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# Monetary Policy Decisions – Comparing Theory and “Inside” Information from MPC Members

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## Abstract

How do monetary policy committee (MPC) members form their views about the appropriate interest rate? To what extent do they change their minds during the deliberations in the interest rate meeting? How important is the Chairman? The theoretical literature makes assumptions about these issues. We have asked actual MPC members in Sweden and Norway. This paper reports the results from this unique survey and discusses how well existing theories on monetary policy by committee capture the reality.

*Keywords:* Monetary Policy Committee, Sveriges Riksbank, Norges Bank, Decision Making, Questionnaire Study.

*JEL Code:* D71, E52, E58.

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## 1. Introduction

Monetary policy is in many countries set by a committee. The shift away from a single policymaker in charge of interest rate setting has triggered a large number of papers examining the merits, and shortcomings, of Monetary Policy Committees (MPCs). Most of these papers are theoretical in nature, and the models used make assumptions about the characteristics of MPC members, about the way information is gathered and exchanged, and about the procedures and dynamics in the actual policy meetings. Needless to say, such assumptions influence the results these models yield, and the policy recommendations drawn.

This paper re-examines the main assumptions made in the literature. We do so by asking the people who should know best – actual MPC members. The MPC members interviewed are from Norges Bank and the Swedish Riksbank, the first of which can be viewed as a collegial committee, whereas the second is generally seen as an individualistic committee. By examining both types of MPCs, we can shed some light on the question how influential the Governor actually is, which is one issue that has found much attention in the theoretical literature. As Norges Bank and the Swedish Riksbank operate the same type of flexible inflation targeting in very similar cultures and similar economies, differences in the responses received are likely to be due to MPC features rather than to differences in cultures or economic environments. Furthermore, as we have tight institutional links to these two central banks, we were able to achieve answers from almost all MPC-members, and not just from policy makers dissatisfied with their MPC, something which would have biased our results.<sup>1</sup>

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<sup>1</sup>To reduce biases in the responses that might arise because of our institutional linkages, we have kept the questionnaires strictly anonymous and emphasized this to the respondents in advance.

The research method of posing direct questions to economic agents has traditionally been subject to some skepticism,<sup>2</sup> but has become more common during the last two decades. Survey information on what lies behind agents' decisions may improve the interpretation of findings based on data on realized decisions and point to new directions of future theoretical research. For example, studies asking firms about their price-setting behavior have been conducted in a large number of countries, generating valuable information on, for instance, the frequency of price reviews and the sources of price rigidity.<sup>3</sup> In the realm of monetary policy, surveys have been used to investigate central banks' views in different matters, for example why credibility is important and what makes a central bank credible (Blinder, 2000). While the method certainly has some limitations<sup>4</sup>, we believe that it can provide useful evidence on monetary policy making by committees, in much the same way as it has in other areas. The information contained in this survey is unique, as it is to our knowledge the only survey in the literature where the respondents are actual MPC members. In addition, surveying two different types of MPCs in two relatively similar countries with equal monetary policy regimes provides an interesting comparative analysis.

In our survey, we study the validity of the assumptions made in the theoretical literature. These assumptions concern: the optimal size and composition of an MPC (Section 3); the deliberation within MPCs (Section 4); the role of the Governor (Section 5); the heterogeneity between committee members (Section 6); and the merits of transparency (Section 7).

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<sup>2</sup> See Boulier and Goldfarb (1998) for an overview of the methodological debate.

<sup>3</sup> Studies include Blinder *et al.* (1998) for the US, Fabiani *et al.* (2006) for the euro area, Hall *et al.* (2000) for the UK, Amirault *et al.* (2004) for Canada, Apel *et al.* (2005) for Sweden and Langbraaten *et al.* (2008) for Norway.

<sup>4</sup> See, for example, Blinder *et al.* (1998) for a discussion. For instance, responses may be sensitive to the precise wording of the questions and the respondents may sometimes have incentives to conceal the truth.

We find that MPC members' perceptions confirm a number of theoretical assumptions. However, there are others that run counter to the literature. For instance, the committee members do not seem to alter their views on the appropriate level of interest rates during the policy meeting – deliberation does not seem to matter much. Rather, it seems to be the contact with staff prior to the policy meeting that is crucial for MPC members to form their views. In a similar vein, committee members feel they forecast accurately what views their colleagues will take in the policy meeting, and this is not only the case of the full-time Riksbank members, but also of the part-time Norges Bank members.

Yet another interesting finding is that there seems to be a preference for the status quo regarding institutional features at both central banks, be it in terms of the committee size, the split between internal and external members, or the communication strategy towards the public. While this may be taken to reflect aversion to change, an alternative and plausible explanation is that exact institutional details in isolation do not matter for the quality of monetary policy. This may explain why there has been no convergence across central banks in terms of, say, the publication of meeting minutes.

## **2. The questionnaire and the respondents**

To contrast theory with reality, we surveyed MPC members at the Swedish *Riksbank* and at *Norges Bank*. These two banks are similar in their goals – both are inflation targeters – but differ in institutional respects.

The Executive Board of the *Riksbank* consists of six members. All members are internal full-time members. They are individually accountable, and the Board is thus considered an

individualistic, as opposed to a collegial, committee. The Riksbank is today ranked among the world's most transparent central banks.<sup>5</sup> Practically ever since the Board was established in 1999, the minutes of the monetary policy meeting and the voting result have been published with a lag of about two weeks. It is shown who has dissented, together with the policy rate preferred by those dissenting. Since May 2009 this information has been provided already in the press release announcing the interest rate decision. Statements in the minutes have been attributed since May 2007 and show who has said what during the discussion. Between the policy meetings the MPC members make public appearances, for example by giving speeches or interviews. What a member says in monetary policy matters is the responsibility of this member alone.

The Executive Board of *Norges Bank* consists of seven members; the Governor, the Deputy Governor and five external members. The external members work part-time as Board members, and they keep their ordinary jobs while serving as Board members. The Executive Board is a collegial committee, where the Governor seeks a consensus decision. Formally, each member has one vote. The members can dissent from the Governor's interest rate proposal, but the information about the dissents becomes public only after 60 years.<sup>6</sup> Attributed minutes from the policy meetings are not provided, but from 2011 a summary of the Executive Board's assessment is published in each Monetary Policy Report.<sup>7</sup>

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<sup>5</sup> See Dincer and Eichengreen (2007, 2009) and Eijffinger and Geraats (2006).

<sup>6</sup> From April 2012, information about dissents is published after 12 years.

<sup>7</sup> See Qvigstad et al. (2013) for a more detailed description of the Executive Board's structure and communication.

Most questions in the survey focused on institutional design, the decision-making process and communication. Typically, members were asked to grade a statement on a four-grade scale, e.g., “unimportant”, “slightly important”, “fairly important” and “very important”. In order to facilitate comparison, we made the questions to the members of the two MPCs as similar as possible. However, due to institutional differences, some questions were somewhat adjusted.

The survey was conducted during the period May – June 2009 for the Riksbank members and during the period March – April 2011 for the Norges Bank members. We sent the questionnaire to present and former members of the Riksbank’s and the Norges Bank’s MPCs in the period 1999 until the date of the survey. Since 1999, altogether 13 people have served in the Riksbank’s MPC, while 17 external members have served in the Norges Bank’s MPC. In order to maximize the number of responses and encourage honesty, we emphasized the confidentiality of individual responses. Because of the small number of internal members (Governor and Deputy Governors) at Norges Bank in the period we considered, it might have been difficult to ensure their anonymity. We therefore decided to ask only external members. Among the 17 potential respondents from Norges Bank, we have included two alternate members, because from 2010, the alternate members have attended the meetings and the discussions in the same way as the ordinary members, except that they have no formal voting power.

From the Riksbank members we received answers from 12 out of 13 potential respondents, while from Norges Bank we received 13 out of 17. For expositional reasons, we have chosen to report only the median responses for most of the questions, but report or comment on the dispersion when this information is of particular interest or when the distribution of responses is very skewed.

### 3. Size and composition

#### 3.1 Why have an MPC?

The main rationale for having a group of people, rather than one individual, responsible for monetary policy decisions is that “several heads are better than one”. MPCs improve on decisions by pooling members’ information and knowledge (see, e.g., Blinder 2007).<sup>8</sup> Pooling can basically take two forms: “pooling by talking” and “pooling by voting” (Claussen *et al.* 2012). Pooling by talking takes place when the MPC members deliberate prior to the decision. Pooling by voting is the implicit pooling that takes place when the MPC votes to combine the different views.

The perception that groups tend to make better monetary policy decisions than individuals has received empirical support. For example, Blinder and Morgan (2005, 2008a, 2008b) and Lombardelli *et al.* (2005) find in experiments where students make simulated monetary policy decisions that the decisions are better if made by a group. In a theoretical study, Gerlach-Kristen (2006) finds that if the perceptions of the state of the economy differ between individuals, a committee achieves better policy outcomes than a single policymaker.

What are the views of actual MPC members on the reasons for having a committee? We asked the members to what extent they agreed with the following statements:

1. Public acceptance for independence:

Sufficient acceptance among the general public and politicians for a system where the conduct of monetary policy is delegated to an (independent) central bank requires that

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<sup>8</sup> This finding goes back to Condorcet’s jury theorem, which dealt with court decisions.

the monetary policy decisions are made by a group of persons and not by one individual.

2. Better decisions:

Over time the monetary policy decisions improve if they are made by a group of persons instead of one individual.

3. Insurance:

Making decisions by group functions as an insurance against extreme preferences one individual governing monetary policy might hold.

Figure 3.1 shows the distribution of responses, where the vertical line represents the median response. We see that the majority of the Riksbank members and the Norges Bank members agreed with all three reasons for having a committee.

[Figure 3.1. about here]

### **3.2 The optimal size**

If MPCs improve decisions by pooling members' information and knowledge, this suggests in isolation that the bigger the committee, the better. But there are also costs associated with increasing the size of a committee, such as less thorough (or more time-consuming) discussions and more potential for free-riding.

The question of the optimal MPC size is addressed directly or indirectly in different strands of the literature. In an experimental study, Blinder and Morgan (2008b) find that eight-person groups do not perform significantly better than four-person groups in implementing monetary policy tasks. In a review of the rather small economics literature on committees as well as the

older and larger literature on committees in other social sciences, Sibert (2006) concludes that the ideal MPC should not have more than five members. In another interdisciplinary survey of studies, Erhart and Vasquez-Paz (2007) conclude that the optimal committee consists of roughly five to nine members.<sup>9</sup> In simulations using a theoretical model of dynamic decision-making of a monetary policy committee, Weber (2010) arrives at the conclusion that there is relatively little benefit of having a committee with more than seven members.

We next asked the members what they believed to be the most appropriate size of their respective MPCs. When asked if they thought their current six-member Board was too small, of right size or too large, half of the Riksbank members thought it was too large, and only one member thought it was too small. The Norges Bank members were more satisfied with their own seven-member Board. More than 2/3 of the members thought that the size was right, while the rest thought it was too large. When asked to state their preferred committee size, the responses were distributed as shown in Figure 3.2. Although the preferred size is within the estimated span of the optimal size in the literature, the average response lies within the lower region of that span.

[Figure 3.2 about here]

One reason for the relatively small preferred size could be that the members feel that discussions in larger groups are too time-consuming compared to the value-added of more views. As we shall show below, the members consider information from the central bank staff more important than information from their peer members, and this may help explain their reluctance to large committees. Yet another explanation could be that members may be interested

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<sup>9</sup> Gerling *et al.* (2005) survey the game theoretic literature on committee decision making but do not settle on a specific figure. Berger and Nitsch (2008) provide an international comparison of MPC numbers.

in maximizing their influence on the decisions. The larger the committee, the less likely it is that a particular member will be the median voter.

### **3.3 The value of outsiders**

One aspect of the composition of an MPC that has received much attention in the literature is the inclusion of external members. One could argue that MPC members should be heterogeneous in order to prevent a high positive correlation in individual judgment errors. Related to this, Sibert (2006) argues that external members help avoid “group-think”, which occurs when the committee members’ striving for consensus makes them stop paying sufficient attention to alternative courses of action. The committee may then make worse decisions than any of its members would have made on his own.

In the Riksbank’s MPC all members are internal; they are employed full time by the Riksbank and have their offices there. With few exceptions, however, members have been recruited from outside the bank, for example from the financial sector or academia. The Executive Board of Norges Bank consists of five external members working part-time, in addition to the two internal full-time members (the Governor and the Deputy Governor). The external members have various backgrounds, including the business sector, academia and politics. To investigate the views of two groups' of policymakers on the issue of internal versus external members, we first asked the **Riksbank members** to what extent they thought the following statements on the composition of MPCs applied:

1. Outside perspective:

Having external members **would contribute** to better decisions as it adds information, knowledge and an "outside perspective".

2. Part-time membership better:

If one or more of the six members of the Riksbank's Executive Board was employed part-time, this would require less resources without the monetary policy decisions being of poorer quality.

The **Norges Bank members** were asked:

1. Outside perspective:

Having external members **contributes** to better decisions as it adds information, knowledge and an "outside perspective".

3. Full-time membership better: Monetary policy decisions would be better if the members of the Norges Bank Executive Board were full-time members.

The responses are shown in Figure 3.3. The Riksbank members did not tend to support the view that having external members would provide a useful "outside perspective" on the decisions, although the dispersion in the responses was quite large. The Norges Bank members, however, gave quite strong support to the statement.

[Figure 3.3 about here]

When the Riksbank members were asked if they thought that being part-time instead of full-time members would require less resources without leading to poorer decisions, most members disagreed. The Norges Bank members were asked if they thought that decisions would be better with full-time employment, and they were equally negative to this. There was thus a tendency of MPC members to defend their own respective systems. Whether this tendency reflects some type of cognitive bias (e.g., overconfidence or confirmation bias) or has other

explanations is an interesting question which is beyond the scope of this paper. One possibility is that internal full-time members underestimate the danger of group think and overemphasize the importance of the internal interest rate process, in which it is difficult for external part-time members to participate heavily. External members might, on the other hand, overemphasize the danger of group-think among internals and overestimate the value of their own “external” views. We found evidence of “*status quo* bias” also in other matters, which we will return to later.

To sum up this section, MPC members believe that they make better decisions as a group than as individuals. This is in line with mainstream theory. They also prefer relatively small committees, which might be due to time and free-riding considerations and/or to guaranteeing their personal influence on the interest rate decision. Their views on external members are mixed. We next turn to the question how interest rate decisions are arrived at in practice and in the theoretical models of the literature.

#### **4. Deliberation**

An MPC meeting typically consists of two stages. In the first stage – the deliberation stage – the members exchange views. In the second stage – the decision stage – the MPC reaches the policy decision through an agreed upon aggregation rule (for example, majority voting).

Like any economic agents, MPC members receive information, interpret the information and update their judgments. The theoretical literature often thinks of this process as Bayesian updating: The MPC members have some priors, or ‘beliefs’, that are confronted with new information, and they form their posterior judgments (Chappell *et al*, 2012). In this section, we consider two types of deliberations; the deliberations within the MPC, i.e. between the

members, which are typically modeled in the literature, and deliberations between the MPC and the staff, which take place prior to the MPC meeting and which have up to now rarely caught researchers' attention. We end this section by asking whether the policy decision tends to be made before the MPC meeting.

#### **4.1 Deliberations within the MPC**

In the existing theoretical literature on MPCs, it is assumed that the pooling of information takes place within the MPC, see e.g., Berk and Bierut (2009), Gerlach-Kristen (2006, 2008) and Weber (2010). To investigate the relevance of this assumption for MPCs in practice, we asked the respondents how important they considered the other MPC members as source of information on the following aspects:<sup>10</sup>

1. Exogenous factors:

The current economic situation and trends that the Bank is unable to influence, such as future oil prices and international economic developments.

2. The "model":

How the economy functions and thereby how things will develop if the central bank acts in one particular way or another.

3. Prioritization of objectives:

How quickly inflation should be brought back on target/prioritizing between stabilizing inflation and stabilizing the real economy.

[Figure 4.1 about here]

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<sup>10</sup> The Norges Bank members were asked how important the other external members were, as the two internal members (Governor and Deputy Governor) also represent the staff.

The results are summarized in Figure 4.1. Somewhat surprisingly, most MPC members did not consider their fellow members as very important information sources. The median respondent tended to view other members as “slightly important” as sources of information. The only exception is that the median Norges Bank member viewed the other members as “fairly important” regarding information about the “model”.

One interpretation of this finding is that the members do not enter the meetings with much private information that other members might find useful. The different views may thus reflect different ways of interpreting common information. Such differences in “heuristics” may not disappear during the deliberations. Van den Steen (2011) models this assuming that agents receive the same information, but have different priors regarding the precision of various pieces of information. Despite common information, they end up disagreeing and appear overconfident from the eyes of the other agents. The findings from our survey are consistent with such a model.

The result that other members are not very important as sources of information is particularly noteworthy when seen in connection to the findings in Section 3, where MPC members preferred relatively small committees. This may reflect that they do not find their colleagues’ views hugely informative. They nevertheless preferred a committee to a single decision maker.

## 4.2 The staff's role

The theoretical literature on MPCs barely considers the staff's role in the pooling process.<sup>11</sup> But monetary policy decisions are not made in a vacuum. The MPC receives a considerable amount of inputs from the central bank staff.

How important are these inputs to the MPC members? We asked them the same questions as in Section 4.1, this time focusing on the role of the staff. Figure 4.2 shows the results. Strikingly, most respondents found the staff more important than their fellow members.<sup>12</sup> This suggests that the existing theoretical literature on MPCs, which focuses on information sharing among the MPC members themselves, could miss an important aspect of the decision-making process. Future theoretical work on collective decision-making in central banks should therefore focus more on the interaction between the staff and the MPC members.

[Figure 4.2 about here]

The staff seems to have more influence regarding exogenous factors and the model (which together form the forecasts), than regarding the prioritization of objectives. This might reflect that the latter represents true *policy* decisions, as opposed to *economic analysis*. It might also reflect that the staff participates less actively in the discussions on how to balance the various policy trade-offs.

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<sup>11</sup> To our knowledge, the only exception is Claussen *et al.* (2012), who assume that the chairman has access to the staff and is thereby better informed than the other members. They also consider information pooling within the staff prior to the staff advice to the chairman.

<sup>12</sup> MPC members might also simply have been polite towards the present authors, most of whom have been on their staff.

Although the results from this survey may not necessarily carry over to other central banks, they could be interpreted as giving some support to the results in Romer and Romer (2008), who found that the FOMC members' forecasts did not add any extra value to the staff forecasts. Based on this, Christina and David Romer argued that *“a more effective division of labor within the Federal Reserve System might be for the staff to present policymakers with policy options and related forecast outcomes, and for policymakers to take those forecasts as given. With this division, the role of the FOMC would be to choose among the suggested alternatives, not to debate the likely outcome of a given policy.”* Our results indicate that to some extent such a division of labor takes place, albeit perhaps implicitly, during the monetary policy process preceding the MPC meetings in Norway and Sweden.

Even though respondents from both central banks considered the staff more important than their fellow MPC members, there were some small differences between the groups. The staff seems even more important for the Riksbank members than for the Norges Bank members, at least as sources of information on the current developments and the workings of the economy. This might reflect that the Riksbank members are internals and have easier access to the staff than the external Norges Bank members.

#### **4.3 How much is settled before the meeting?**

Given that the staff is important, but not well represented in the actual meeting, the question arises how important the actual meeting is for the pooling of information. To obtain more information about this, we asked the members the following questions:

1. Decided prior to meeting:

How often has it happened that you have in principle decided [how you intend to vote]/[which decision you prefer]<sup>13</sup> before the monetary policy meeting and not changed your mind during the meeting?

2. New information:

How often has it happened that information and arguments that are new to you have been presented at the monetary policy meeting?

3. Changed my mind:

How often has it happened that you have changed your mind during the monetary policy meeting despite that you had in principle decided in advance?

4. Not decided prior to meeting:

How often has it happened that you have not known [how you would vote]/[which decision you would prefer] prior to the monetary policy meeting?

We also wanted to obtain information about how much the members knew about the views of the other members before the meeting. Due to the institutional differences, we asked two groups of MPC members somewhat different, but related questions. The **Riksbank** members were asked:

5. Clear impression of majority:

How often has it happened that you have a clear impression of how the majority of your colleagues intend to vote before you go into the monetary policy meeting?

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<sup>13</sup> The Riksbank members were given the first formulation in the brackets, and the Norges Bank members were given the second formulation, as there is less of explicit voting in the Norwegian collegial MPC.

6. Clear impression of all members:

How often has it happened that you have a clear impression of how all of your colleagues intend to vote before you go into the monetary policy meeting?

The **Norges Bank** members were asked:

7. Clear impression of other external members:

How often has it happened that you have a clear impression of which decision the other external members would prefer before you go into the monetary policy meeting?

8. Clear impression of the internal members:

How often has it happened that you have a clear impression of what proposal for interest rate decision that the governor (or deputy governor) will present at the monetary policy meeting?

[Figure 4.3 about here]

The members' responses are shown in Figure 4.3. The results indicate that members have often or always decided beforehand which outcome they favored. This tendency is somewhat stronger for Riksbank members than for Norges Bank members, as the median Riksbank member has "always" decided in advance how to vote, while the median Norges Bank member has "often" decided in advance which level of the policy interest rate he/she would prefer. It is also interesting to note that four Norges Bank members responded that they either "never" or "sometimes" had decided in advance which decision they preferred and not changed their minds, while no one from the Riksbank gave such responses. This might reflect that the internal process before the meeting is more thorough with full-time internal members than

with part-time external members. It is also possible that individual accountability and detailed minutes from the meeting – which are published in Sweden and which we discuss in detail in Section 7 below – give a strong incentive to go to the meeting with a clear view on the appropriate decision.

In both committees, it is quite unusual that new information or arguments come up at the monetary policy meeting, and it is even more unusual that members change their minds as a consequence. The median Riksbank member has “never” changed his mind, while the median Norges Bank member has “sometimes” changed his mind. One Norges Bank member, has, however “often” changed his mind. This confirms that the Riksbank members seem to have a more clear opinion before the meeting. As stated by Svensson (2009a, p. 26): *“The discussion and exchange at the final monetary policy meeting do not start from scratch, but are the culmination and summary of [a long series of] ...meetings. Therefore, one would not expect too much spontaneity but rather the presentation of the essential summaries and the reasons for the decision by each member.”* Similarly, at Norges Bank, the process leading to publication of the Monetary Policy Report includes several meetings and seminars with the Board members.

Another striking finding is that the majority of the members of both MPCs usually have a pretty good impression about the decisions preferred by the other members. The median Riksbank member responded that he “always” had a clear impression of what the outcome of the vote would be. Also the Norges Bank members, who meet less frequently due to their part-time membership, tend to have a clear picture of which decision the other external members, as well as the governor, would prefer. This may reflect pre-meeting discussions and/or that over time the members learn about their fellow members’ individual “reaction functions”.

To sum up this section, it seems that the focus in the literature on the formal MPC meeting misses important aspects of the monetary policy process. In particular, staff seems to play a more important role in forming MPC members' views than exchanges at the actual committee meeting, and a MPC member's view on optimal policy seems essentially fixed and known to others prior to the formal meeting. Having established that individuals further down the hierarchy matter for MPC members' views, we now turn to the role of the one person higher up – the Chairman.

## 5. The role of the Chairman

The role of the Chairman has received considerable attention in the MPC literature.<sup>14</sup> Blinder (2007) distinguishes between two major types of decision making systems; *individualistic* MPCs and *collegial* MPCs. In individualistic MPCs, the members are individually accountable for their voting, and unanimity is not necessarily sought. The decisions are made by majority voting. In collegial MPCs, one tries to reach unanimity, and if this is not achieved, the MPC still stands unified behind the decision. There may or may not be a formal vote, and dissenting votes are rare. Blinder distinguishes between two polar types of collegial MPCs; *genuinely-collegial* MPCs and *autocratically-collegial* MPC. The difference relates to the role of the Chairman, who merely dictates the “consensus” in an autocratically-collegial MPC, while all members have equal weight in a genuinely-collegial MPC.

Blinder (2009) mentions Norges Bank and the FOMC under Chairman Greenspan as examples of autocratically-collegial committees. By contrast, the Executive Board of the Riksbank

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<sup>14</sup> Chappell *et al.* (2004, 2007a, 2007b) and Gerlach-Kristen and Meade (2010) investigate the influence of the Chairman of the FOMC, Chappell *et al.* (2009) compare the influence of the Chairman in Sweden and the UK. Gerlach-Kristen (2008) and Claussen *et al.* (2012) analyze the role of the Chairman in a theoretical setting.

is considered an individualistic committee, as there is formal voting with frequent dissents, and the members are individually accountable for their actions. But even if the Riksbank members are in one sense equal, it is an empirical question whether the Chairman is “more equal” than the other members (beyond the fact that he has the casting vote in case of a draw). It is also an empirical question whether the Chairman in the Norges Bank Board has a sufficiently dominant role to characterize the Board as an autocratically-collegial committee.

How different are the roles of the Chairmen in Norges Bank and the Riksbank? To investigate the role of the Chairman, we asked the members to indicate how they thought the following statements, which cover different aspects of Chairman dominance, apply:

1. Influence over forecasts and material:

The Governor has more influence over the forecasts and other materials on which the interest rate decisions are based than the other members of the Board.

2. Influence over the discussion:

As Chairman at the monetary policy meeting, the Governor is in a particularly good position to influence the discussion, and thereby the interest rate decision.

3. Show unanimity:

Many members find it worthwhile to show unanimity, and therefore support the Governor’s view, given that it is reasonably close to their own assessment.

4. Avoid being in minority:

The Governor finds it worthwhile not to be in a minority and therefore supports the majority view, given that it is reasonably close to his own assessment.

[Figure 5 about here]

We see from Figure 5 that most of the Norges Bank members gave strong support to the statement that the Governor has more influence over the forecasts and other materials than the other members. They did not, however, agree that the Chairman can influence the interest rate decision by steering the discussion. The Riksbank members did not find any of the statements particularly convincing, although the views were somewhat dispersed. The proposition that members seek unanimity did, however, receive some support at both central banks, with the median respondent giving it the rating “applies to some extent”.<sup>15</sup>

To obtain further evidence of the dominance of the Chairman, we asked the members if they have refrained from entering a reservation even if they found that another decision would have been better. In a truly individualistic committee, one should expect that members would always enter a reservation if they disagreed with the majority. In a truly collegial committee, one should expect that members form a “consensus” that all can stand behind even if some individuals would prefer a different decision.

Our results showed that 7 out of 12 Riksbank members have “never” refrained from entering a reservation if they thought another decision would have been better, while 5 members responded that they “seldom” have refrained from such reservation. 5 out of 12 responses of the Norges Bank members responded that they have “never” refrained from entering a reservation, 6 stated that they have “seldom” refrained from entering a reservation, and 1 responded that he/she “sometimes” has refrained from entering a reservation. Although there is a stronger tendency at Norges Bank to refrain from entering a reservation than at the Riksbank,

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<sup>15</sup> Apel et al. (2010) distinguish between members who were present before vs after publishing the Riksbank’s own interest rate forecasts, suggesting that the introduction of interest rate forecasts has reduced the Chairman’s role.

the difference is not as striking as one perhaps could expect. The fact that many Riksbank members have actually refrained from entering a reservation suggests that a committee which from an institutional perspective appears individualistic also has some collegial elements.

Similarly, the collegial Norwegian committee seems to have individualistic traits in that most Norges Bank members have never or seldom refrained from entering a reservation. This could either reflect that the perceived cost of dissenting is low, or that the MPC is usually able to reach true consensus and not a bargained “consensus decision”. Among the members that had “seldom” or “sometimes” refrained from entering a reservation, the argument that got the strongest support was that the final decision was reasonably close to the decision they would have preferred, and that there was a “bargaining margin”. The members gave also some support to the argument that a reservation was a very strong signal and would hurt the collegial element of the board. One member expressed that “as an external members, you have a small “budget” of a few explicit reservations you can make – before it will be at the expense of the collegial spirit”.

To summarize this section, our results do not give unambiguous support to Blinder’s (2009) view that the Norges Bank Board is an autocratically-collegial committee. Only in one dimension – the Governor’s influence over forecasts and material – does the characterization seem to fit well. The Riksbank Board seems to fit into the definition of an “individualistic” committee, although with some “collegial” elements. It seems reasonable for theoretical models to take account of the Chairman’s influence depending on committee type, but the differences should not be overemphasized.

## 6. The MPC members' preferences (individual loss functions)

The literature not only distinguishes between different kinds of MPCs, but also often assumes heterogeneity in MPC members. One reason for doing so is that some committees have internal and external members. But even if a committee consists of only one group of policymakers, there is no reason to assume that they all share the same view of the world.

It is common to assume that the MPC members have different individual loss functions, see e.g., Riboni and Ruge-Murcia (2008) and Gerlach-Kristen (2009).<sup>16</sup> Can MPC members' preferences be captured by a standard quadratic loss function with the inflation gap and the output gap as arguments? Are there significant differences between the members' preferences?

While the existing literature on heterogeneity in MPC members' preferences use indirect evidence based on voting behavior, we decided to go for a direct approach. The reference for the preference questions was the standard loss function

$$L = (\pi - \pi^*)^2 + \lambda(y - y^*)^2$$

where  $\pi$  is inflation,  $\pi^*$  is the inflation target,  $(y - y^*)$  is the output gap (capacity utilization), and  $\lambda$  is the weight on stability in the real economy relative to inflation stability. The respondents were asked if they would be willing to quantify their  $\lambda$ . Only four Riksbank members and two Norges Bank members claimed that they would be willing to do this. The typical result was a  $\lambda$  of 1.

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<sup>16</sup> MPC members may also differ by their heuristics, i.e., the model they have in mind, as mentioned in Section 4.1, or by the economic data available to them.

Those who responded that they would not consider stating a  $\lambda$  were asked to rate the following three explanations as to why they felt unable to do so:

1. Overly simple:

The idea that one can use a specific number to describe the relative weight of stabilizing inflation to stabilizing resource utilization is overly simple.

2. Depends on the situation:

The relative weight depends on the current situation and therefore varies so much that it is meaningless to state a number.

3. Output gap too uncertain:

The measures of resource utilization in the economy are so uncertain that it is meaningless to state a relative weight.

[Figure 6.1 about here]

As seen from Figure 6.1, all of the explanations received considerable support among the Riksbank members, with the median respondent answering “applies completely”, for all explanations. Similarly, the median answer for explanations 1 and 2 was “applies to some extent” at Norges Bank. We did not ask whether the *quadratic* form of the loss function was appropriate, but one of the Norges Bank members wrote in the questionnaire that “*my preferences are not quadratic*”. Another member wrote that “*I will not give my lambda, because it is not always the case that the loss function represents the relevant monetary policy judgments*”.

Contrary to the Riksbank members, the Norges Bank members did not give much support to explanation 3, represented by a median answer of “applies to some extent”. This might be due to differences in the extent to which the output gap has been used by the staff and communicated to the MPC. The Norges Bank staff has a long tradition of estimating and publishing their best estimate of the output gap, while the Riksbank staff has during the sample period been more agnostic to the output gap as an indicator of capacity. The different takes of the two staffs might have influenced the respective MPC members’ views on the output gap.

We then asked the members who did not consider that they could provide a specific figure for  $\lambda$  whether they would be willing to provide a *rough* estimate of how they value stabilizing inflation in relation to stabilizing resource utilization. They were giving the following alternatives:

1.  $\lambda < 1$ : I would give *greater* importance to stabilizing inflation than resource utilization,
2.  $\lambda > 1$ : I would give *less* importance to stabilizing inflation than resource utilization,
3.  $\lambda \approx 1$ : I would give roughly *equal* weight to stabilizing inflation and resource utilization.

A total of 9 Riksbank members and 8 Norges Bank members were prepared to make either a precise or a rough estimate of the relative importance they would give to stabilizing inflation in relation to stabilizing resource utilization. The results are represented in Figure 6.2. None of the Riksbank members would give greater importance to stabilizing resource utilization than inflation, while two of the Norges Bank members had such policy preferences. One

interpretation is that internal members with a full-time position in a central bank become more concerned about price stability than external members with jobs outside the central bank.<sup>17</sup>

[Figure 6.2 about here]

Perhaps more interesting than the average  $\lambda$  is its dispersion. Preferences seem to be more dispersed at Norges Bank than at the Riksbank. Since members from both central banks have different backgrounds and expertise, this result may reflect that heterogeneity is better preserved if members keep their jobs outside the central bank when joining the MPC than if they become full-time internals.<sup>18</sup>

To our knowledge, the theoretical literature does not say whether preference dispersion is good or bad. On the one hand, from a democratic accountability perspective, it may be desirable that the MPC roughly reflects the preference distribution in the society as a whole. On the other hand, there are arguments for having MPC members with preferences that deviate from those of the society in certain ways, cf. Rogoff's (1985) 'conservative' central banker. Notwithstanding, our results indicate that the choice of external vs internal MPC members has implications for the degree of preference dispersion within the MPC.

In sum, this section suggests considerable heterogeneity in terms of preferences across MPC members both at the Riksbank and Norges Bank. Theoretical papers assuming such

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<sup>17</sup> In a similar vein, Gerlach-Kristen (2009) finds that external MPC members at the Bank of England seem to be recession averse, while internal members appear to have symmetric preferences for the output gap. For the UK, see also Besley, Meads and Surico (2008) and Spencer (2006) and, for the US, Chappell et al (2005).

<sup>18</sup> In a recent paper related to this issue Ball (2012) argues that Fed Chairman Ben Bernanke appears to have changed his view about zero-bound policy quite dramatically when becoming a full-time internal at the Fed.

differences seem to be on the right track.

## **7. Transparency**

Transparency is one final field in the institutional setup of MPCs that our survey can shed light on. There is a large general literature on monetary policy transparency.<sup>19</sup> The theoretical results on the benefits of transparency are not unambiguous, but a rough general conclusion is that neither full secrecy nor full transparency is optimal. We first discuss transparency in terms of public speeches and then in terms of the publication of meeting minutes.

### **7.1 Verbal communication**

Where monetary policy is set by a single Governor, it is clear that his speeches carry most weight of all the verbal central bank communications. But who should speak to the public in an MPC, and how, if at all, should speeches be coordinated? Blinder (2007, p.114) writes: “A central bank that speaks with a cacophony of voices may, in effect, have no voice at all.” Similarly, Issing (2005) fears that economic agents might attach more importance to MPC members’ individual opinions than to the relevant economic arguments.

To learn about how the two groups of MPC members view the relevance of the “cacophony problem”, we asked them if they thought the following statements about individual communication applied:

1. Less clear communication:

If all members of the Executive Board can express their own views publicly as

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<sup>19</sup> For reviews of the literature on transparency, see e.g., Geraats (2002, 2006), Crowe and Meade (2008), and Blinder *et al.* (2008). See also Chahrour (2011).

individuals, the Bank's communication is less clear.

2. Still bound by the governor or other members:

When expressing own views publicly, I feel bound by the Governor's or other members' statements.

3. Better understanding:

When each member in public describes his or her views (e.g. in speeches and the minutes of the meeting), agents understand better the Bank's policy ("the way we think").

[Figure 7.1 about here]

The responses are represented in Figure 7.1. There are considerable differences in between the two groups of policymakers, which may reflect the collegial/individualistic setup of the committees. Basically, the Norges Bank members seem to believe in Blinder's "cacophony problem", while the Riksbank members think that publishing the different views improves agents' understanding. The contrast was particularly stark regarding if such information makes economic agents understand the Bank's policy better, which was a view strongly supported in Sweden. There was also a difference in how the members would feel bound by the Governor's statements, where the median Norges Bank member felt more constrained than his counterpart at the Riksbank.<sup>20</sup>

There is thus a strong tendency of defending own systems, i.e., a *status quo* bias. It also may mean that the exact communication choice does not matter much, which would support the

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<sup>20</sup> We should add, however, that there was considerable disagreement within each committee on this issue, where the responses varied from "does not apply at all" to "applies completely" in each group.

finding in Ehrmann and Fratzscher (2007) that the predictability of policy decisions is equally good for the Federal Reserve and the ECB, even though these banks have chosen an individualistic and a collegial communication strategy, respectively.

## **7.2 Written communication**

Whether or not minutes and the voting result of the monetary policy meeting should be published is a controversial issue. While empirical results suggest that publishing voting records makes it easier to predict future policy decisions (see, e.g., Gerlach-Kristen, 2004, 2009), the concern is again that publishing minutes and voting results may just confuse matters.

Another argument against publishing voting results and minutes, in particular attributed minutes, is that it might have the effect of making the discussion at the policy meeting less honest and frank, and more limited and “tied to script”. Meade and Stasavage (2008) provide some evidence from the Federal Reserve’s Federal Open Market Committee that publishing verbatim transcripts of the FOMC meetings made members more reluctant to offer dissenting opinions. On the other hand, publishing voting records and attributed views could give incentives to prepare better to the meetings, particularly if this increases the probability of reappointment.

The pros and cons of revealing information about the deliberations of individual MPC members, for example by publishing individual voting records, have been explored in a number of theoretical papers (see, for instance, Gersbach and Hahn, 2008b, 2009, and Weber, 2010). A possible consequence of publishing minutes that has been explored in one strand of the literature is that MPC members may want to meet and discuss, and possibly settle things, before the monetary policy meeting, away from the public eye (see for example Swank and Visser,

2008, and Swank *et al.*, 2008). One hypothesis is that MPC members worry that the public might interpret disagreement as a sign of incompetence and therefore try to reach a deal at an informal pre-meeting to be able to show a united front favoring the decision at the formal monetary policy meeting.

To investigate how actual MPC members view some of the possible consequences of publishing this information for the quality of the deliberations, we asked them to rate the following statements:

1. Less spontaneous discussions:

The discussion at the monetary policy meetings is probably less spontaneous or in some other way poorer when the minutes are attributed.

2. Better discussions:

The discussions at the monetary policy meetings are probably better when the minutes are attributed.

3. More effort:

The members probably invest more time and effort in the monetary policy preparation work when the minutes are attributed.

4. More focus on individuals:

There is probably more public focus on the individual members when minutes are attributed.

[Figure 7.2 about here]

Figure 7.2 shows the responses. Although there was substantial disagreement within each committee, there was a tendency that members defended the *status quo*. That is, members from the Riksbank, which has attributed minutes, were sympathetic to the argument that attributed minutes make the discussions better and that members invest more time and effort. Members from Norges Bank, which does not have attributed minutes, did not think that discussions would be better if they were provided. At the same time, they acknowledged that attributed minutes would make members prepare better.

In sum, the survey respondents' views on how much transparency is desirable are mixed. As regards verbal communication, the members of the individualistic MPC at the Riksbank think speaking with many voices helps the public understand monetary policy better, whereas the collegial MPC members in Norway do not hold this view. As regards written communication, there also is no common view on whether publishing minutes would be beneficial. Generally, members preferred the *status quo* in their respective committee.

## **8. Conclusions**

The theoretical literature on MPCs keeps expanding, and the results of this paper hopefully inform future papers. We find that many assumptions made in the previous literature are confirmed by actual MPC members' experience: a committee seems preferable to a single policymaker but should not be very large, MPC members apparently indeed have heterogeneous preferences, and the Chairman seems to have more influence in a collegial committee. However, it appears that certain distinctions made in the theoretical literature do not seem to matter much in practice, and we also find room for future studies.

In terms of issues that might not matter much in practice but that have kept theorists busy, we will mention the role of external MPC members, the choice of communication strategy and the question whether meeting minutes should be published. Our respondents displayed a tendency to support the *status quo* in their respective committee. This suggests to us that there is not one obviously preferable choice in these matters. In terms of futures studies, it is striking that MPC members seem to attach little weight to their peers' views. This contradicts the assumptions in many models on the merit of deliberation. Also, committee members apparently rely heavily on staff input. The literature should devote time to these issues.

## References

- Amirault, D., C. Kwan, and G. Wilkinson (2004), "A Survey of the Price-Setting Behaviour of Canadian Companies", *Bank of Canada Review* (Winter 2004-2005), 29-40.
- Apel, M., R. Friberg, and K. Hallsten (2005), "Microfoundations of Macroeconomic Price Adjustment: Survey Evidence from Swedish Firms." *Journal of Money, Credit and Banking* 37, 313-338.
- Apel, M., C.A. Claussen, and P. Lennartsdotter (2010), "Picking the Brains of MPC Members." Sveriges Riksbank Working Paper Series No. 237.
- Ball, L. M. (2012), "Ben Bernanke and the Zero Bound." NBER Working Paper 17836.
- Berger, H., and V. Nitsch (2008), "Too Many Cooks? Committees in Monetary Policy." Working Paper no. 2274. CESifo GmbH.
- Berk, J. M., and B. K. Bierut (2011), "Communication in a monetary policy committee." *European Journal of Political Economy* 27(4), 791-801.
- Besley, T., N. Meads, and P. Surico (2008), "Insiders versus Outsiders in Monetary Policy-making." *American Economic Review: Papers and Proceedings* 98(2), 218-223.
- Blinder, A.S. (2000), "Central-Bank Credibility: Why Do We Care? How Do We Build It?" *American Economic Review* 90, 1421-1431.
- Blinder, A.S. (2007), "Monetary Policy by Committee: Why and How?" *European Journal of Political Economy* 23, 106-123.
- Blinder, A.S. (2009), "Talking about Monetary Policy: the Virtues (and Vices?) of Central Bank Communication." BIS Working Paper No 274.

- Blinder, A.S., and J. Morgan (2005), "Are Two Heads Better Than One? Monetary Policy by Committee." *Journal of Money, Credit, and Banking* 37(5), 789–812.
- Blinder, A.S., and J. Morgan (2008a), "Do Monetary Policy Committees Need Leaders? A Report on an Experiment." *American Economic Review* 98(2), 224–29.
- Blinder, A.S., and J. Morgan (2008b), "Leadership in Groups: A Monetary Policy Experiment." *International Journal of Central Banking* 4(4), 117–150.
- Blinder, A.S., E.R.D. Canetti, D.E. Lebow, and J.B. Rudd (1998), *Asking About Prices – A New Approach to Understand Price Stickiness*. Russell Sage Foundation, New York.
- Blinder, A.S., M. Ehrmann, M. Fratzscher, J. De Haan, and D.-J. Jansen (2008), "Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence." *Journal of Economic Literature* 46(4), 910–945.
- Boulier, B. and R. Goldfarb (1998), "On the use and nonuse of surveys in economics." *Journal of Economic Methodology* 5(1), 1-21.
- Chahrour, R. (2011) "Public Communication and Information Acquisition" . Manuscript, Columbia University.
- Chappell, H.W. Jr., R.R. McGregor, and T. Vermilyea (2004), "Majority Rule, Consensus Building, and the Power of the Chairman: Arthur Burns and the FOMC." *Journal of Money, Credit and Banking* 36(3), 407-422.
- Chappell, H.W. Jr., R.R. McGregor, and T. Vermilyea (2005), *Committee Decisions on Monetary Policy: Evidence from Historical Records of the Federal Open market Committee*, MIT Press.
- Chappell, H.W. Jr., R.R. McGregor, and T. Vermilyea (2007a), "The Persuasive Power of a Committee Chairman: Arthur Burns and the FOMC." *Public Choice* 132(1-2), 103-112.
- Chappell, H.W. Jr., R.R. McGregor, and T. Vermilyea (2007b), "The Role of the Bias in Crafting Consensus: FOMC Decision Making in the Greenspan Era." *International Journal of Central Banking* 3(2), 39-60.
- Chappell, H.W. Jr., R.R. McGregor, and T. Vermilyea (2009), "An econometric model of monetary policy decision-making with applications to the United Kingdom and Sweden." Mimeo.
- Chappell, H.W. Jr., R.R. McGregor, and T. Vermilyea (2012), "Deliberation and learning in monetary policy committees." *Economic Inquiry*.

- Claussen, C.A., E. Matsen, Ø. Røisland, and R. Torvik (2012), "Overconfidence, Monetary Policy Committees and Chairman Dominance." *Journal of Economic Behavior and Organization* 81(1), 699-711.
- Crowe, C., and E.E. Meade (2008), "Central bank Independence and Transparency: Evolution and Effectiveness." *European Journal of Political Economy* 24, 763-777.
- Dincer, N., and B. Eichengreen (2007), "Central Bank Transparency: Where, Why, and With What Effects?" Working Paper no. 13003, National Bureau of Economic Research.
- Dincer, N., and B. Eichengreen (2009), "Central Bank Transparency: Causes, Consequences and Updates." Working paper no. 14791, National Bureau of Economic Research.
- Eijffinger, S.C.W., and P.M. Geraats (2006), "How Transparent are Central Banks?" *European Journal of Political Economy* 22(1), 1–21.
- Ehrmann, M., and M. Fratzscher (2007), "Communication by Central Bank Committee Members: Different Strategies, Same Effectiveness?", *Journal of Money, Credit and Banking* 39(2-3), 509-541.
- Erhart, S., and J.-L. Vasquez-Paz (2007), "Optimal Monetary Policy Committee Size: Theory and Cross Country Evidence." Working Paper no. 2007/6, The Central Bank of Hungary.
- Fabiani, S., M. Druant, I. Hernando, C. Kwapil, B. Landau, C. Loupias, F. Martins, T. Mathä, R. Sabbatini, H. Stahl, and A. Stokman (2006), "What Firms' Surveys Tell Us about Price-Setting Behavior in the Euro Area", *International Journal of Central Banking* 2, September, 3-47.
- Geraats, P. (2002), "Central Bank Transparency." *The Economic Journal* 112 (November), F532-F565.
- Geraats, P. (2006), "Transparency of Monetary Policy: Theory and Practice." *CESifo Economic Studies* 52(1), 111-152.
- Gerlach-Kristen, P. (2004), "Is the MPC's Voting Record Informative About Future UK Monetary Policy?" *Scandinavian Journal of Economics* 106(2), 299-313.
- Gerlach-Kristen, P. (2006), "Monetary Policy Committees and Interest Rate Setting." *European Economic Review* 50, 487-507.
- Gerlach-Kristen, P. (2008), "The Role of the Chairman in Setting Monetary Policy: Individualistic vs. Autocratically Collegial MPCs." *International Journal of Central Banking* 4(3), 119–143.

- Gerlach-Kristen, P. (2009), "Outsiders at the Bank of England's MPC." *Journal of Money, Credit and Banking* 41(6), 1099–1115.
- Gerling, K., H. P. Grüner, A. Kiel, and E. Schulte (2005), "Information Acquisition and Decision Making in Committees: A Survey." *European Journal of Political Economy* 21, 563-597.
- Gersbach, H., and V. Hahn (2008b), "Should the Individual Voting Records of Central Bankers be Published?" *Social Choice and Welfare* 30(4), 655-683.
- Gersbach, H., and V. Hahn (2009), "Voting Transparency in a Monetary Union." *Journal of Money, Credit and Banking* 41(5), 831-853.
- Hall, S., M. Walsh, and A. Yates (2000), "Are UK Companies' Prices Sticky?," *Oxford Economic Papers* 52, 425-446.
- Issing, O. (2005), "Communication, Transparency, Accountability: Monetary Policy in the Twenty-First Century." Federal Reserve Bank of St. Louis *Review* 87(2, Part 1), 65-83.
- Langbraaten, N., Nordbø, E.W., and F. Wulfsberg (2008), "Price-Setting Behaviour of Norwegian Firms – Results of a Survey." *Economic Bulletin* 2/2008, Norges Bank.
- Lombardelli, C., J. Proudman, and J. Talbot (2005), "Committees Versus Individuals: An Experimental Analysis of Monetary Policy Decision-Making." *International Journal of Central Banking* 1(1), 181–205.
- Meade, E.E., and D. Stasavage (2008), "Publicity of Debate and the Incentive to Dissent: Evidence from the US Federal Reserve." *The Economic Journal* 118, 695-717.
- Qvigstad, J.F., I. Fridriksson and N. Langbraaten (2013), "Monetary policy committees and communication." *Norges Bank Staff Memo* 2/2013.
- Riboni, A., and F.J. Ruge-Murcia (2008), "Preference Heterogeneity in Monetary Policy Committees", *International Journal of Central Banking* 4(1), 213-233.
- Riboni, A., and F.J. Ruge-Murcia (2010), "Monetary Policy by Committee: Consensus, Chairman Dominance, or Simple Majority." *Quarterly Journal of Economics* 125(1), 363-413.
- Romer, C.D. and D.H. Romer (2008), "The FOMC versus the Staff: Where Can Monetary Policymakers Add Value?". *American Economic Review* 98, 230-235.
- Sibert, A. (2006), "Central Banking by Committee." *International Finance* 9(2),145–168.
- Spencer, C. (2006), "Reaction functions of Bank of England MPC members: Insiders versus outsiders." Surrey University working paper 06-06.

- Svensson, L.E.O. (2009), "Transparency Under Inflation Targeting: Experiences and Challenges." *Sveriges Riksbank Economic Review* No. 1 2009, 5-44.
- Swank, O.H., and B. Visser (2008), "Is Transparency to No Avail? Committee Decision-Making, Pre-Meeting, and Credible Deals." EUI Working Papers ECO 2008/18, European University Institute.
- Swank, J., O. H. Swank, and B. Visser (2008), "How Committees of Experts Interact with the Outside World: Some Theory, and Evidence from the FOMC." *Journal of the European Economic Association* 6(2-3), 478-486.
- Van den Steen, E.J. (2011) "Overconfidence by Bayesian Rational Agents" *Management Science* 57 (5), 884-896.
- Weber, A. (2010), "Communication, Decision-Making and the Optimal Degree of Transparency of Monetary Policy Committees." *International Journal of Central Banking* 6(3), 1-49.

**Figures**

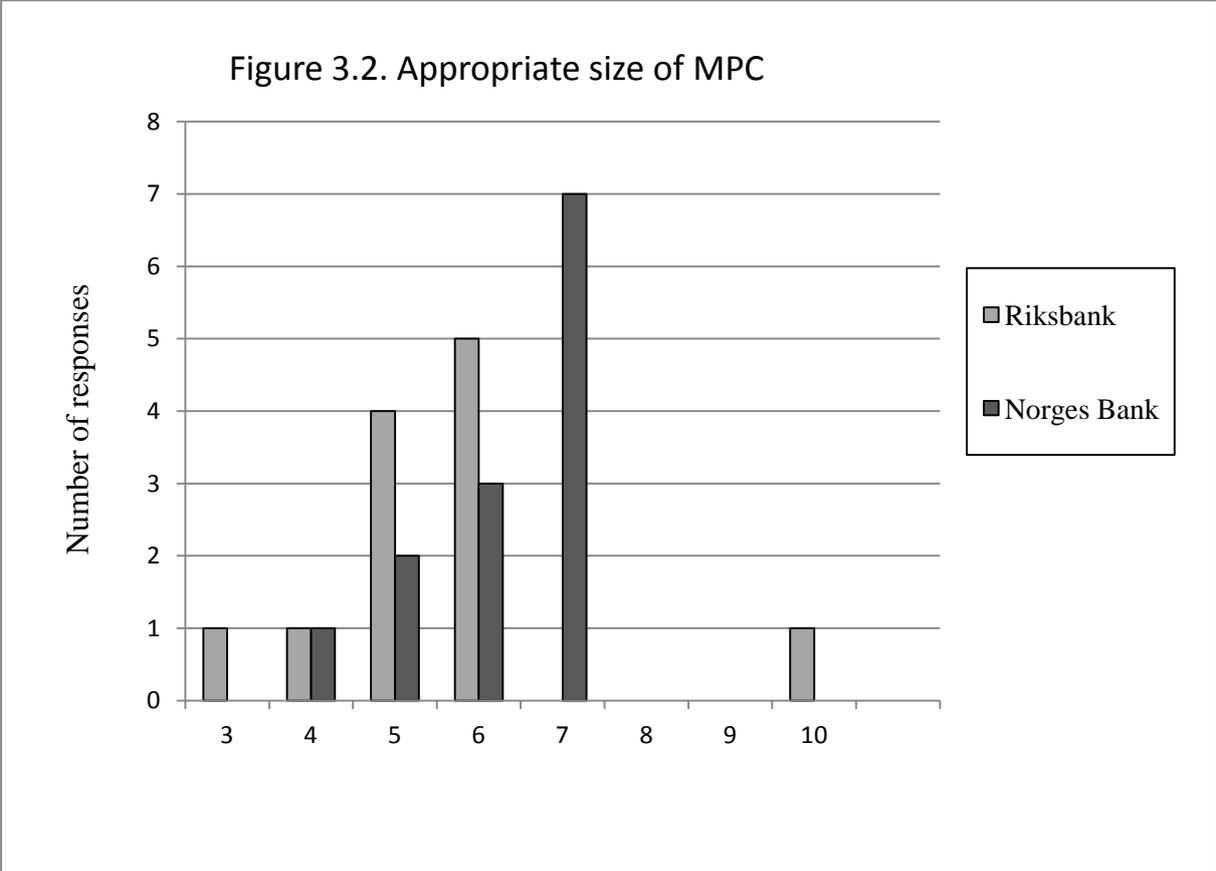
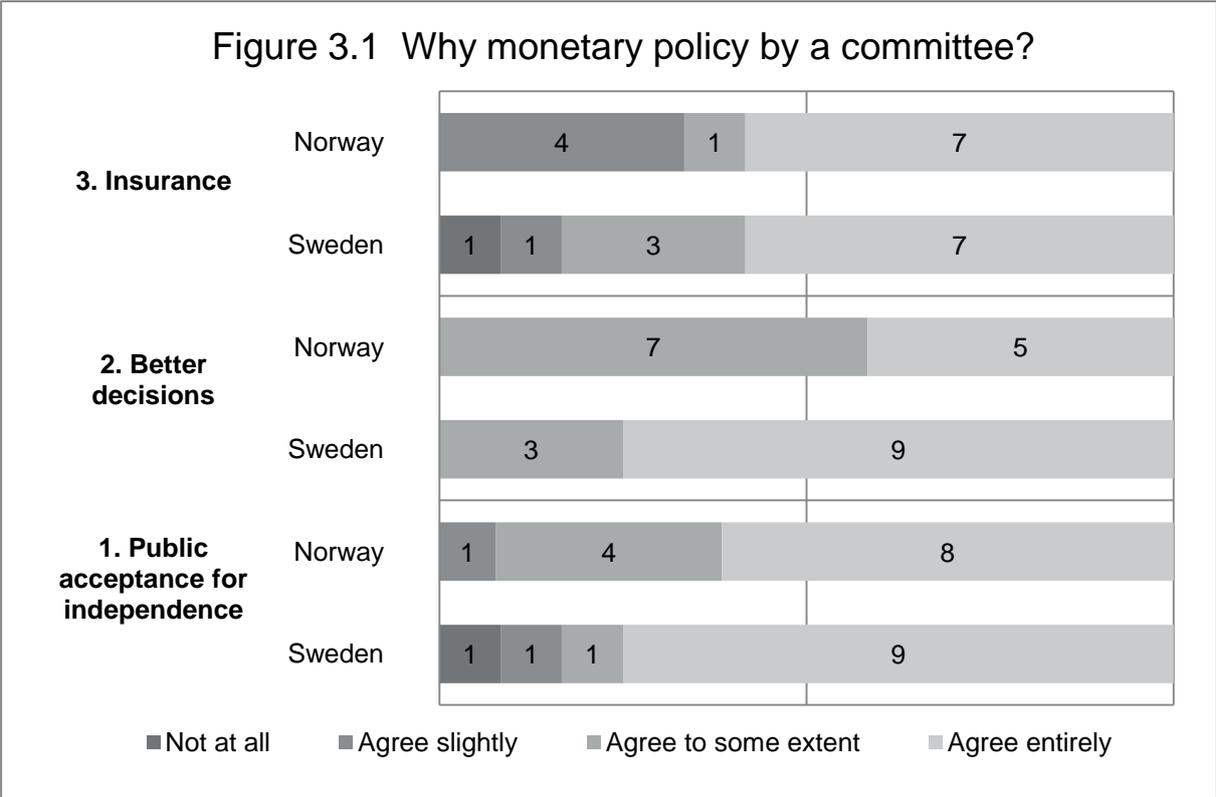
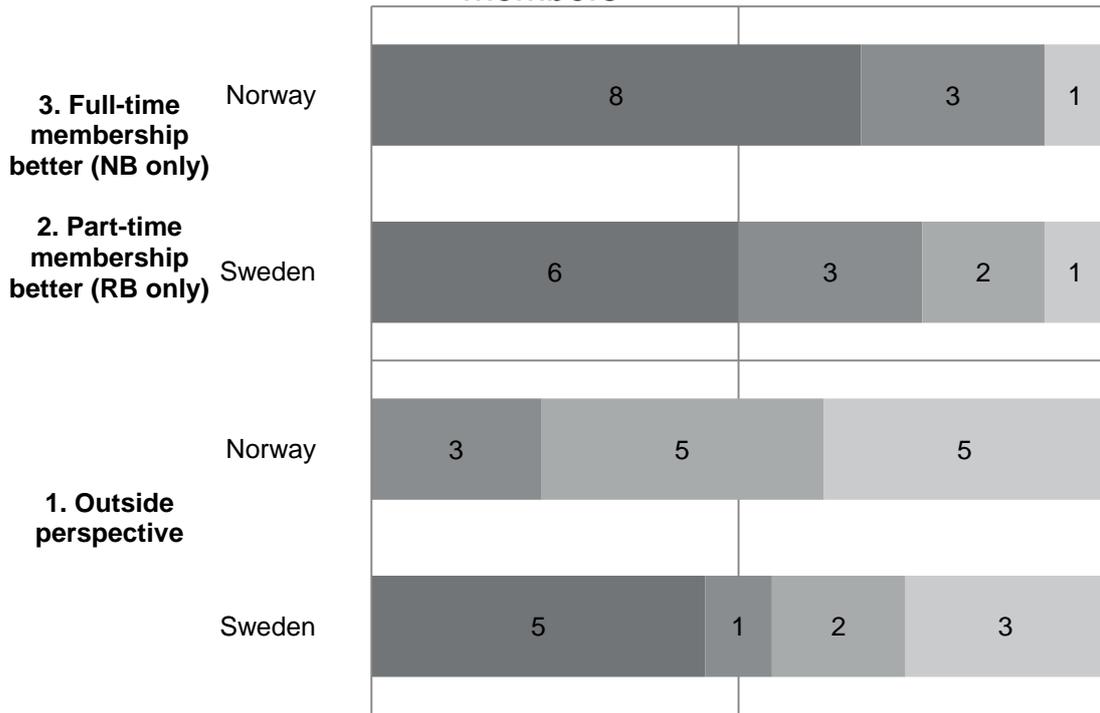
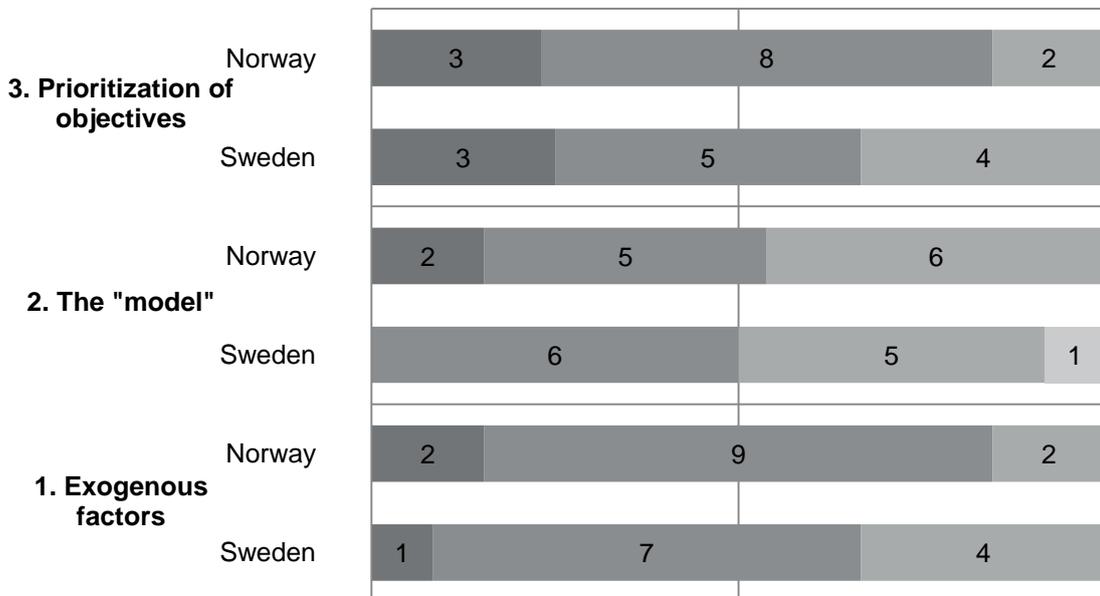


Figure 3.3 Internal/full-time vs external/part-time members



■ Does not apply at all ■ Applies only to a slight extent ■ Applies to some extent ■ Applies completely

Figure 4.1 The importance of peer members as sources of information



■ Unimportant ■ Slightly important ■ Fairly important ■ Very important

Figure 4.2 The importance of staff as source of information

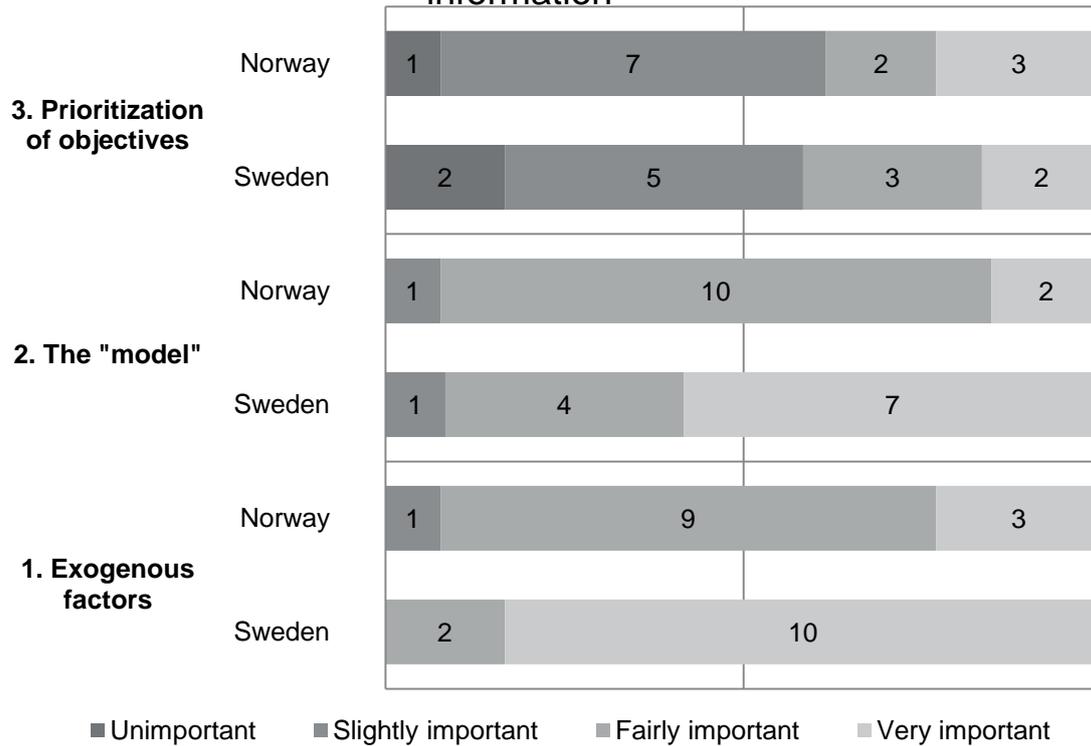


Figure 4.3 The situation before the meeting

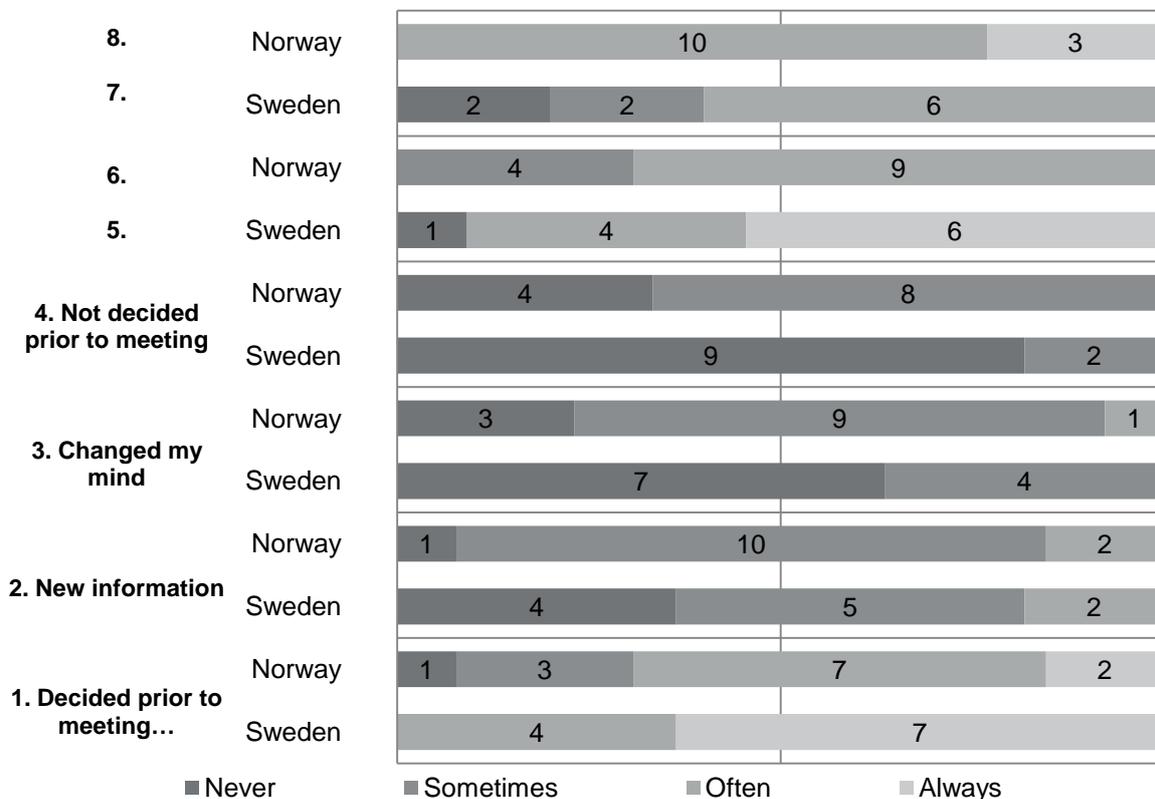


Figure 5. The role of the Chairman

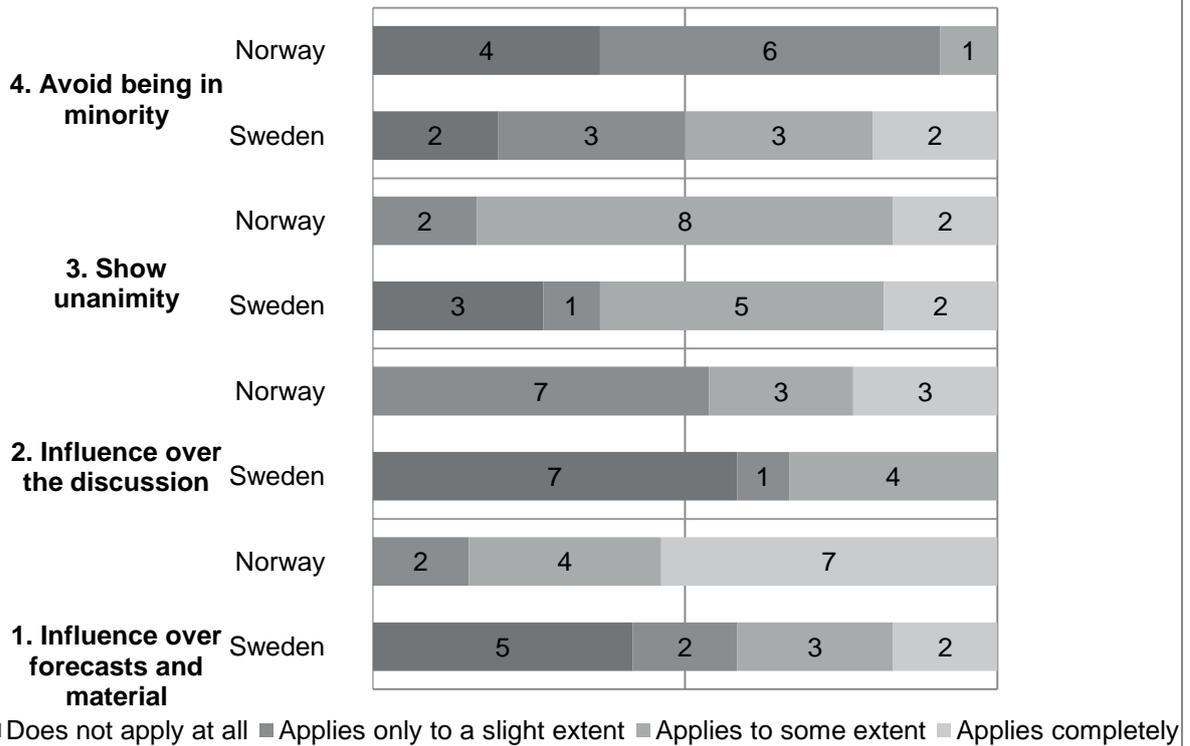


Figure 6.1. The MPS members' preferences (individual loss functions)

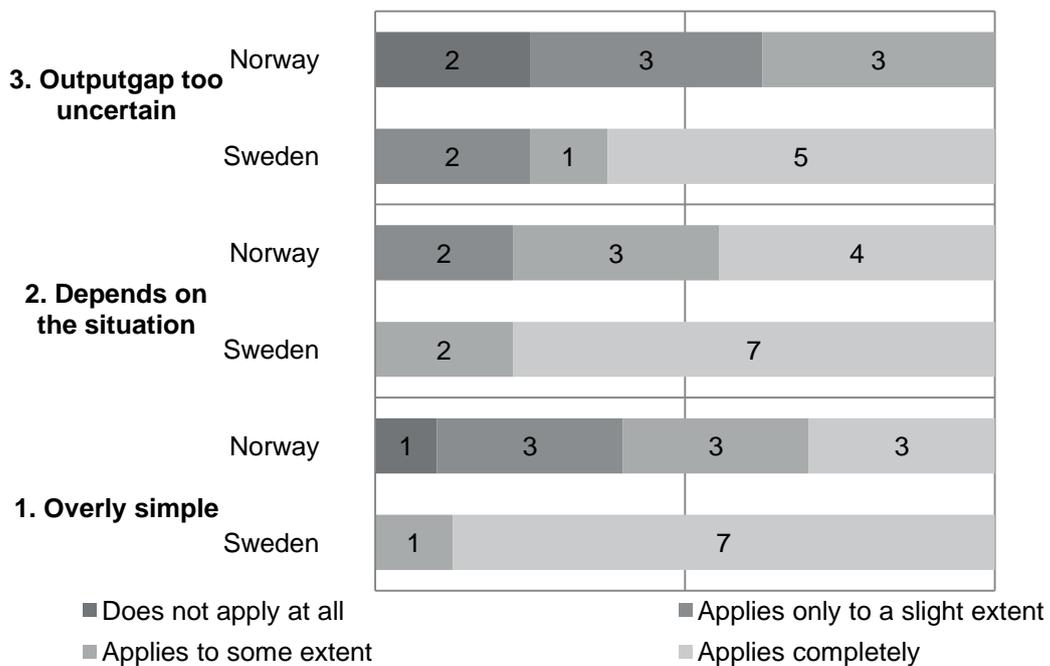


Figure 6.2. The weight on stabilisation of output relative to inflation ( $\lambda$ )

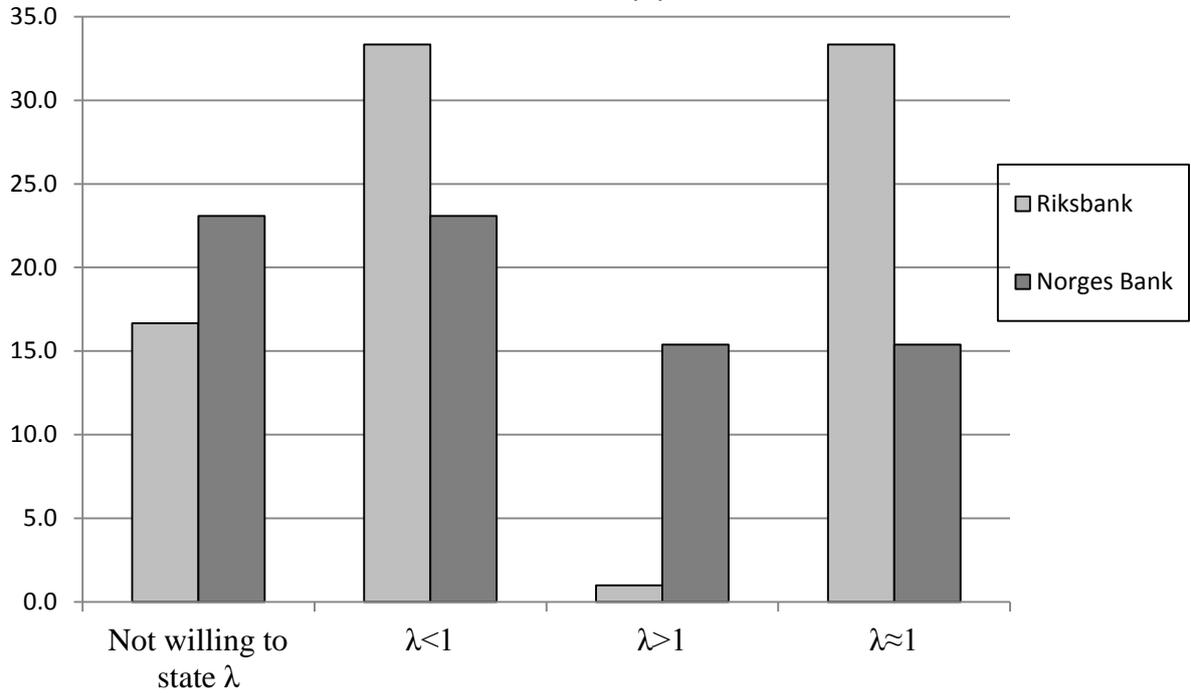


Figure 7.1 One voice vs many voices

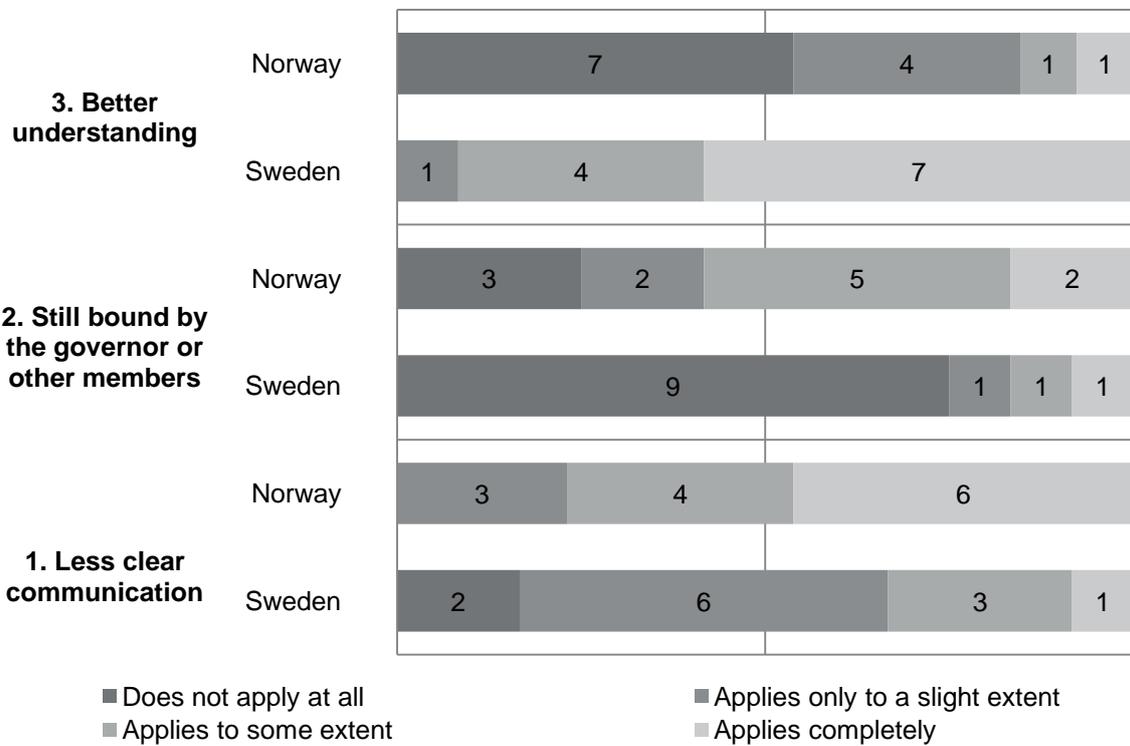


Figure 7.2 Attributed minutes

