve reputations, and the reason to implement the project would vanish in case of conflicting signals.

Given (8-10), do members have incentives to break the united front in the formal meeting? As before, it makes sense to assume that when the market observes a broken front, either in the deliberation stage or in the voting stage, it concludes that $s_1 \neq s_2$, again leading to a belief $\hat{\pi}(s_1 \neq s_2) = \frac{\pi}{1+\pi} < \hat{\pi}(X = 0; \beta)$. Thus, breaking a united front damages reputations. This is a cost. If $s_1 = s_2$, no benefit of breaking the united front exists. From a project point of view the optimal decision is taken. A benefit does exist if $s_1 \neq s_2$ and $X^P = 1$. From $m_1 \neq m_2$, the market infers $s_1 \neq s_2$. Then, in the voting stage of the formal meeting reputations are already damaged. As a result, pivotal voting leads members to vote against

implementation in the voting stage. Hence, in case $s_1 \neq s_2$ and $X^P = 1$, by breaking the united front in the communication stage a member ruins reputations but prevents the implementation of a bad project. As the cost of breaking the united front is a damaged reputation, and the benefit is higher project payoff, the member who is least concerned with his reputation (member 1) has strongest incentive to break the united front. Consequently, the united front is not broken if

$$p + \lambda_1 \hat{\pi}\left(X = 1; \beta\right) \geq \lambda_1 \hat{\pi}\left(s_1 \neq s_2\right)$$

implying

$$\lambda_1 \geq \bar{\lambda}_1\left(\beta\right) := \frac{-p}{\hat{\pi}\left(X = 1; \beta\right) - \hat{\pi}\left(s_1 \neq s_2\right)}. \tag{11}$$

Let us now turn to the intended decision strategy. The dominant member anticipates behavior in the formal meeting and wants to avoid a broken front in the formal meeting. To understand why, suppose that $s_1 \neq s_2$, $X^P = 1$, but $m_1 = m^b$.[15] Then, as discussed above, the status quo will be maintained and reputations are damaged. By choosing $X^P = 0$, the status quo will be maintained too, but the united front will not be broken in the formal meeting. Clearly, $X^P = 0$ with a united front yields a higher expected payoff than $X^P = 1$ with a broken front. Hence, it is optimal for member d to avoid a broken front.

The discussion above points out that for $\lambda_d > \bar{\lambda}$, two forces are at work in the pre-meeting. First, the dominant player is inclined to choose $X^P = 1$ if $s_1 \neq s_2$. As discussed above, $\hat{\pi}\left(X = 1; \beta^*\right) > \hat{\pi}\left(X = 0; \beta^*\right)$ requires that $\beta^* < \frac{1}{2}$, the equilibrium probability with which member d chooses $X^P = 1$ if $s_1 \neq s_2$ has to be lower than $\frac{1}{2}$. In the absence of a second force, the first force would lead the dominant member to choose $X^P = 1$ if $s_1 \neq s_2$ with probability $\beta = \beta'$, with β' solving

$$p + \lambda_d \hat{\pi}(X = 1; \beta') = \lambda_d \hat{\pi}(X = 0; \beta') \tag{12}$$

[15] Recall that in the formal meeting members do not have incentives to break the united front if the socially optimal decision will be made.

Note that this equality holds at the interim stage, i.e., when it is known that the members hold conflicting views about the state. Second, the dominant player should avoid a broken front in the formal meeting. As a result, (11) is a constraint for the dominant player. If for $\beta = \beta'$, condition (11) is violated, then the equilibrium value of β equals $\beta = \beta^{\max}$, and solves

$$p + \lambda_1 \hat{\pi}\left(X = 1; \beta^{\max}\right) = \lambda_1 \hat{\pi}\left(s_1 \neq s_2\right) \tag{13}$$

It is now easy to see that the identity of the dominant member is important. If $d = 1$, then $p + \lambda_1 \hat{\pi}\left(X = 1; \beta'\right) = \lambda_1 \hat{\pi}(X = 0; \beta') \geq \lambda_1 \hat{\pi}\left(s_1 \neq s_2\right)$, such that the dominant member does not want to deviate from his own intended decision X^P. Condition (11) is met and a formal meeting is a mere formality. However, if $d = 2$, the existence of a formal meeting may discipline member 2. As an extreme, suppose that $p + \lambda_1 \hat{\pi}\left(X = 1; 0\right) \leq \lambda_1 \hat{\pi}\left(s_1 \neq s_2\right)$. Then, member 2 is forced to choose X^P in line with the first-best rule, as member 1 would break the united front in the formal meeting if $X^P = 1$ for $s_1 \neq s_2$. The next proposition summarizes the above discussion. Recall that $\bar{\lambda}$ is defined in (7) (where $\hat{\pi}\left(X = x\right)$ should be read as $\hat{\pi}\left(X = x; 0\right)$) and $\bar{\lambda}_1\left(\beta\right)$ is defined in (11).

Proposition 2 *Suppose a pre-meeting is organized.*

(A) The equilibrium intended decision strategy is given by (8) with the equilibrium value, $\beta^* \in [0, \frac{1}{2})$ *for any finite value of* λ_2. β^* *depends on the dominant player in the pre-meeting:*

(i) Suppose 1 is the dominant member in the pre-meeting, $d = 1$.

(i-a) For $\lambda_1 \leq \bar{\lambda}$ *with* $\bar{\lambda}$ *given by (7),* $\beta^* = 0$*;*

(i-b) For $\lambda_1 > \bar{\lambda}$, $\beta^* = \beta'$, *where* β' *solves (12).*

(ii) Suppose 2 is the dominant member in the pre-meeting, $d = 2$.

(ii-a) For $\lambda_2 \leq \bar{\lambda}$, $\beta^* = 0$*;*

(ii-b) For $\lambda_2 > \bar{\lambda}$ *and* $\lambda_1 \leq \bar{\lambda}_1\left(0\right)$, $\beta^* = 0$*;*

(ii-c) For $\lambda_2 > \bar{\lambda}$ *and* $\lambda_1 \in \left(\bar{\lambda}_1\left(0\right), \bar{\lambda}_1\left(\beta'\right)\right)$, $\beta^* = \beta^{\max}$, *with* $\beta^{\max}$ *the solution to (13), and* β' *the solution to (12);*

(ii-d) For $\lambda_2 > \bar{\lambda}$ *and* $\lambda_1 > \bar{\lambda}_1(\beta')$, $\beta^* = \beta'$, *with* β' *the solution to (12).*

(B) In the formal meeting, members form a united front in favor of X^P.

(C) Equilibrium market beliefs satisfy (9) and (10) in case of $X = 1$ *and* $X = 0$, *respectively, with* $\beta = \beta^*$.

One striking feature of Proposition 2 is that it does not assume anything about the voting rule in the formal meeting. This means that if a pre-meeting is organized, the voting rule that is used in the formal meeting is irrelevant.

It is natural to assume that the formal meeting consists of both a deliberation and a voting stage even when it is preceded by a pre-meeting. However, once the members come out of the pre-meeting they could simply cast their votes in the formal meeting as they already possess all information. Of course, a formal meeting without a deliberation stage would immediately signal that a pre-meeting has taken place. There is another important implication of reducing the formal meeting to a voting stage: the voting rule starts to matter. In case of majority voting (one favourable vote suffices for a project to be implemented), if one agent were to break the united front in the voting stage of the formal meeting, his reputation would be hurt, but the project would still be implemented. He would therefore refrain from deviating. The presence of a deliberation stage that preceeds the voting stage in the formal meeting allows an agent who wants to deviate to do so in the deliberation stage, ruining the reputation of both members, and thus making the first-best decision the decision that maximizes expected utility in the continuation game (i.e., the voting stage). The presence of the deliberation stage in the formal meeting, then, facilitates putting pressure on members in the pre-meeting not to deviate (too much) from the first-best decision rule.

In this section, we have shown that when committee members organize a pre-meeting, the extent to which the decision on the project is distorted depends on which member is dominant in the pre-meeting. In practice, neither of the members in a committee might be truly dominant. In those cases, the final decision is likely to be a compromise between what member 1 wants and member 2 wants.

VII. The Decision to Hold a Pre-meeting

In this section, we show that holding a pre-meeting, $r_1 = r_2 = 1$, is part of an equilibrium. To this end, we first show that in the absence of a pre-meeting, each member has an incentive to organize one. Next, we show that if a pre-meeting is organized, no member has an incentive to stay away.

Does an equilibrium exist in which a pre-meeting is *not* hold? Suppose it does. Then, a model like the one discussed in Section 3 results. Members behave as in Proposition 1. In the formal meeting, members share information, $m_i = s_i$. Furthermore, the project is implemented if and only if $s_1 = s_2 = s^g$. Posteriors are given by (2) and (3). Note that given these posteriors, members benefit from deviating from the imputed equilibrium by organizing a pre-meeting. In the pre-meeting, it is a dominant strategy for the dominant member to choose $X^P = 1$ if and only if $s_1 = s_2 = s^g$. Moreover, the pre-meeting enables the two members to form a united front in the formal meeting in case of $s_1 \neq s_2$, leading to a stronger reputation ($\hat{\pi}(m_1 = m_2) > \hat{\pi}(m_1 \neq m_2)$). Thus, by deviating to a pre-meeting, the decision on X will be optimal from a social point of view, and members' reputations may improve.

It is also clear from Proposition 2 that if the market believes that a pre-meeting *is* organized, no member gains by skipping the pre-meeting. The temptation to deviate is strongest for member 1 in case member 2 is the dominant member in the pre-meeting. So, suppose this situation. Member 1 anticipates that in case a pre-meeting is held, behaviour will be as described by Proposition 2. If signals concur, the absence of a pre-meeting does not have any effect on project payoffs and reputations. So, suppose $s_1 \neq s_2$. If no pre-meeting were held, member 1's payoff would equal $\lambda_1 \hat{\pi}(s_1 \neq s_2)$. This is less than or equal to his payoff in case he sticks to the pre-meeting. For low values of λ_1, see part (A-ii-b) of Proposition 2, member 1's credible threat to break a united front supporting project implemention guarantees him a reputation of $\lambda_1 \hat{\pi}(X = 0; 0)$. For intermediate values of λ_1, see part (A-ii-c) of Proposition 2, he can limit the extent to which member 2 deviates from

the first-best outcome rule. As a result, he gets $\lambda_1 \hat{\pi}(s_1 \neq s_2)$, the same as he would get by deviating from the pre-meeting. Finally, for high values of λ_1, see part (A-ii-d) of Proposition 2, he prefers to go along with member 2's intended decision rather than break the united front. Also, for these values of λ_d, 1 would lose by skipping the pre-meeting. Thus, skipping a pre-meeting never makes member 1 better off. The reason is that as shown in the previous section, if a pre-meeting is organized, member's 2 strategy on X^P keeps member 1 on board: in the formal meeting, member 1 should not have an incentive to break the united front. This also ensures that member 1 does not want to skip a pre-meeting. Hence, member 1 has a strict preference to participate in the pre-meeting. As member 2 has weaker incentives to cancel a pre-meeting than member 1, the next proposition follows.

Proposition 3 *A pre-meeting is an equilibrium phenomenon.*

VIII. If transparency gives rise to pre-meetings, do decisions improve?

Relative to a truly transparent meeting, in which decisions maximize project value, the emergence of a pre-meeting may give rise to large distortions. But perhaps such a comparison is unfair - the upshot of the present paper is that a truly transparent meeting is an ideal situation that one is unlikely to encounter in the real world, see Proposition 3. A better comparison may well be one with a closed decision process. In such a process, the sequence of moves is as in model 1, transparency. However, in a closed process the market does not observe behaviour in the deliberation stage nor in the voting stage. Instead, it only observes the final decision. In the introduction, we have discussed the behavior of a committee under such a decision process. Visser and Swank (2007) have shown that under such a process the size of the distortion of the implementation decision depends on the voting rule. In terms of the model of Section 5, the voting rule determines the dominant player d in the formal meeting. Propositions 2 shows that a transparent formal meeting preceded by a pre-meeting does not yield the same outcomes as a closed decision process if $d = 2$. As discussed, the existence of a formal meeting disciplines member 2: member 1 should not have incentives

to break the united front in the formal meeting. The fact that member 2 needs member 1 to cooperate limits the degree to which he can distort the decision on the project. This disciplining is more difficult under a closed decision process. As a result, a transparent meeting preceded by a pre-meeting leads to an expected project payoff that is at least as high as the payoff under a closed meeting.

Accountability is central to discussions we refer to in the related literature section, but there is no single definition that commands universal support. The idea in the literature is that for a committee member to be held accountable a necessary condition is that his behaviour should be observable by some outside agent. This outside agent can then next decide how to react to the observed behaviour, for example by removing him from the committee or by keeping or promoting him. It is in this sense that we use the term accountability in the Proposition. In our model, in case of both a truly transparent process and in a process consisting of a formal meeting preceded by a pre-meeting the same behaviour can be observed–deliberation and voting. However, less can be deduced about an individual member when members meet in a pre-meeting due to the formation of a united front. It is in this sense that accountability is hurt due to the presence of pre-meetings.

To sum up,

Proposition 4 *Compared with a truly transparent process, the presence of a pre-meeting hurts accountability and may reduce the quality of the decision taken. Compared with a closed process, accountability does not change due to the presence of a pre-meeting. The quality of the decision taken remains the same or improves.*

IX. Members are better informed about their abilities than is the market

We have assumed that committee members and the market are a priori equally well informed about the quality of the members' assessments of the state μ. In some situations, members may have better views of each others' qualities than the market has. Consider therefore a committee in which every member knows his own ability level and that of the

other member. Maintain the assumption that the market only knows the prior probability that a member is highly able, π. All this is common knowledge. In particular, it is commonly known that among committee members ability levels are known. When high ability members always receive an informative signal and low ability members always receive an uninformative signal, the assumption that members know their own and each others abilities has too strong implications. The committee would either be fully informed or not informed at all. For this reason, we assume that the signal of a high ability member may be flawed, while that of a low ability member may contain information:

$$\begin{aligned} \Pr\left(s^g|\mu=h,\bar{a}\right) &= \Pr\left(s^b|\mu=-h,\bar{a}\right)<1 \\ \Pr\left(s^g|\mu=h,\underline{a}\right) &= \Pr\left(s^b|\mu=-h,\underline{a}\right)>\frac{1}{2} \\ \Pr\left(s^g|\mu=h,\bar{a}\right) &> \Pr\left(s^g|\mu=h,\underline{a}\right) \end{aligned}$$

The determination of the conditions under which implementation is first-best is a statistical matter that requires the appropriate weighing of members' views, see Nitzan and Paroush (1982). We maintain that $p<0$ and focus on the case where

$$p+E\left[\mu|s_1=s^g,s_2=s^b;a_1=\bar{a},a_2=\underline{a}\right] > 0 \tag{14}$$

$$p+E\left[\mu|s_1=s^g,s_2=s^g;a_1=\underline{a},a_2=\underline{a}\right] > 0 \tag{15}$$

Equation (14) reflects that if a committee consists of a low ability member and a high ability member, the signal of the high ability member is decisive. Equation (15) implies that two positive signals of low ability members contain sufficiently positive evidence for implementation.[16]

We do not present a full analysis of the current model. We confine ourselves to making two points. First, committee members may distort the implementation decision in case of a

[16]Inequalities (14) and (15) therefore imply restrictions on the conditional likelihoods with which either type of member receives the correct signal.

transparent decision process. Second, high ability members may choose not to participate in a pre-meeting.

In order to make the first point, assume transparency and assume an equilibrium like the one presented in Proposition 1. Thus, assume that each member votes for implementation if and only if implementation yields a higher payoff than status quo. Now suppose that $s_1 = s^g$, $s_2 = s^b$, $a_1 = \bar{a}$ and $a_2 = \underline{a}$. Then, according to (14), a non-distorted implementation decision requires $v_1 = v_2 = v^g$. From these events, the market infers that member 1 is of the high ability type, while member 2 is of the low ability type: $\hat{\pi}_1(m_1, m_2, v_1, v_2) = \hat{\pi}_1\left(m^g, m^b, v^g, v^g\right) = 1$ and $\hat{\pi}_2\left(m^g, m^b, v^g, v^g\right) = 0$. By voting for implementation, member 2 reveals his type and ruins his reputation. Member 2 has an incentive to distort the implementation decision if

$$p + E\left(\mu | s_1 = s^g, s_2 = s^b; a_1 = \bar{a}, a_2 = \underline{a}\right) < \lambda_2 \hat{\pi}_2\left(m^g, m^b, v^g, v^b\right) \tag{16}$$

The posterior $\hat{\pi}_2\left(m^g, m^b, v^g, v^b\right)$ is an out-of-equilibrium belief. What would the public conclude from two members with conflicting signals and conflicting votes? One possibility (1) is that the market believes that member 2 is not willing to reveal his type (this would mean $\hat{\pi}_1\left(m^g, m^b, v^g, v^b\right) = 1$ and $\hat{\pi}_2\left(m^g, m^b, v^g, v^b\right) = 0$). An alternative possibility (2) is that the market believes that $a_1 = a_2$ and that member 1 tries to make the impression that he is of the high ability type (this would mean $\hat{\pi}_1\left(m^g, m^b, v^g, v^b\right) = \hat{\pi}_2\left(m^g, m^b, v^g, v^b\right) > 0$). Clearly, if the first possibility were true, a member 1 of the low ability type would have a strong incentive to vote for implementation if $a_1 = a_2 = \underline{a}$, $s_1 = s^g$ and $s_2 = s^b$. As a result, it is not plausible that the market exclusively believes in possibility 1. If possibility 2 stays open, we must have that $\hat{\pi}_2\left(m^g, m^b, v^g, v^b\right) > 0$. The implication is that if λ_2 is sufficiently large, (16) holds and member 2 has an incentive to distort the implementation decision.

Let us now consider member 1's incentive to invite member 2 for a pre-meeting. Assume that λ_2 is small such that member 2 has no incentive to distort the implementation decision.

Again suppose $a_1 = \bar{a}$ and $a_2 = \underline{a}$. Furthermore, suppose that $s_1 = s^g$. Then, regardless of member 2's signal, in the absence of a pre-meeting the project will be implemented. In contrast with the case in which members do not know their own an each other abilities, in the present case member 1 *wants* the market to observe disagreement. It would infer that he is of the high ability type. By inviting member 2 for a pre-meeting, member 2 gets the opportunity to pretend to have also received a positive signal. This is good for the reputation of member 2 but bad for the reputation of member 1. Thus, the desire of a high-ability member to show his type to the market may give him a preference for transparency. Notice, however, that if a high-ability member has received a negative signal, he is not able to show his type to the market. As before, he wants to conceal disagreement, leading him to invite member 2 for a pre-meeting.[17]

The two examples in this section demonstrate that our assumption about the information members possess about their types is not innocuous. If members know their types, also under transparency, decisions may be distorted. Moreover, high ability members may abstain from organizing a pre-meeting.

X. Consequences of the decision become observable

So far, the rationale for a pre-meeting has been to conceal disagreement from the market. This rationale does not exist in environments where the market can observe μ. Then, instead of comparing signals to form an impression about members' abilities, the market compares each member's signal with the realization of μ. Under transparency, this would lead to the following posteriors:

$$\begin{aligned} \hat{\pi}_i\left(m_i = m^g, \mu = h\right) &= \hat{\pi}_i\left(m_i = m^b, \mu = -h\right) = \frac{2\pi}{1+\pi} \\ \hat{\pi}_i\left(m_i = m^g, \mu = -h\right) &= \hat{\pi}_i\left(m_i = m^b, \mu = h\right) = 0 \end{aligned} \tag{17}$$

Clearly, if a member's signal matches with the state, his reputation improves. If not, his

[17] Notice that member 1's invitation decision contains information about his type.

reputation is ruined.

Before proceeding with the analysis, we would like to pause and explain what it means for experts not to know the state μ with certainty while the market does observe μ with probability one.[18] Timing plays an important role: at the moment the experts decide μ is not known. However, when time passes it may be the case that the state is observed by the market either directly or indirectly from the experienced level of utility. If this happens before decisions are being taken that affect a member's career, then μ can play an important role in such decisions.

As members have no incentives to conceal disagreement, do they still have incentives to organize a pre-meeting? The answer to this question is in the negative for a committee consisting of two members. However, the answer is in the affirmative for committees of more than two members. To see this, suppose a committee of $n > 2$ members. What matters is whether or not a member correctly foresees the state. As discussed above, the reputation of a member is damaged if he incorrectly foresees the state. This threat is an incentive to collect additional information before making a statement in the formal meeting. Suppose members deviate from the transparent process by meeting in advance, and sharing their private views. If a majority of members holds positive views, a positive state of the economy is more likely than a negative. As a result, for given ex post beliefs (17) and speaking from a reputational perspective only, it is then in every member's interest to report m^g in the formal meeting. That is, when the market observes μ when updating its beliefs, the purpose of a pre-meeting is not to feign concurrence, but for every individual member to improve the accuracy of his own public statement.

Why do we need a committee of at least three persons for a pre-meeting to make sense? To answer this question, suppose a two-member committee. Then, in a pre-meeting, member 1 may learn s_2. If $s_1 = s_2$, then member 1 does not change his claim in the formal meeting. If, by contrast, $s_1 \neq s_2$, from a reputational point of view member 1 is indifferent between

[18] Such environments are also studied by Ottaviani and Sørensen (2001), Levy (2007) and Gersbach and Hahn (2008).

claiming m^g or m^b. As a result, in a committee of two members, the other member's signal will never change one's claim.

XI. Concluding Remarks[19]

Understanding behaviour within given institutional arrangements or rules of the game is interesting and important. It is a prerequisite for arguing in favour of one institution over another. We have shown that to fully understand the consequences of changes of the rules of the game, one should also study the incentives that such changes create for the agents to further change the rules of the game. Decision-makers are often not passive players of a given game.

Our analysis shows that as a consequence of the reactions of the committee members, imposing transparency on a hitherto closed decision-making process does not reduce the process' opacity. Moreover, the voting rule that governs decision-making in the closed process loses its relevance. Decision-making is often as good or bad as it is in a closed process. The fact that a member who cares most about the project's value can stand up in the formal meeting, break the united front, and guarantee first-best behaviour limits the degree to which a dominant member can distort decision making. In other words, the quality of the project does not deteriorate as a result of imposing transparency but may actually improve.

Although reputational concerns can induce committee members to distort the decision-making process (relative to what would be first-best), it is important to note that from an ex ante perspective these distortions cannot improve the expected reputation. In equilibrium the market sees through the members' intentions. Although one decision commands a higher reputation than another, the ex ante expected reputation equals the prior belief about a member's ability. Hence, if members could commit to a decision process, they would like to commit to the first-best decision rule.

[19] Many of the issues we discuss in this section were triggered by comments and observations made by two anonymous referees.

In this paper, we have chosen a specific format for the pre-meeting. In particular, a dominant member attempts to impose his desired decision on the committee, and his only concern is to make sure the conceding member remains on board in the formal meeting. Other formats are possible. Voting rules or at least an implicit understanding as to the degree of consensus needed to support a project in the formal meeting may well develop. In this respect, a focal point might be the official voting rule of the formal meeting. Alternatively, a bargaining model might be a better description of the negotiations taking place in the pre-meeting. The chairman – a figure that is absent from our analysis – may approach the other members one by one to forge a deal. Moreover, why would all members be part of the pre-meeting? In Swank, Swank and Visser (2008) we present data that shows that once verbatim transcripts of the Federal Open Market Committee of the US FED were known to be made public with a five-year time lag, the consensus among Governors became virtually complete, while the change in behaviour of Bank Presidents was somewhat less dramatic. As Governors are located in Washington, while Bank Presidents come from different places in the US, this suggests that the ease with which one can meet in person stimulates participation in pre-meetings. Or perhaps groups of members meet in different pre-meetings on the basis of perceived preferences (e.g., hawks and doves in the monetary policy context) to cook a deal to be presented to the committee as a whole. Whether these other formats would lead to different views on the merits of imposing transparency is an open question that should be studied. We conjecture that if all members participate our approach describes more or less the bounds on the possible outcomes (where outcome means a mapping from signals to decision on the project). Matters are likely to be quite different if the committee falls apart in subgroups that pre-meet.

We do not assume any specific relationship between the weight λ a member attaches to his reputation and the identity of the dominant member in the pre-meeting. It is, however, an interesting question to ask which member has the biggest incentive to strive for dominance. Again, commitment plays an important role. As we just observed, from an ex ante

perspective the expected reputation equals π. The larger is λ of the dominant member, the larger is the distortion and therefore the smaller is the expected value of the implemented project. As a result, if members could somehow decide before the pre-meeting who is the dominant member in the pre-meeting both members would like the one with the lower λ to be the dominant one. From an ex ante perspective, there is no conflict of interest or battle for dominance. However, once they are in the meeting and they have realized they hold conflicting views about the desired decision this battle may arise. This situation is intricate as reputations are a driving force and these reputations are determined by what the market knows about the equilibrium outcome of the battle. A full analysis must await further analysis.

In our model, members have a private signal without exerting any effort. As Gersbach and Hahn (2008) show, the incentives to become informed change with transparency. We are currently investigating how different forms of transparency affect both the incentives to become informed and the degree to which decisions are distorted. Interestingly, whether members care about their reputations in the eyes of fellow committee members or in the eyes of the market (as is the case here) matters a great deal.

In reality, one sometimes observes 'broken fronts'. Information may be leaked anonymously. This sometimes happens before the actual decision is made, presumably to influence the balance of power in the meeting. Or it takes place to discredit a decision taken in the hope that it will be reversed. Whistle blowing is another form of breaking with a widely supported practice or decision. Neither 'open' nor closed processes are immune to such behaviour. The logic used in the present paper points to some of the obstacles – reputational damage, lack of effectiveness – that should be surmounted by anyone considering to break a united front. It can also be used to think about decisions reached in a closed process that are 'whistle blow proof'. One reason why reputational concerns may not stop a member from speaking up is that there is uncertainty not just about a member's competence but also about his preferences. If preferences are known to the public, members do not need to use their

observable behaviour to signal these preference. Behaviour can then be used to strengthen their perceived ability levels in line with the theory developed in this paper. If preferences are not known, a member must contemplate how his actions affect the public's beliefs about both competence and preferences. This creates reasons to publicly hold a minority view.

XII. Appendix

Derivation of (9) and (10).

$$\hat{\pi}\left(X=1;\beta\right)=\Pr\left(a_i=\bar{a}|x=1\right)=\frac{\Pr\left(x=1|\bar{a}_i\right)\Pr\left(\bar{a}_i\right)}{\Pr\left(x=1|\bar{a}_i\right)\Pr\left(\bar{a}_i\right)+\Pr\left(x=1|\underline{a}_i\right)\Pr\left(\underline{a}_i\right)},$$

where

$$\begin{aligned}\Pr\left(x=1|\bar{a}_i\right) &= \Pr\left(x=1|\bar{a}_i,\mu=h\right)\Pr\left(\mu=h\right)+\Pr\left(x=1|\bar{a}_i,\mu=-h\right)\Pr\left(\mu=-h\right)\\ &= \left(\frac{\pi+1}{2}+\frac{1-\pi}{2}\beta\right)\frac{1}{2}+\beta\left(\frac{1-\pi}{2}\right)\frac{1}{2}=\frac{1+\pi}{4}+\beta\frac{1-\pi}{2},\end{aligned}$$

and

$$\begin{aligned}\Pr\left(x=1|\underline{a}_i\right) &= \Pr\left(x=1|\underline{a}_i,\mu=h\right)\Pr\left(\mu=h\right)+\Pr\left(x=1|\underline{a}_i,\mu=-h\right)\Pr\left(\mu=-h\right)\\ &= \frac{1}{2}\left(\frac{1+\pi}{2}+\frac{1-\pi}{2}\beta\right)\frac{1}{2}+\frac{1}{2}\beta\left(\frac{1+\pi}{2}\right)\frac{1}{2}\\ &\quad+\frac{1}{2}\left(\frac{1-\pi}{2}+\frac{1+\pi}{2}\beta\right)\frac{1}{2}+\frac{1}{2}\beta\left(\frac{1-\pi}{2}\right)\frac{1}{2}=\frac{1}{2}\beta+\frac{1}{4}.\end{aligned}$$

Thus,

$$\hat{\pi}\left(X=1;\beta\right)=\frac{\left(\frac{1+\pi}{4}+\beta\frac{1-\pi}{2}\right)\pi}{\left(\frac{1+\pi}{4}+\beta\frac{1-\pi}{2}\right)\pi+\left(\frac{1}{2}\beta+\frac{1}{4}\right)\left(1-\pi\right)}=\frac{\left(1+\pi\right)+2\left(1-\pi\right)\beta}{\left(1+\pi^2\right)+2\left(1-\pi^2\right)\beta}\pi.$$

The posterior in (10) follows from

$$\hat{\pi}\left(X=0;\beta\right)=\frac{\Pr\left(a_i=\bar{a}|x=0\right)\pi}{\Pr\left(a_i=\bar{a}|x=0\right)\pi+\Pr\left(a_i=\underline{a}|x=0\right)\left(1-\pi\right)},$$

where

$$\begin{aligned}\Pr\left(x=0|\bar{a}_i\right) &= \Pr\left(x=0|\bar{a}_i,\mu=h\right)\Pr\left(\mu=h\right)+\Pr\left(x=0|\bar{a}_i,\mu=-h\right)\Pr\left(\mu=-h\right)\\ &= \frac{1-\pi}{2}\left(1-\beta\right)\frac{1}{2}+\left(\frac{1+\pi}{2}+\frac{1-\pi}{2}\left(1-\beta\right)\right)\frac{1}{2}\end{aligned}$$

and similarly

$$\Pr\left(x=0|\underline{a}_i\right)=\frac{1}{2}\pi\left(\frac{1}{2}+\left(1-\beta\right)\right)+\frac{1}{2}\left(1-\pi\right)\left(\frac{1}{2}+\left(1-\beta\right)\right)$$

and thus

$$\hat{\pi}\left(X=0;\beta\right)=\frac{3-\pi-2\left(1-\pi\right)\beta}{3-\pi^2-2\left(1-\pi^2\right)\beta}\pi.$$

XIII. References

Cawley, J. H. (1992), Sunshine Law Overexposure and the Demise of Independent Agent Collegiality, *Widener Journal of Public Law 1*, 43-124.

Farrell, J., and Rabin, M. (1996), Cheap Talk, *Journal of Economic Perspectives 10*, 103-118.

Fudenberg, D., I. Levine,D.I. and Maskin, E. (1994), The Folk Theorem with Imperfect Public Information, *Econometrica 62*, pp. 997–1039.

Fung, A., Graham, M. and Weil, D. (2007), Full Disclosure: *The Perils and Promise of Transparency, Cambridge*: Cambridge University Press.

Gersbach, H. and Hahn, V. (2004), Voting Transparency, Conflicting Interests and the Appointment of Central Bankers, *Economics and Politics 16*, 321-345.

Gersbach, H.and Hahn, V. (2008), Information Acquisition and Transparency in Committees, working paper ETH Zurich.

Hermalin, B.E. and Weisbach, M.S. forthcoming, Information Disclosure and Corporate Governance, *Journal of Finance*.

Holmström, B. (1999), Managerial Incentive Problems: A Dynamic Perspective, *Review of Economic Studies 66*, 169-182.

Johnson, N. (2004), Open Meetings and Closed Minds: Another Road to the Mountaintop, *Drake Law Review 53*, 11-53.

Levy, G. (2007), Decision Making in Committees: Transparency, Reputation and Voting Rules, *American Economic Review 97*, 150-168.

May, R. (1997), Reforming the Sunshine Act, *Administrative Law Review 49*, 415-420.

Meade, E.E. (2005), The FOMC: Preferences, Voting and Consensus, *Federal Reserve Bank of St. Louis Review 87*, 93-101.

Meade, E.E. and Stasavage, D. (2008), Publicity of Debate and the Incentive to Dissent: Evidence from the US Federal Reserve, *Economic Journal 118*, 695-717.

Nitzan, S. and Paroush, P. (1982), Optimal Decision Rules in Uncertain Dichotomous Choice Situations, *International Economic Review 23*, 289-297.

Ottaviani, M. and Sørensen, P.N. (2001), Information aggregation in debate: who should speak first?, *Journal of Public Economics 81*, 393-421.

Prat, A. (2005), The Wrong Kind of Transparency, *American Economic Review 95*, 862-877.

Roberts, A. (2006), *Blacked Out. Government Secrecy in the Information Age. Cambridge etc.*: Cambridge University Press.

Scharfstein, D.S. and Stein, J.C. (1990), Herd Behavior and Investment, *American Economic Review 80*, 465-479.

Stasavage, D. (2006), *Does Transparency Make a Difference? The Example of the European Council of Ministers, in David Heald and Christopher Hood (eds.) Transparency, the Key to Better Governance?*, British Academy/Oxford University Press.

Stasavage, D. (2007), Polarization and Publicity: Rethinking the Benefits of Deliberative Democracy, *Journal of Politics 69*, 59-72.

Stiglitz, J. (1998), Distinguished Lecture on Economics in Government: The Private Uses of Public Interests: Incentives and Institutions, *Journal of Economic Perspectives 12*, 3-22.

Swank, J., Swank, O.H. and Visser B. (2008), How Committees of Experts Interact With the Outside World: Some Theory, and Evidence From the FOMC, *Journal of the European Economic Association Papers and Proceedings*, pp. 478-486.

Visser, B. and Swank, O.H. (2007), On Committees of Experts, *Quarterly Journal of Economics 122*, 337-372.

Winston, C. (2008), The Efficacy of Information Policy: A Review of Archon Fung, Mary Graham, and David Weil's Full Disclosure: The Perils and Promise of Transparency, *Journal Economic Literature 46*, 704-717.