Inconsistent voting behavior in the FOMC

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Abstract

This paper examines determinants of inconsistent voting behavior in the Federal Open Market Committee (FOMC). Inconsistent voting behavior is defined as a changing preference on the preferred interest rate voiced in the policy go-around relative to the interest rate preference cast in the formal voting. It is hypothesized that the change in transparency in 1993 as well as individual characteristics of FOMC members may play a significant role in inconsistent voting behavior.

Using FOMC voting data extracted from verbatim transcripts from 1989 until 2008 results can be summarized as follows: The regime shift in transparency has a significant impact on the probability of casting inconsistent votes. After 1993, the probability of casting inconsistent votes decreases significantly, on average by 3.3%. FOMC members with longer tenure on the committee have a lower probability of casting inconsistent votes. Further results suggest that Board members and bank presidents differ significantly, with bank presidents casting inconsistent votes more often than Board members do. This relation holds true for gender as well, with female members casting more inconsistent votes than males. In addition, political aspects and career backgrounds also contribute to explaining inconsistent voting behavior in the FOMC.

Conditional effects reveal that after the change in transparency differences between Board members and bank presidents remain, whereas differences between male and female members have diminished. Further results suggest that FOMC members with a career in the government sector have been strongly affected by the regime shift in transparency.

Keywords: FOMC; transcript data, inconsistent voting; logit estimations

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1. Introduction

The Federal Open Market Committee (FOMC) is the monetary policy committee in the United States, containing seven members of the Board of Governors and five of the twelve voting presidents of regional Federal Reserve Banks. In fact, all twelve regional Federal Reserve Bank presidents participate in FOMC meetings and its policy go-arounds, thereby discussing alternatives of monetary policy actions and voicing their individual preferences. Sometimes FOMC members disagree with the interest rate proposed by the chairman, expressed by dissenting votes in the policy go-around, or dissents in the formal vote (i.e., when FOMC members prefer higher or lower short-term interest rates than proposed by the chairman of the FOMC).[2] In this paper I focus on one specific feature of FOMC voting behavior, namely inconsistent voting behavior – defined as switching preference on the short-term interest rate, as voiced by FOMC members in their meetings. In particular, inconsistent voting behavior occurs if a member shows disagreement on the interest rate proposed by the chairman in the policy go-around, but agrees in the formal vote.

Only a few papers have examined possible sources of inconsistent voting behavior in the FOMC, focusing on the shift in transparency of 1993. This shift fits with the general trend toward increased transparency of developed countries' central banks in recent decades. Through this trend market participants may have a better understanding of central banks' monetary policy goals and preferences, leading theoretically to reduced inflation rates by reducing uncertainty. Some researchers, however, emphasize possible drawbacks of increased transparency, especially in the FOMC after 1993 when FOMC members become aware that

[2] Some studies conclude that disagreement about monetary policy may have significant implications, e.g., for the returns to and volatility of financial markets (Blinder et al. 2008; Ehrmann and Fratzscher 2007a, 2007b; Hayo et al. 2012; Neuenkirch 2012). Dissenting views among monetary policy makers may also affect the predictability of monetary policy decisions (Riboni and Ruge-Murcia 2011; Ehrmann and Fratzscher 2013; Ehrmann et al. 2012).

verbatim transcripts would be released with a 5-year lag.[3] Meade and Stasavage (2008) find theoretical and empirical evidence for a decline in dissenting voting behavior of FOMC members after 1993 in the Greenspan era. In their study, official votes and verbatim transcripts of FOMC meetings between 1989 and 1997 are used to support their analyses. Further papers also find empirical evidence of changing voting behavior after 1993 (see, e.g., Eichler and Lähner 2014a; Eichler and Lähner 2014b). However, these papers solely use dissenting votes cast in the formal voting. Swank et al. (2008) show in a theoretical framework, that once the committee reaches a decision, members tend to speak with one voice to the public. They state that the regime shift in transparency in 1993 led the FOMC to conduct pre-meetings, which, in turn, resulted in more scripted formal meetings. Meade (2005) finds that after committee discussions the proposed interest rate (by Alan Greenspan) was nearly always adopted by the committee, whereby the official dissent rate was quite low, but the disagreement in internal discussions was quite high (7.5% vs. 30%).

Following Meade and Stasavage (2008), inconsistent voting behavior is defined as a change in preference on the preferred interest rate voiced in the policy go-around relative to the interest rate preference cast in the formal voting. That is, a member who showed disagreement on the interest rate proposed by Chairman Greenspan in the policy debate, but agreed in the formal vote, is considered to have cast an inconsistent vote (coded as 1). As well, in their study voicing agreement in the policy go-around but dissenting in the formal vote has also been defined as an inconsistent vote.[4] In contrast to this, consistent voting includes cases of dissenting votes in both the policy go-around and in the formal vote, and

[3] Before this shift in transparency, FOMC members were aware that meetings were tape-recorded but were unaware that these records were kept. Through pressure by U.S. Congress, the FOMC decided to publish lightly edited verbatim transcripts of its discussions with a lag of five years (Swank et al. 2008 p. 481).

[4] In contrast to Meade and Stasavage (2008), I solely use events where FOMC members voiced disagreement in the policy go-around but assented in the official vote (to measure the united front assumption more appropriate). One may also define inconsistent voting behavior as a committee member agreeing in the policy go-around and dissenting in the formal vote. However, in the period examined this case did not occur with respect to the short-term interest rate proposal. Voicing agreement in the policy go-around but dissenting in the formal vote only occurred when Greenspan's proposal on the policy *bias* or *tilt* was considered. These cases were excluded from the analysis.

instance of agreement in both the policy go-around and in the formal vote (coded as 0). One could expect that the occurrence of inconsistent voting behavior would have decreased after the regime shift in transparency due to the formation of a united front to present to the public (that is, that the entire committee would speak with one voice), the existence of pre-meetings and, hence, the increase in scripted formal FOMC meetings.[5] Meade and Stasavage (2008) find that voting behavior was barely affected by the transparency change of 1993. In addition, using records of FOMC transcripts over the period between 1989 and 1997, Swank et al. (2008) show suggestive evidence that inconsistent voting declined after 1993.

In this paper, I expand the analyses of Swank et al. (2008) and Meade and Stasavage (2008) in several ways in order to analyze possible factors – in addition to the regime shift in transparency in 1993 – which may drive inconsistent voting behavior in the FOMC. First, I use data on voiced disagreement in the policy go-around released in verbatim transcripts as well as dissents cast in the formal voting from 1989 to 2008, which includes the chairmanships of Alan Greenspan and Ben Bernanke.

Second, I am able to detect further individual characteristics (e.g., career backgrounds or gender), which may also contribute significantly to our understanding of inconsistent voting behavior in the FOMC. For example, Eichler and Lähner (2014b) found that, when dissenting on the chairman's formal interest rate proposal, FOMC members with career backgrounds in government tend to prefer easier monetary policy, whereas FOMC members with a career in the financial sector tend to prefer tighter monetary policy. As far as reputational concerns are considered, Meade and Stasavage (2008) found that experience gathered in FOMC meetings has no impact on inconsistent voting behavior. Following Meade and Stasavage (2008), reputational aspects are, of course, included in the analysis. Surprisingly, gender issues in the FOMC have thus far barely been examined. However,

[5] See Meyer (2004) who states that pre-meetings conducted by the Board of Governors actually took place, whereas the nature of these meetings has changed over time (Blinder 2005). Meade and Stasavage (2008 p. 4) state that after 1993 FOMC members tend "(…) to present the sort of pre-pared statements that may result in less real deliberation."

Chappell and McGregor (2000) find that female FOMC members tend to prefer easier monetary policy than male members do. Since this study focuses on inconsistent voting behavior, the question as to whether there are voting patterns related to differences in consensus building preferences amongst male and female FOMC members remains to be examined.

Third, as FOMC members may have different political affiliations (e.g., through the appointment channel), or may have been the object of political pressure from the current administration, political considerations must be included in the analysis. Political considerations in monetary policy committees are examined for instance in Harris and Spencer (2009), Harris et al. (2011), Havrilesky and Gildea (1992, 1995), Chappell et al. (1993, 1995), Tootell (1996), and Meade and Sheets (2005).[6] Thus, it is rational to assume that political pressure exerted by the current administration could have an impact on consensus building tendencies in committees like the FOMC, especially given that the majority of the committee (7 out of 12) is elected by the U.S. President and confirmed by the Senate.

In fact, I am not aware of any paper applying many different aspects (e.g., the impact of career backgrounds, political considerations, and gender) of FOMC voting behavior to inconsistent voting patterns in order to obtain a deeper insight in this relatively young but growing field of research. These advancements lead us to the following research questions: i) Does higher transparency have an impact on the probability of casting inconsistent votes? ii) Do Board members and bank presidents[7] (and analogously, male and female FOMC members) differ in their likelihood of casting inconsistent votes? iii) Do individual career

[6] For a more detailed discussion of this strand of the literature see Eichler and Lähner (2014b).

[7] There are several papers exploring different voting behavior of bank presidents and Board members. Sources of these different views may be the regional affiliation or availability of regional information (see, e.g., Belden 1989; Gildea 1990; Tootell 2000; Meade and Sheets 2005; Meade 2010; Chappell et al. 2005, 2008, Eichler and Lähner, 2014a), institutional factors such as the power of the chairman as well as individual preferences of FOMC members (Allen et al. 1997; Chappell et al. 1997, Chappell and McGregor 2000; Chappell et al. 2007a, 2007b, 2011), or monetary policy committee members' individual forecasts on inflation, real GDP growth or the unemployment rate (see, e.g., Riboni and Ruge-Murcia 2008; Harris and Spencer 2009; Harris et al. 2011).

backgrounds, individual experience gathered in FOMC meetings, or political considerations have an impact on inconsistent voting behavior? To answer these questions, I use FOMC's transcript voting data as revealed in the policy go-around and in the formal vote between 1989 and 2008. Results show clear empirical evidence of a decline in the probability of inconsistent voting by FOMC members after 1993's shift in transparency. In particular, the probability of casting an inconsistent vote in the FOMC decreased on average by 3.3%. Further results indicate that, in general, bank presidents have a higher probability of casting inconsistent votes, whereas Board members tend to vote in line with their interest preference voiced in the policy go-around. Taking the regime shift of transparency into account, I find that bank presidents' probability of casting an inconsistent vote is 7.8 percentage points higher than the probability for Board members in the pre-1993 period, and 4.5 percentage points higher in the post-1993 period. Female FOMC members do also have a significantly higher probability of casting inconsistent votes than male ones. Interestingly, the probability for female FOMC members dropped sharply (by 31.6 percentage points), converging with their male counterparts after 1993. Further results indicate that members with longer experience in the FOMC have a lower probability of voting inconsistently. What is more, members with a career background in the industrial sector (and NGOs) have a significantly lower probability of casting inconsistent votes. Other career backgrounds seem to have no direct impact on inconsistent voting behavior, taking the entire period of this study into account. However, by applying interaction models the study shows that FOMC members with a career in the government sector (relative to the mean of the committee) have a significantly lower probability of casting inconsistent votes in the FOMC after 1993, and this effect is more pronounced the longer a FOMC member has served in the government sector. Political concerns may also be important since FOMC members voted more consistently during the presidency of George W. Bush than during the presidencies of George H.W. Bush and Bill Clinton.

The remainder of this paper is organized as follows. Section 2 provides some descriptive evidence about inconsistent voting in the FOMC. Section 3 contains data description and hypotheses in the first part, whereas the second part of Section 3 is dedicated to presenting the regression analysis containing baseline regressions, robustness checks, and interaction models. Finally, Section 4 gives a short summary.

2. Descriptive Evidence

As already outlined, this paper uses transcripts of FOMC meetings – released after a lag of 5 years – containing verbatim records of FOMC members. These transcripts have been used in several papers investigating the determinants of disagreement within the FOMC (see, e.g., Chappell et al. 2007b; Chappell et. al 2008; Edison and Marquez 1998; Meade 2005; Thornton 2005). In addition, transcripts provide some advantages over meeting minutes (Meade, 2005):

- Meeting minutes contain only information about the formal vote (dissenting or assenting). Thus, minutes signal strong individual deviations from the proposed interest rate. Transcripts provide information about the entire continuum of disagreement.
- Transcripts contain verbatim information about voting and non-voting bank presidents and Board members, whereas the minutes only reveal information about voting members.
- Transcripts provide information about "true" policy preferences (e.g., output stabilization vs. inflation stabilization) as voiced in the policy go-arounds. Thus, opinions rather than votes can be collected from these documents. Additionally, explicit values of preferred interest rates are (with some exceptions) mentioned by meeting participants.

FOMC meetings usually have a clear structure, although there were some minor differences under the chairmanships of Greenspan and Bernanke. In general, FOMC meetings contain

two rounds of discussions published in FOMC transcripts. In the first round, FOMC members expressed their views on economic conditions (with bank presidents providing further information about their districts), whereas the second round was dedicated to discussing policy options (after the staff of the Board presents his Blue Book). In the second round, Alan Greenspan typically spoke first (other participants followed including Governors, as well as voting and non-voting bank presidents), while Bernanke usually provided a summary of discussion at the end of the policy go-around. After the second round of discussion the official vote was taken, in which the chairman votes first (by proposing the monetary policy action). Since FOMC members voiced their individual preferences on the policy issue in the policy go-around (the second round of discussion) and were voting shortly afterwards (the formal vote), it is possible to construct a binominal voting indicator measuring (in)consistent voting behavior. An inconsistent vote is recorded if: a) FOMC member voiced disagreement (e.g., preferring an alternative policy option with respect to the chairman's position) in the second round of discussion, and if b) the *same* member cast an assent in the official vote. When both conditions are fulfilled by the *same* member, the member has voted inconsistently (coded as 1; 0 otherwise). Table 1 shows all inconsistent votes contained in the dataset. In the period between 1989 and 2008, 94 inconsistent votes out of 1796 total votes were recorded (5.2% of all votes cast). Bank presidents change their views on the monetary policy stance more frequently than Board members do (59 vs. 35 inconsistent votes, indicating a share of 7.3% of all votes cast by bank presidents and 3.6% of all votes cast by Board members).

From 1989 until October 1993 (Meade and Sheets, 2005 date the November meeting of 1993 as the very first meeting of the regime shift) there were 37 meetings with 30 inconsistent votes being recorded (a share of 0.81 inconsistent votes per meeting, or 7.1% of total votes), and from November, 1993 to the end of 2008 they were 128 meetings with 64 recorded inconsistent votes (a share of 0.5 inconsistent votes per meeting, or 4.5% of total votes). Taking Board members and bank presidents into account, the descriptive evidence

reveals that until the regime shift a Board member cast an inconsistent vote, in average, 0.35 times per meeting (or 5.4% of total votes cast by Board members), whereas a bank president cast an inconsistent vote, on average, 0.46 times per meeting (or 9.4% of total votes cast by bank presidents). After the regime shift these numbers drop to 0.17 times per meeting (or 3.0% of total votes) for Board members and to 0.33 times per meeting (or 6.6% of total votes) for bank presidents. Female FOMC members changed their views, in total, 21 times (or 8.9% of total votes cast by female members), while male FOMC members changed their views 73 times (or 4.7% of total votes cast by male members).

<Insert Table 1 around here>

To sum up, the descriptive evidence reveals that the regime shift in transparency in 1993 may have had an impact on inconsistent voting behavior, leading to a lower probability of inconsistent voting in the FOMC. What is more, Board members and bank presidents seem to have different voting patterns, with bank presidents casting inconsistent votes more often, regardless of the time period considered. However, such descriptive evidence is typically not sufficient to prove the hypotheses since there are several potential factors, such as career background characteristics or political affiliations, that may also affect inconsistent voting behavior. Hence, a regression approach is presented below using pooled and random effects logit models to provide empirical evidence. To examine potential conditional effects of the regime shift, interaction terms are included in the regression analysis as well.

3. Regression analysis

3.1 Hypotheses

In addition to the variables of interest, i.e. before and after the regime shift (*Tape*), whether one is a Board member or bank president (*Board member*), individual career backgrounds (*Academia*, *Government*, *Industry*, *Finance*, *NGO*, *Board staff*, *Fed bank staff*), political

affiliations (*Dem governor*, *Rep Governor*, *Dem bank president*, *Rep bank president*, *President's party*), gender (*Gender*), and gathered committee experience (*Experience*), the dataset contains, in line with the previous literature on FOMC voting behavior, several additional control variables listed in Table A 1 in the Appendix. To provide robustness to the presented results, institutional characteristics (represented by the dummies *Meeting* and *Greenspan*) of the FOMC; national macroeconomic conditions (namely the *National industrial production gap*, the *National inflation*, the *National output gap*, the *National unemployment*, the *National house price gap*, the *Federal funds rate*, the *National exchange rate index*, and the *National commodity price index*); and regional macroeconomic conditions (namely *Regional house price gap*, *Regional unemployment*, *Failed deposits of regional banks*, and *Regional coincident index*) are included in the analysis. Descriptive statistics are provided in Table A 2. These institutional characteristics, national macroeconomic conditions, and regional conditions may have a systematic influence on inconsistent voting behavior although the expected signs were not clear *a priori*.

Nevertheless, some hypotheses can be drawn from the literature and from the descriptive evidence provided in Section 2. It is hypothesized that after the shift in transparency in 1993 – represented by the dummy *Tape* – the probability of casting inconsistent votes decreases. Hence, a negative coefficient is predicted. After FOMC members became aware that verbatim transcripts would not only be kept but also be published, FOMC members may have changed their voting behavior in FOMC meetings, possibly resulting in more consistent voting. Meade and Stasavage (2008) provide empirical evidence that the probability of casting dissenting votes in the policy go-around and in the formal vote declined significantly after 1993. However, in the case of inconsistent votes the authors found only weak evidence that inconsistent voting behavior was affected by the transparency shift. What is more, because of the fact that during the time period in question the Board of Governors conducted so called pre-meetings, which may have resulted in more

scripted formal FOMC meetings, it is assumed that Board members have a lower probability of casting inconsistent votes than bank presidents do since bank presidents do not attend those pre-meetings. Since the dummy variable *Board member* is coded as Governor = 1, bank president = 0, a negative coefficient is predicted. Concerning gender, from theoretical point of view it is not clear *a priori* how male versus female FOMC members may behave in terms of inconsistent voting behavior.[8] With respect to reputational aspects, it is assumed that the more years a FOMC member participates in FOMC meetings, the lower the probability of casting inconsistent votes. Intuitively, at the beginning of the career in the FOMC a committee member may have a higher probability of changing his/her view in the formal vote towards the interest rate proposed by the chairman (i.e. to foster consensus), if he/she expressed a dissenting view in the policy go-around. Therefore, a negative coefficient is predicted. Finally, since this is the first paper that analyzes the impact of FOMC members' individual characteristics and political affiliations on inconsistent voting behavior it is difficult to formulate clear hypotheses *a priori*.

Relating to the descriptive evidence given above some further exercises can be conducted in terms of conditional effects. It is supposed that the shift in transparency may not only have had a direct effect on the probability of casting inconsistent votes but may shape inconsistent voting behavior in the FOMC as well, tested in interaction models. Therefore, the *Tape* dummy is interacted with the independent variables in question: *Board member*, *Gender*, *President's party*, *Experience*, and career backgrounds (*Academia*, *Government*, *Industry*, *Finance*, *NGO*, *Board staff*, *Fed bank staff*). Some results of interest are provided in Section 3.2.3.

3.2 Empirical Methodology

3.2.1 Results of the baseline regressions

[8] However, descriptive evidence reveals a comparatively high ratio of inconsistent votes for female FOMC members. Following this, a positive coefficient is predicted since the dummy *Gender* is defined as female member = 1, male member = 0.

In order to test the determinants of inconsistent voting behavior I use a binominal voting indicator as the dependent variable. For each FOMC meeting, the transcripts published by the Board of Governors provide information for each member as to whether the member agreed with the interest rate suggestion of the chairman, dissented in favor of tightening with a higher preferred interest rate, or dissented in favor of easing with a lower preferred interest rate. Since transcripts contain both verbatim information of the second round of discussions (so called policy go-around) and information about the formal vote, inconsistent voting behavior is detectable. Following Meade and Stasavage (2008) a member voted inconsistently if a member showed disagreement on the interest rate proposed by the chairman in the policy go-around, but voted in agreement in the formal vote (coded as 1, 0 otherwise). In order to account for the binominal nature of the dependent variable I use a logit model to test the hypotheses.[9] In order to account for potential unobserved heterogeneity among Federal Reserve districts I use a random effects estimator for the logit models as robustness checks (see Table 4).

The empirical strategy was as follows: models I-V of Table 2 show the results of a pooled estimator for the logit models. Different variable constellations are estimated in order to mitigate the omitted variable bias. Model I contains a simple equation of institutional factors, whereas models II-V incorporates a bundle of controls. In a nutshell, model II adds political affiliation dummies, model III adds national and regional macroeconomic conditions, model IV takes professional experience measured as individual career background characteristics (instead of committee experience) into account. Finally, model V incorporates institutional characteristics of the FOMC, political affiliations and individual career background characteristics of FOMC members. In order to assess the economic significance of the independent variables on inconsistent voting behavior of FOMC members, average

[9] One might think that probit models could also be appropriate. Therefore, probit models (not reported, but available upon request) of the baseline regressions were conducted showing similar results.

marginal effects are presented giving the discrete change in the probability of casting an inconsistent vote for a one unit change in the explanatory variable, *ceteris paribus* (see Table 3 and Table 5).

Coming to the results of the baseline regressions, Table 2 reveals that the regression results confirm the hypotheses. The *Tape* variable – tracking the regime shift in transparency – is negative and highly significant in all specifications. That is, once FOMC members became aware that meetings were not only recorded but would be published as well, the probability of casting inconsistent votes decreased significantly. In other words, FOMC members changed their voting behavior towards consistent voting. Thus, the results confirm the hypothesis that after 1993 the FOMC was forced to develop a more united front to present to the public by speaking with one voice. This led not only to a lower probability of casting dissenting votes in the formal vote (which is not examined in this paper but for which evidence was found in other studies) but also to a lower probability of casting inconsistent votes (which is the focus of the present paper). In terms of economic significance and relative importance expressed by marginal effects, I find a decrease in the probability of casting inconsistent votes in the FOMC on average by 2.4% up to 3.8% after 1993. As hypothesized, the *Board member* dummy is negative and highly significant in all regressions, meaning that Board members' probability of casting inconsistent votes is significantly lower than bank presidents' probability, with the marginal effect ranging from 4.3% to 5.1%. Moreover, the more experience a FOMC member has, the lower the probability of casting inconsistent votes. In other words, relatively new members tend to change their views towards consensus more often than "old hands" do. However, the economic significance remains relatively small. Gathering one more year of experience as a FOMC member leads to a lower probability of casting inconsistent votes by 0.3%. FOMC members gathered working experience in industry and NGOs before becoming a bank president or Board member have a significantly lower probability of casting inconsistent votes. One more year of working in industry or with NGOs

before becoming a Board member or bank president (relative to mean of the committee) leads to a 0.7% and 0.5% lower probability of casting inconsistent votes, respectively. Interestingly, the dummy *Gender* is positive and highly significant, i.e. female FOMC members change their views on the appropriate monetary policy stance towards consensus more often than male ones do. Finally, taking policy issues into account, the results show that the *President's party* dummy is positive and significant, indicating a higher probability of casting inconsistent votes during the Clinton administration, and a lower probability of casting inconsistent votes during the Bush administrations. Further, bank presidents elected during Republican presidencies show a significantly higher probability of casting inconsistent votes (in comparison to Democratic Board members).

Turning to the controls, with the exception of the national inflation rate, for which the empirical significance is small, the results show no clear impact of either national or regional macroeconomic conditions. In addition, Wald chi2 values of models I-V of Table 2 indicate the variable constellations are appropriate.

<Insert Table 2 and Table 3 around here>

3.2.2 Robustness checks of the baseline regressions

In this subsection several robustness checks are presented to underscore the results of Section 3.2.1. First, a random effects estimator instead of a pooled estimator is used in the regressions. Table 4 presents the results of random effects logit estimations using the same specifications as in Table 2. The results found in Table 4 support the results of the baseline regressions. The coefficient of *Tape* remains negative and significant in all regressions, indicating that the 1993 change in transparency significantly decreased the probability of inconsistent voting behavior in the FOMC, although the empirical and economic significance is slightly smaller when applying a random effects estimator. The results for *Board member*, *Experience*,

Gender, *President's party*, and *Rep bank president* are confirmed as well. In other words, the coefficient estimations remain robust regardless of whether pooled or random effects estimation techniques are used, emphasizing the robustness of the baseline results.

<Insert Table 4 and Table 5 around here>

Second, a variety of national and regional macroeconomic control variables were added to model III of Table 2. These determinants were used in many other papers dealing with FOMC voting behavior and may also have had a significant impact on inconsistent voting behavior (see Table 6 for coefficient estimates, and Table 7 for marginal effects). In more detail, in model I the *National output gap* was added; in model II the *National unemployment*; in model III the *Federal funds rate*; in model IV *Failed deposits of regional banks* and the *Regional coincidence index*; and finally in model V the *National house price gap*, the *National exchange rate index*, and the *National commodity price index*. As the results of Table 6 and Table 7 indicate, coefficient estimations as well as marginal effects of the variables in question remain significant and show the predicted signs.

<Insert Table 6 and Table 7 around here>

3.2.3 Results of the interaction models

Since the baseline regressions indicate that 1993's change in transparency directly affected inconsistent voting behavior in the FOMC, by significantly reducing the probability that a FOMC member voted inconsistently, one may raise the question as to whether this circumstance also had a conditional effect for different groups on the committee. For example, in the 1989-2008 period, bank presidents and Board members showed differences in inconsistent voting behavior in the sense that Board members had a significantly lower probability of casting inconsistent votes than bank presidents did. Likewise, FOMC members

with less committee experience had a significantly higher likelihood of voting inconsistently, in comparison to those with more experience. Therefore, in the subsequent analysis it is asked if conditional effects shape inconsistent voting amongst different groups of FOMC members. For this, the *Tape* variable is interacted with member-specific characteristics (being a Board member or bank president, gender, professional experience, professional background before becoming a FOMC member, and political affiliation). Coefficient estimations of interaction models are provided in Table A 3 - Table A 5 in the Appendix. Based on these estimations, marginal effects are calculated and presented below, whereas in Table 8 the *Tape* dummy is interacted with the *Board member* dummy, in

Table 9 the *Tape* dummy is interacted with the *Gender* dummy, and finally in Table 10 the *Tape* dummy is interacted with the *President's party* dummy. The interaction effects of columns 2 and 3 in Tables 8-10 represent the expected probability (marginal effect) of inconsistent voting between interacted dummy variables, whereas columns 4 and 5 represent differences in these marginal effects. For instance, being a bank president (Board member) between 1989 and 1993 has a 13.5% (5.7%) probability of inconsistent voting. After the regime shift in transparency, the probability of inconsistent voting drops significantly to 7.1% for bank presidents and to 2.5% for Board members. As already outlined, bank presidents and Board members differ significantly with respect to their inconsistent voting behavior. For bank presidents the probability of casting an inconsistent vote before (after) introducing the regime shift is 7.8 percentage points (4.5 percentage points) higher than for Board members.

<Insert Table 8 and Table 9 around here>

Gender has, in fact, not only a direct effect but also a conditional effect when considering inconsistent voting behavior within the FOMC. Interestingly, the probability that a female

member cast an inconsistent vote drops by 31.6 percentage points after 1993, whereas the probability for male members of casting an inconsistent vote remains relatively constant (dropping just by 2.2 percentage points). Apparently, voting behavior of male and female members converged greatly as a result of the decision to publish verbatim transcripts.

<Insert Table 10 around here>

In order to test the conditional effect of the direct political influence channel, Table 10 presents the results of interacting *Tape* and the *President's party* dummy. During the presidency of George W. Bush the probability of casting an inconsistent vote in the FOMC was significantly lower than during the presidencies of George H. W. Bush (7.7 percentage points lower) and Bill Clinton (4.6 percentage points lower). What is more, FOMC members changed their views the most under the presidency of George H. W. Bush from 1989-1993 (10.1%) and the least under the presidency of George W. Bush from 2001-2008 (2.4%). Under the presidency of Bill Clinton FOMC members changed their views on average by 7%.

Since career aspects may play a role in inconsistent voting behavior in the FOMC, Figures 1-8 show the marginal effects of interacting *Tape* with *Experience* gathered in FOMC meetings (Figure 1) and the individual career backgrounds before becoming bank president or Governor (Figures 2-8). The x-axis of each figure shows the number of years of working experience relative to the committee's mean value for the respective meeting. The y-axis of each figure shows the marginal effect of changing the *Tape* dummy value from 0 to 1 on the probability of casting an inconsistent vote. For the interaction model using meeting *Experience* as the conditioning variable, Figure 1 reveals that the difference in the marginal effect between periods of publishing (*Tape* = 1) and not publishing (*Tape* = 0) verbatim transcripts is negative and upward sloping. Significant differences have been found for FOMC members with short experience in the committee. That is, after the change in transparency the

probability of casting an inconsistent vote is significantly smaller, especially for FOMC members with less experience as an active voting member. In other words, the more experienced a member, the smaller the difference between the pre-1993 and post-1993 periods (that is, significant differences in inconsistent voting behavior between members diminish with longer committee experience). Concerning career aspects, only Figure 3 shows clear interdependence between career background and the transparency shift in 1993 on the probability of voting inconsistently in the FOMC. The marginal effect (which tracks the impact of the regime shift) is negative and downward sloping, indicating a lower probability of casting inconsistent votes in the FOMC after 1993. This effect is more pronounced the longer a FOMC member has served in the government sector (relative to the mean of the committee) before becoming bank president or Board member. For instance, take the example of a committee member who has worked 10 years more in the government sector relative to the average of the committee before becoming a bank president or Board member. After the regime shift in 1993 this member's probability of casting an inconsistent vote is 0.5 percentage points lower than before the shift. Accordingly, FOMC members with a career in the government sector have been strongly affected by the regime shift in transparency.

<Insert Figure 1 - Figure 8 around here>

4. Conclusions

Using FOMC voting data extracted from verbatim transcripts from 1989 until 2008, I test several potential determinants influencing inconsistent voting behavior. Inconsistent voting behavior is defined as switching from dissenting in the policy go-around to assenting in the formal vote. It is hypothesized that the change in transparency in 1993 as well as individual characteristics of FOMC members may play a significant role in inconsistent voting behavior. Applying logit models, the results can be summarized as follows: The regime shift in

transparency has a significant impact on the probability of casting inconsistent votes. After 1993, the probability of casting inconsistent votes decreased significantly, on average by 3.3%. FOMC members with longer experience on the committee have a lower probability of casting inconsistent votes. Further results suggest that Board members and bank presidents (likewise, male and female members) differ significantly, with bank presidents (female members) casting inconsistent votes more often than Board members (male members) do. In addition, political aspects and individual career backgrounds also contribute to explaining inconsistent voting behavior.

Conditional effects reveal that after the change in transparency differences between Board members and bank presidents remain, whereas differences between male and female members diminish. Further results suggest that FOMC members with a career in the government sector have been strongly affected by the regime shift in transparency. Finally, during the presidency of George W. Bush the probability of casting inconsistent votes in the FOMC was significantly lower than during the presidencies of George H. W. Bush and Bill Clinton.

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Table 1: Stylized facts of inconsistent voting behavior from 1989 to 2008

	Board		Bank		Sum
	Male	Female	Male	Female	
1989	**1**	**1**	**6**		**8**
1990		**3**	**1**		**4**
1991			**4**		**4**
1992	**3**	**4**	**6**		**13**
October 1993		**1**			**1**
November 1993	3		1		4
1994	4	2	5		11
1995	2	2	5	2	11
1997	1		5		6
1998	1		2	3	6
2000	1		5		6
2001	2		5	1	8
2003	1	1	2		4
2007	1		2		3
2008		1	4		5
Sum	**20**	**15**	**53**	**6**	**94**

Note: Years with no inconsistent votes were dropped from the table.

Table 2: Coefficients of the baseline regressions using pooled logit estimator

Variable	Model				
	I	II	III	IV	V
Tape	-0.495 **	-0.633 **	-0.799 ***	-0.805 ***	-0.720 ***
	(0.25)	(0.26)	(0.24)	(0.24)	(0.27)
Meeting	-0.456	-0.571	-0.124	-0.070	-0.145
	(0.56)	(0.56)	(0.67)	(0.67)	(0.67)
Greenspan	0.639	0.484	0.335	0.021	0.160
	(0.40)	(0.43)	(0.57)	(0.60)	(0.61)
Board member	-1.023 ***		-1.056 ***	-0.906 ***	
	(0.22)		(0.22)	(0.33)	
Experience	-0.060 *	-0.060 **	-0.059 *		
	(0.03)	(0.03)	(0.03)		
Gender	0.870 ***	0.946 ***	0.879 ***	0.839 ***	0.962 ***
	(0.28)	(0.29)	(0.28)	(0.32)	(0.32)
President‘s party		0.465 **	0.506 **	0.501 **	0.452 **
		(0.23)	(0.21)	(0.22)	(0.23)
Dem bank president		0.337			0.431
		(0.43)			(0.51)

Rep bank president			1.059	***					1.101	**
			(0.40)						(0.47)	
Rep governor			-0.325						-0.118	
			(0.40)						(0.44)	
National industrial production gap					-0.241		-0.280		-0.262	
					(0.19)		(0.19)		(0.19)	
National inflation					-0.649	*	-0.693	*	-0.660	*
					(0.35)		(0.36)		(0.37)	
Regional unemplyoment					-0.212		-0.097		-0.148	
					(0.16)		(0.17)		(0.18)	
Regional house price gap					-0.046		-0.037		-0.047	
					(0.06)		(0.05)		(0.05)	
Academia							0.012		0.037	
							(0.02)		(0.02)	
Government							-0.057		-0.013	
							(0.06)		(0.07)	
Industry							-0.152	***	-0.131	**
							(0.06)		(0.06)	
Finance							-0.025		-0.002	
							(0.02)		(0.02)	
NGO							-0.105	*	-0.102	*
							(0.06)		(0.06)	
Board staff							-0.005		0.011	
							(0.02)		(0.02)	
Fed bank staff							-0.015		0.008	
							(0.02)		(0.03)	
Constant	-2.052	***	-2.735	***	-2.001	**	-2.462	***	-3.463	***
	(0.70)		(0.80)		(0.86)		(0.87)		(1.03)	
Pseudo R2	0.05		0.06		0.06		0.11		0.11	
Wald chi2	37.26	***	58.59	***	56.61	***	68.19	***	71.12	***
LogL	-351.26		-346.20		-345.14		-329.39		-327.90	
No. of Obs	1796		1796		1796		1796		1796	

Note: Results from pooled logit model estimation. Dependent variable: inconsistent vote. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 3: Average marginal effects of the baseline regressions using pooled logit estimator

Variable	Model									
	I		II		III		IV		V	
Tape	-0.024	**	-0.031	**	-0.038	***	-0.038	***	-0.034	***
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Meeting	-0.022		-0.028		-0.006		-0.003		-0.007	
	(0.03)		(0.03)		(0.03)		(0.01)		(0.03)	
Greenspan	0.031		0.023		0.016		0.001		0.008	
	(0.02)		(0.02)		(0.03)		(0.03)		(0.03)	
Board member	-0.050	***			-0.051	***	-0.043	***		
	(0.01)				(0.01)		(0.02)			
Experience	-0.003	*	-0.003	*	-0.003	*				
	(0.00)		(0.00)		(0.00)					
Gender	0.042	***	0.046	***	0.042	***	0.040	***	0.046	***
	(0.01)		(0.01)		(0.01)		(0.02)		(0.02)	
President‘s party			0.022	**	0.024	**	0.024	**	0.021	**
			(0.01)		(0.01)		(0.01)		(0.01)	
Dem bank president			0.016						0.020	
			(0.02)						(0.02)	
Rep bank president			0.051	***					0.052	**
			(0.02)						(0.02)	
Rep governor			-0.016						-0.006	
			(0.02)						(0.02)	
National industrial production gap					-0.012		-0.013		-0.012	
					(0.01)		(0.01)		(0.01)	
National inflation					-0.031	*	-0.033	*	-0.031	*

					(0.02)		(0.02)		(0.02)	
Regional unemployment					-0.010		-0.005		-0.007	
					(0.01)		(0.01)		(0.01)	
Regional house price gap					-0.002		-0.002		-0.002	
					(0.00)		(0.00)		(0.00)	
Academia							0.001		0.002	
							(0.00)		(0.00)	
Government							-0.003		-0.001	
							(0.00)		(0.00)	
Industry							-0.007	**	-0.006	**
							(0.00)		(0.00)	
Finance							-0.001		0.000	
							(0.00)		(0.00)	
NGO							-0.005	*	-0.005	*
							(0.00)		(0.00)	
Board staff							0.000		0.001	
							(0.00)		(0.00)	
Fed bank staff							-0.001		0.000	
							(0.00)		(0.00)	
No. of Obs	1796		1796		1796		1796		1796	

Note: Average marginal effects. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 4: Coefficients of the baseline regressions using random effects logit estimator

Variable	Model									
	I		II		III		IV		V	
Tape	-0.544	**	-0.587	*	-0.911	***	-0.767	**	-0.631	*
	(0.25)		(0.31)		(0.29)		(0.30)		(0.33)	
Meeting	-0.364		-0.485		-0.065		-0.034		-0.103	
	(0.56)		(0.56)		(0.59)		(0.59)		(0.59)	
Greenspan	0.623		0.467		0.113		-0.129		0.079	
	(0.40)		(0.46)		(0.51)		(0.54)		(0.58)	
Board member	-1.318	***			-1.388	***	-1.014	***		
	(0.26)				(0.27)		(0.39)			
Experience	-0.068	*	-0.071	**	-0.069	**				
	(0.03)		(0.03)		(0.03)					
Gender	0.800	**	0.836	**	0.809	**	0.344		0.517	
	(0.33)		(0.34)		(0.34)		(0.48)		(0.49)	
President‘s party			0.473	*	0.539	**	0.475	*	0.421	
			(0.27)		(0.27)		(0.27)		(0.28)	
Dem bank president			0.814	*					0.333	
			(0.46)						(0.57)	
Rep bank president			1.685	***					1.442	***
			(0.42)						(0.56)	
Rep governor			0.048						-0.174	
			(0.44)						(0.51)	
National industrial production gap					-0.294		-0.328	*	-0.314	*
					(0.18)		(0.18)		(0.18)	
National inflation					-0.664		-0.736	*	-0.689	
					(0.43)		(0.43)		(0.44)	
Regional unemplyoment					-0.016		0.038		0.002	
					(0.20)		(0.21)		(0.21)	
Regional house price gap					-0.071		-0.039		-0.049	
					(0.06)		(0.06)		(0.06)	
Academia							0.028		0.067	**
							(0.02)		(0.03)	
Government							0.040		0.117	
							(0.09)		(0.10)	
Industry							-0.140	**	-0.102	
							(0.07)		(0.07)	
Finance							-0.009		0.025	

							(0.03)		(0.03)	
NGO							-0.103		-0.101	
							(0.09)		(0.09)	
Board staff							-0.009		0.022	
							(0.04)		(0.04)	
Fed bank staff							0.024		0.058	
							(0.04)		(0.04)	
Constant	-2.164	***	-3.502	***	-1.835	**	-2.465	***	-3.770	***
	(0.78)		(0.89)		(0.87)		(0.83)		(1.02)	
Lnsigma2u	-0.165		-0.108		-0.098		-0.504		-0.270	
	(0.60)		(0.61)		(0.60)		(0.77)		(0.70)	
Sigma_u	0.921		0.948		0.952		0.777		0.874	
	(0.28)		(0.29)		(0.28)		(0.30)		(0.31)	
rho	0.205		0.214		0.216		0.155		0.188	
	(0.10)		(0.10)		(0.10)		(0.10)		(0.11)	
Likelihood-ratio test of rho=0	27.06	***	25.84	***	26.38	***	7.46	***	10.38	***
Wald chi2	32.39	***	40.81	***	41.80	***	41.99	***	46.26	***
Log pseudoL	-337.73		-333.27		-331.95		-325.65		-322.71	
No. of Obs	1796		1796		1796		1796		1796	

Note: Results from random effects logit model estimation. Dependent variable: inconsistent vote. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 5: Average marginal effects of the baseline regressions using random effects logit estimator

Variable	Model									
	I		II		III		IV		V	
Tape	-0.020	*	-0.020		-0.034	**	-0.018		-0.013	
	(0.01)		(0.01)		(0.02)		(0.01)		(0.01)	
Meeting	-0.014		-0.018		-0.002		-0.001		-0.002	
	(0.02)		(0.03)		(0.02)		(0.01)		(0.01)	
Greenspan	0.016	*	0.012		0.003		-0.002		0.001	
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Board member	-0.047	***			-0.046	***	-0.020	*		
	(0.02)				(0.02)		(0.01)			
Experience	-0.002	**	-0.002	**	-0.002	*				
	(0.00)		(0.00)		(0.00)					
Gender	0.034	*	0.034	*	0.032	*	0.007		0.011	
	(0.02)		(0.02)		(0.02)		(0.01)		(0.01)	
President‘s party			0.015		0.017	*	0.009		0.008	
			(0.01)		(0.01)		(0.01)		(0.01)	
Dem bank president			0.032						0.006	
			(0.02)						(0.01)	
Rep bank president			0.076	**					0.036	
			(0.03)						(0.02)	
Rep governor			0.001						-0.003	
			(0.01)						(0.01)	
National industrial production gap					-0.009		-0.006		-0.005	
					(0.01)		(0.00)		(0.00)	
National inflation					-0.020		-0.014		-0.012	
					(0.01)		(0.01)		(0.01)	
Regional unemplyoment					0.000		0.001		0.000	
					(0.01)		(0.00)		(0.00)	
Regional house price gap					-0.002		-0.001		-0.001	
					(0.00)		(0.00)		(0.00)	
Academia							0.001		0.001	*
							(0.00)		(0.00)	
Government							0.001		0.002	
							(0.00)		(0.00)	
Industry							-0.003	***	-0.002	*
							(0.00)		(0.00)	
Finance							0.000		0.000	
							(0.00)		(0.00)	

NGO							-0.002		-0.002	
							(0.00)		(0.00)	
Board staff							0.000		0.000	
							(0.00)		(0.00)	
Fed bank staff							0.000		0.001	
							(0.00)		(0.00)	
No. of Obs	1796		1796		1796		1796		1796	

Note: Average marginal effects. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 6: Robustness checks of the baseline regressions using pooled logit estimator

Variable	Model I		II		III		IV		V	
Tape	-0.889	***	-0.837	***	-0.701	***	-0.900	***	-0.690	***
	(0.25)		(0.23)		(0.27)		(0.24)		(0.26)	
Meeting	-0.390		-0.259		-0.088		-0.054		-0.114	
	(0.61)		(0.60)		(0.66)		(0.66)		(0.67)	
Greenspan	0.051		0.202		0.242		0.497		0.570	
	(0.51)		(0.52)		(0.56)		(0.57)		(0.60)	
Board member	-1.064	***	-1.059	***	-1.047	***	-1.036	***	-1.039	***
	(0.22)		(0.22)		(0.22)		(0.22)		(0.22)	
Experience	-0.059	*	-0.060	*	-0.058	*	-0.059	*	-0.055	*
	(0.03)		(0.03)		(0.03)		(0.03)		(0.03)	
Gender	0.907	***	0.894	***	0.885	***	0.859	***	0.883	***
	(0.28)		(0.28)		(0.28)		(0.28)		(0.28)	
President‘s party	0.506	**	0.536	**	0.446	**	0.451	**	0.448	**
	(0.21)		(0.22)		(0.23)		(0.21)		(0.21)	
National industrial production gap					-0.229		-0.213		-0.314	
					(0.19)		(0.20)		(0.20)	
National output gap	0.176									
	(0.22)									
National unemployment			0.028							
			(0.04)							
National inflation	-0.808	**	-0.712	**	-0.779	**	-0.732	**	-0.622	
	(0.40)		(0.35)		(0.37)		(0.34)		(0.41)	
Federal funds rate					0.066					
					(0.06)					
National house price gap									0.017	
									(0.06)	
National exchange rate index									0.136	
									(0.12)	
National commodity price index									0.018	
									(0.02)	
Regional unemployment	-0.222		-0.213		-0.234		-0.160		-0.200	
	(0.16)		(0.16)		(0.16)		(0.17)		(0.16)	
Regional house price gap	-0.063		-0.056		-0.070		-0.062			
	(0.06)		(0.06)		(0.06)		(0.06)			
Failed deposits of regional banks							-0.008			
							(0.01)			
Regional coincident index							0.155			
							(0.14)			
Constant	-1.372	*	-1.711	**	-2.291	**	-2.082	**	-2.356	***
	(0.76)		(0.73)		(0.91)		(0.88)		(0.90)	
Pseudo R2	0.06		0.06		0.07		0.07		0.07	
Wald chi2	56.90	***	56.06	***	57.39	***	69.59	***	54.38	***
LogL	-345.70		-345.82		-344.56		-343.82		-344.15	
No. of Obs	1796		1796		1796		1796		1796	

Note: Results from pooled logit model estimation. Dependent variable: inconsistent vote. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 7: Average marginal effects of the robustness checks of the baseline regressions using pooled logit estimator

Variable	Model I		II		III		IV		V	
Tape	-0.043	***	-0.040	***	-0.034	**	-0.043	***	-0.033	***
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Meeting	-0.019		-0.012		-0.004		-0.003		-0.005	
	(0.03)		(0.03)		(0.03)		(0.03)		(0.03)	
Greenspan	0.002		0.010		0.012		0.024		0.027	
	(0.02)		(0.02)		(0.03)		(0.03)		(0.03)	
Board member	-0.051	***	-0.051	***	-0.050	***	-0.050	***	-0.050	***
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Experience	-0.003	*	-0.003	*	-0.003	*	-0.003	*	-0.003	*
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
Gender	0.044	***	0.043	***	0.042	***	0.041	***	0.042	***
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
President‘s party	0.024	**	0.026	**	0.021	*	0.022	**	0.022	**
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
National industrial production gap					-0.011		-0.010		-0.015	
					(0.01)		(0.01)		(0.01)	
National output gap	0.008									
	(0.01)									
National unemployment			0.001							
			(0.00)							
National inflation	-0.039	**	-0.034	**	-0.037	**	-0.035	**	-0.030	
	(0.02)		(0.02)		(0.02)		(0.02)		(0.02)	
Federal funds rate					0.003					
					(0.00)					
National house price gap									0.001	
									(0.00)	
National exchange rate index									0.007	
									(0.01)	
National commodity price index									0.001	
									(0.00)	
Regional unemployment	-0.011		-0.010		-0.011		-0.008		-0.010	
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
Regional house price gap	-0.003		-0.003		-0.003		-0.003			
	(0.00)		(0.00)		(0.00)		(0.00)			
Failed deposits of regional banks							0.000			
							(0.00)			
Regional coincident index							0.007			
							(0.01)			

Note: Average marginal effects. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.

Table 8: Expected probabilities from interacting Board and Tape dummies

	Marginal effect	Marginal effect	Differences dy/dx	Marginal effect	Marginal effect
	Tape = 0	Tape = 1		Tape = 0	Tape = 1
Bank presidents	0.135 *** (0.03)	0.071 *** (0.01)	Bank presidents - Board member	0.078 ** (0.03)	0.045 *** (0.01)
Board member	0.057 *** (0.02)	0.025 *** (0.01)		Bank president	Board member
			Tape (1) – Tape (0)	-0.065 ** (0.03)	-0.032 ** (0.02)

Table 9: Expected probabilities from interacting Gender and Tape dummies

	Marginal effect	Marginal effect	Differences dy/dx	Marginal effect	Marginal effect

	Tape = 0	Tape = 1		Tape = 0	Tape = 1
Male	0.064 *** (0.01)	0.042 *** (0.01)	Male - Female	-0.314 *** (0.10)	-0.020 (0.02)
Female	0.378 *** (0.10)	0.062 *** (0.02)		Male	Female
			Tape (1) – Tape (0)	-0.022 (0.01)	-0.316 *** (0.10)

Table 10: Expected probabilities from interacting President's Party and Tape dummies

	Marginal effect	Marginal effect	Differences dy/dx	Marginal effect	Marginal effect
	Tape = 0	Tape = 1		Tape = 0	Tape = 1
Republican	0.101 *** (0.02)	0.024 *** (0.01)	Republican - Democratic	0.084 *** (0.03)	-0.046 *** (0.01)
Democratic	0.017 (0.02)	0.070 *** (0.01)		Republican	Democratic
			Tape (1) – Tape (0)	-0.077 *** (0.02)	0.052 *** (0.02)

Note: Table 8 – Table 10: Marginal effects represent the expected probability of the outcome being one (inconsistent voting) of a one unit change in the predictor (ceteris paribus) with respect to a certain cell. Delta-Method standard errors in parentheses. Covariates are held at their mean values.

Figure 1: Marginal effect of interacting Tape dummy and Experience

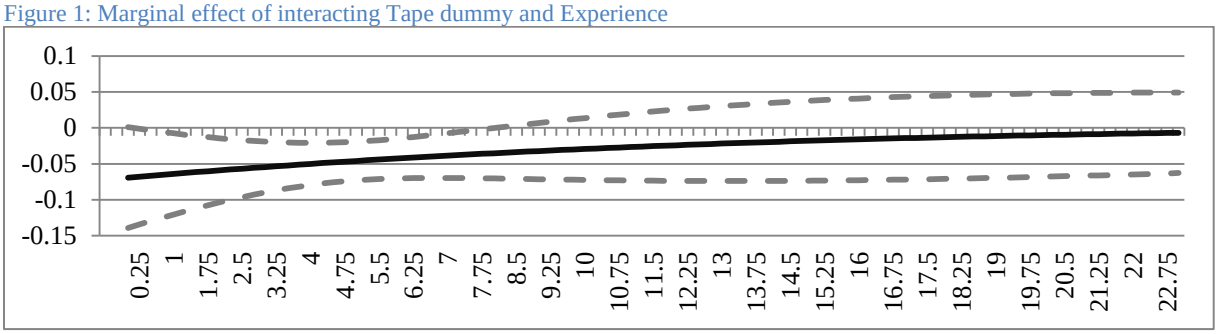


Figure 2: Marginal effect of interacting Tape dummy and Academia

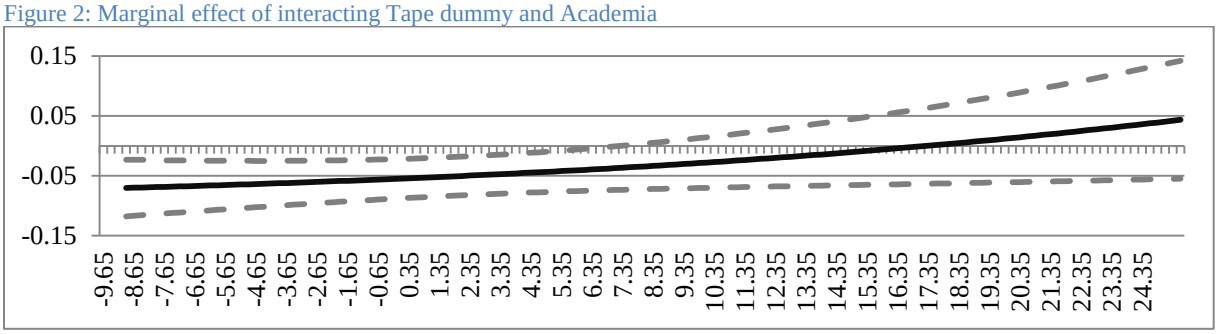


Figure 3: Marginal effect of interacting Tape dummy and Government

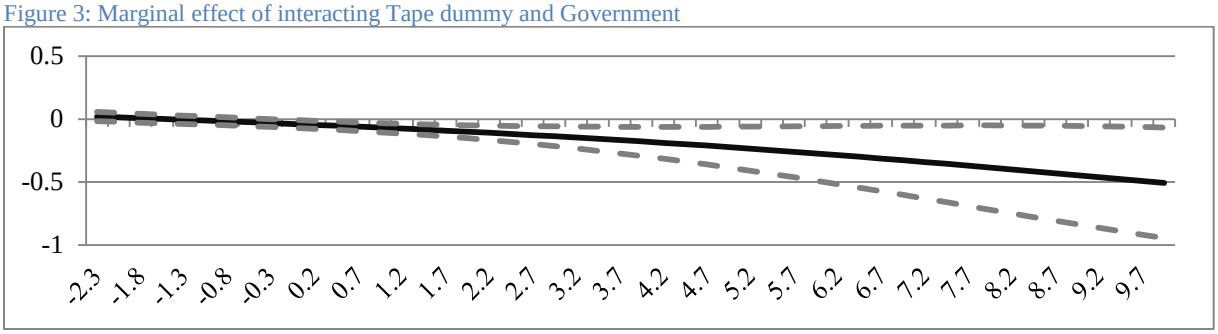


Figure 4: Marginal effect of interacting Tape dummy and Industry

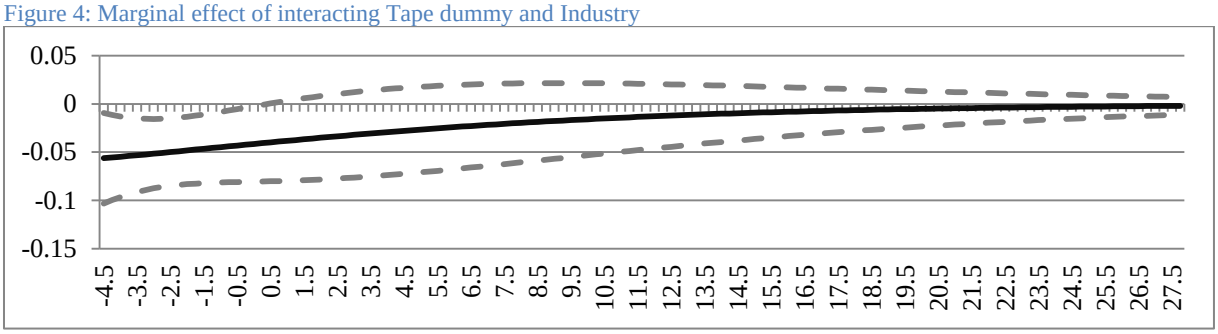


Figure 5: Marginal effect of interacting Tape dummy and Finance

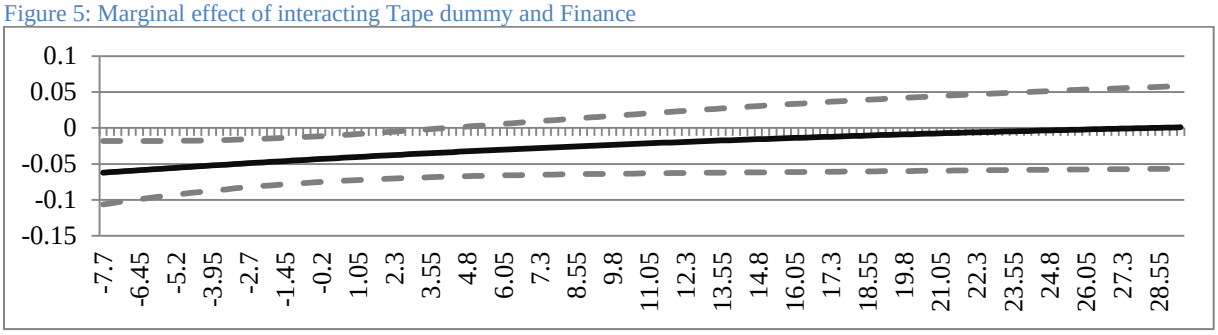


Figure 6: Marginal effect of interacting Tape dummy and NGO

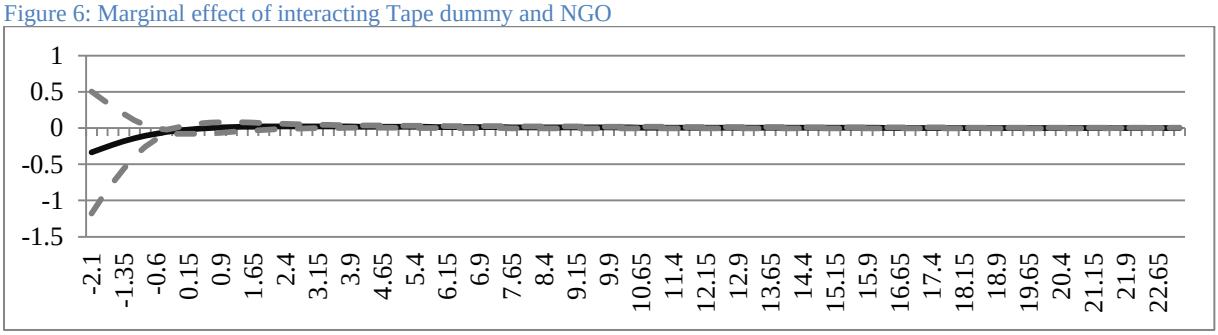


Figure 7: Marginal effect of interacting Tape dummy and Board staff

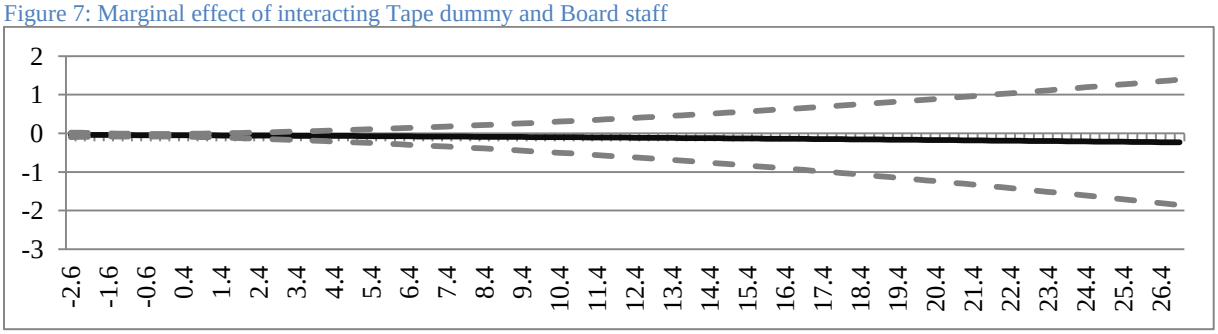
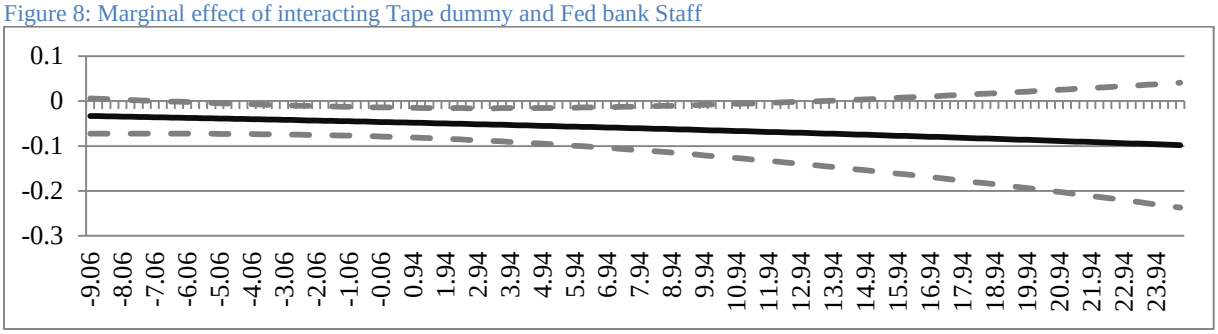


Figure 8: Marginal effect of interacting Tape dummy and Fed bank Staff



Note Figure 1- Figure 8: Solid lines display the difference of marginal effects between before and after the change in transparency on the probability of casting an inconsistent vote. Dashed lines display the 95% confidence intervals. The x-axis of each figure shows the number of years of working experience relative to the committee's mean value for the respective meeting. The y-axis of each figure shows the marginal effect of switching from 0 to 1 in the *Tape* dummy on the probability of casting an inconsistent vote.

Table A 1: Variable definitions and sources

Variable	Definition	Data sources
	Dependent variable	
Inconsistent vote	FOMC member cast either an inconsistent vote (1), i.e. casting a dissent in the policy go-around and assenting in the formal vote; or cast a consistent vote (0)	FOMC transcripts
	Regional variables	
Regional unemployment	- Difference between unemployment rate in district i and national unemployment rate - District unemployment rate is the weighted average of state-specific unemployment rates, population shares are used as the weighting scheme	National and State Unemployment Rate: Bureau of Labor Statistics Resident Population: Census Bureau
Failed deposits of regional banks	Failed deposits of insolvent banks per capita in district i District failed deposits is the weighted average of price-deflated state-specific failed deposits (district boundaries are taken from Chappell et al. (2008)), population shares are used as the weighting scheme	Failed deposits: Federal Deposit Insurance Company Resident population: Census Bureau Consumer price index: Bureau of Labor Statistics
Regional coincident index	Index reflects current economic conditions in a state combining nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements. The trend for each state's index is set to the trend of its gross domestic product (GDP), so long-term growth in the state's index matches long-term growth in its GDP. Index is used as month-over month percentage change. Difference between coincident index in voter i's district and national coincident index District coincident index is the weighted average of state-specific coincident indexes (district boundaries are taken from	Federal Reserve Bank of Philadelphia

	Chappell et al. (2008)), population shares are used as the weighting scheme	
Regional house price gap	Percentage deviation of district i's house price index from time trend State-specific house price gap is calculated as percentage difference between state-specific house price index and Hodrick-Prescott-based time trend; smoothing parameter for the Hodrick-Prescott filter was set to 1,600; quarterly house price indexes are interpolated to monthly data using the cubic spline method District-specific house price gap is the weighted average of state-specific house price gaps (district boundaries are taken from Chappell et al. (2008)), population shares are used as the weighting scheme	House price index for U.S. states: Federal Housing Finance Agency Resident population: Census Bureau
	National variables	
National industrial production gap	Percentage deviation of national industrial production index from Hodrick-Prescott-based time trend; smoothing parameter for the Hodrick-Prescott filter was set to 14,400	Industrial Production: Board of Governors
National inflation	Month-over-month percentage change in Consumer Price Index	Consumer Price Index: Bureau of Labor Statistics
National output gap	Month-over-month change in Hodrick-Prescott-based output gap; smoothing parameter for the Hodrick-Prescott filter was set to 1,600	National output: Bureau of Labor Statistics
National unemployment	National unemployment rate	National Unemployment Rate: Bureau of Labor Statistics
Federal funds rate	Federal Funds Rate of the Wednesday prior to the FOMC meeting	Federal Funds Rate: Board of Governors
National house price gap	Percentage deviation of national house price index from Hodrick-Prescott-based time trend; smoothing parameter for the Hodrick-Prescott filter was set to 1,600; quarterly house price indexes are interpolated to monthly data using the cubic spline method	House price index for the U.S.: Federal Housing Finance Agency
National Commodity price index	Quarter-over-quarter percentage change in S&P GSCI Commodity Spot Price Index	S&P GSCI, drawn from Datastream
National Exchange rate index	Quarter-over-quarter percentage change in trade weighted nominal dollar exchange rate index; higher values indicate depreciation of the U.S. dollar	Federal Reserve, drawn from Datastream
	Institutional dummy variables	
Board member	Dummy variable; equals 1 if vote cast by Board member, 0 if vote cast by bank president	
Tape	Dummy variable indicating the date since all committee	FOMC voting *minutes*

	members were aware that the FOMC meetings have been tape recorded; equals 1 from 1993M11 thru 2008M12 and 0 otherwise	(November, 16 1993)
Meeting	Dummy variable; equals 1 if vote cast at face-to-face meeting, 0 if vote cast via conference call	
Greenspan	Dummy variable; equals 1 if FOMC chairman is Alan Greenspan, 0 otherwise; reference category is the chairmanship of Ben Bernanke	
Gender	Dummy variable; equals 1 if FOMC member is female, 0 otherwise	
	Individual career experience	
Experience	Number of years FOMC member has worked as committee member	Own calculations
Academia	Number of years FOMC member has worked in full time positions in academia before becoming Federal Reserve Bank president or Federal Reserve Bank Board member minus mean committee value	Own calculations
Government	Number of years FOMC member has worked in full time positions in government before becoming Federal Reserve Bank president or Federal Reserve Bank Board member minus mean committee value	Own calculations
Industry	Number of years FOMC member has worked in full time positions in industry before becoming Federal Reserve Bank president or Federal Reserve Bank Board member minus mean committee value	Own calculations
Finance	Number of years FOMC member has worked in full time positions in finance before becoming Federal Reserve Bank president or Federal Reserve Bank Board member minus mean committee value	Own calculations
NGO	Number of years FOMC member has worked in full time positions in non-governmental institutions before becoming Federal Reserve Bank president or Federal Reserve Bank Board member minus mean committee value	Own calculations
Board staff	Number of years FOMC member has worked in full time positions in the staff of Federal Reserve Board of Governors before becoming Federal Reserve Bank president or Federal Reserve Bank Board member minus mean committee value	Own calculations
Fed bank staff	Number of years FOMC member has worked in full time positions in the staff of a regional Federal Reserve Bank before becoming Federal Reserve Bank president or Federal Reserve Bank Board member minus mean committee value	Own calculations
	Political affiliation through appointment dummies	
Dem governor	Dummy variable equals 1 if Federal Reserve Board member was appointed by Democratic President; 0 otherwise	Own calculations

Rep governor	Dummy variable equals 1 if Federal Reserve Board member was appointed by Republican President; 0 otherwise	Own calculations
Dem bank president	Dummy variable equals 1 if Federal Reserve Bank president was elected during Democratic presidency; 0 otherwise	Own calculations
Rep bank president	Dummy variable equals 1 if Federal Reserve Bank president was elected during Republican presidency; 0 otherwise	Own calculations
	Political pressure dummy	
President's party	Dummy variable equals 1 if current President of the United States is Democratic; 0 otherwise	Own calculations

Table A 2: Descriptive statistics of all determinants

Variable	Mean	Std. dev.	Min	Max
Regional house price gap	0.011	2.342	-9.926	12.527
Regional coincident index	0.129	0.887	-2.662	2.700
Failed deposits of regional banks	6.130	37.163	0	1039.192
Regional unemployment	-0.129	0.687	-2.246	1.813
National unemployment	5.470	0.930	3.900	7.700
National inflation	0.244	0.255	-1.803	0.950
National output gap	-0.044	0.548	-2.405	1.140
National house price gap	0.199	2.112	-4.162	5.552
Federal funds rate	4.440	2.162	0.130	9.860
National Commodity price index	0.063	5.624	-13.086	19.845
National exchange rate index	0.218	1.201	-3.256	3.394
Board member	0.547	0.500	0	1
Tape	0.766	0.424	0	1
Meeting	0.967	0.180	0	1
Gender	0.131	0.338	0	1
Greenspan	0.859	0.349	0	1
Experience	5.282	4.600	0	23
Academia	0.787	9.356	-9.65	25.111
Government	0.467	3.000	-2.294	10.167
Industry	1.328	9.512	-4.5	27.895
Finance	0.679	9.085	-7.706	29.444
NGO	0.342	3.151	-2.118	23.263
Board staff	0.203	4.984	-2.526	27.111
Fed bank staff	-2.809	8.343	-9.059	24.889
Dem governor	0.134	0.341	0	1
Rep governor	0.413	0.493	0	1
Dem bank president	0.164	0.370	0	1
Rep bank president	0.289	0.453	0	1
President's party	0.394	0.489	0	1

Table A 3: Coefficient estimates of interaction models

Variable	Model I		II		III		IV	
Tape	-0.753	**	-0.470	*	-1.584	***	-0.923	**
	(0.31)		(0.26)		(0.37)		(0.46)	
Board member	-0.983	**	-1.192	***	-1.029	***	-1.068	***
	(0.39)		(0.23)		(0.22)		(0.23)	
Tape*Board member	-0.107							
	(0.47)							
Meeting	-0.121		-0.114		-0.135		-0.120	
	(0.67)		(0.65)		(0.69)		(0.67)	
Greenspan	0.338		0.342		-0.177		0.322	
	(0.57)		(0.57)		(0.65)		(0.57)	
Experience	-0.058	*	-0.062	**	-0.046		-0.078	
	(0.03)		(0.03)		(0.03)		(0.08)	
Tape*Experience							0.026	
							(0.08)	
Gender	0.877	***	2.351	***	0.931	***	0.885	***
	(0.28)		(0.52)		(0.29)		(0.28)	
Tape*Gender			-1.922	***				
			(0.61)					
President‘s party	0.505	**	0.487	**	-1.923	*	0.519	**
	(0.21)		(0.22)		(1.05)		(0.22)	
Tape*President’s party					3.078	***		
					(1.11)			
National industrial production gap	-0.242		-0.248		-0.215		-0.243	
	(0.19)		(0.19)		(0.19)		(0.19)	
National inflation	-0.650	*	-0.665	*	-0.788	**	-0.651	*
	(0.35)		(0.35)		(0.36)		(0.35)	
Regional unemplyoment	-0.212		-0.244		-0.280	*	-0.208	
	(0.16)		(0.17)		(0.16)		(0.16)	
Regional house price gap	-0.045		-0.044		-0.066		-0.047	
	(0.06)		(0.06)		(0.06)		(0.06)	
Constant	-2.041	**	-2.176	**	-1.248		-1.903	**
	(0.88)		(0.85)		(0.90)		(0.95)	
Pseudo R2	0.06		0.08		0.08		0.06	
Wald chi2	56.06	***	68.45	***	60.38	***	57.56	***
LogL	-345.11		-340.18		-337.55		-345.06	
No of Obs	1796		1796		1796		1796	

Table A 4: Coefficient estimates of interaction models, continued

Variable	Model V		VI		VII		VIII	
Tape	-0.948	***	-0.739	***	-0.928	***	-0.751	***
	(0.24)		(0.25)		(0.40)		(0.24)	
Board member	-1.207	***	-1.060	***	-0.706	***	-0.918	
	(0.23)		(0.24)		(0.23)		(0.66)	
Meeting	-0.032		-0.107		-0.090		-0.116	
	(0.66)		(0.68)		(0.66)		(0.66)	
Greenspan	0.285		0.338		-0.016		0.374	
	(0.57)		(0.57)		(0.59)		(0.57)	
Gender	1.134	***	0.871	***	0.679	**	0.962	***
	(0.29)		(0.30)		(0.28)		(0.28)	
President‘s party	0.535	**	0.537	**	0.490	**	0.508	**
	(0.22)		(0.21)		(0.22)		(0.21)	
National industrial production gap	-0.241		-0.301		-0.275		-0.258	
	(0.19)		(0.19)		(0.19)		(0.19)	
National inflation	-0.615	*	-0.673	*	-0.681	*	-0.656	*
	(0.19)		(0.19)		(0.35)		(0.35)	
Regional unemplyoment	-0.272		-0.141		-0.178		-0.174	
	(0.17)		(0.18)		(0.18)		(0.16)	
Regional house price gap	-0.061		-0.030		-0.024		-0.028	
	(0.05)		(0.05)		(0.05)		(0.06)	
Academia	-0.001							
	(0.02)							
Tape*Academia	0.057	**						
	(0.02)							

Government			0.270	**				
			(0.11)					
Tape*Government			-0.488	***				
			(0.13)					
Industry					-0.128	**		
					(0.06)			
Tape*Industry					-0.044			
					(0.10)			
Finance							-0.034	
							(0.02)	
Tape*Finance							0.027	
							(0.03)	
Constant	-2.332	***	-2.420	***	-2.350	***	-2.445	***
	(0.88)		(0.89)		(0.91)		(0.86)	
Pseudo R2	0.08		0.09		0.09		0.06	
Wald chi2	79.95	***	73.51	***	47.63	***	58.37	***
LogL	-338.42		-335.04		-335.79		-346.25	
No of Obs	1796		1796		1796		1796	

Table A 5: Coefficient estimates of interaction models, continued II

Variable	Model					
	IX		X		XI	
Tape	-0.567		-0.834	***	-0.802	***
	(0.42)		(0.24)		(0.24)	
Board member	-0.774	***	-0.936	***	-0.777	***
	(0.22)		(0.23)		(0.29)	
Meeting	-0.144		-0.110		-0.120	
	(0.67)		(0.67)		(0.67)	
Greenspan	0.360		0.359		0.352	
	(0.56)		(0.58)		(0.56)	
Gender	0.950	***	1.007	***	0.935	***
	(0.28)		(0.28)		(0.30)	
President‘s Party	0.487	**	0.533	**	0.523	**
	(0.21)		(0.21)		(0.21)	
National industrial production gap	-0.251		-0.252		-0.254	
	(0.19)		(0.19)		(0.19)	
National inflation	-0.635	*	-0.625	*	-0.652	*
	(0.35)		(0.35)		(0.19)	
Regional unemployment	-0.134		-0.225		-0.208	
	(0.17)		(0.16)		(0.16)	
Regional house price gap	-0.030		-0.031		-0.028	
	(0.05)		(0.05)		(0.05)	
NGO	-1.090					
	(1.09)					
Tape*NGO	0.910					
	(1.09)					
Board staff			0.059			
			(0.16)			
Tape*Board staff			-0.038			
			(0.16)			
Fed bank staff					0.024	
					(0.02)	
Tape*Fed bank staff					-0.017	
					(0.02)	
Constant	-2.673	***	-2.395	***	-2.434	***
	(0.93)		(0.87)		(0.86)	
Pseudo R2	0.07		0.06		0.06	
Wald chi2	56.85	***	54.46	***	56.69	***
LogL	-342.33		-347.04		-346.97	
No of Obs	1796		1796		1796	

Note: Tables A 3 – A 5: Results from pooled logit model estimation. Dependent variable: inconsistent vote. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% levels, respectively.