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## Auditor Terms and Term Limits in the Public Sector: Evidence from the US States

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**Auditor Terms and Term Limits  
in the Public Sector:  
Evidence from the US States**

Working Paper No. 2009 - 19

# **Auditor Terms and Term Limits in the Public Sector: Evidence from the US States**

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## **ABSTRACT**

Improving transparency and enabling the principal to hold its agents accountable is a major issue in any principal agent relationship. This paper focuses on the role of public auditors in this task and presents evidence on the impact of auditor term length and term limits on government performance at the US State level. While the empirical results for the influence of term length are ambiguous, I find strong evidence for a positive and significant influence of term limits on state credit ratings. Auditors who face a binding term limit seem to be more effective monitors, which improves credit ratings. (99 words)

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## **I. Introduction**

The incentives provided by any institutional arrangement crucially impact on the behavior of agents within that framework. The public sector is characterized by delegation hierarchies involving manifold principal-agent relationships. In order to control the agents developed democracies feature complex systems of checks and balances and supervising institutions that should help holding government agents accountable. This study focuses on public auditing institutions which are mandated to supervise public officials and improve transparency in the public sector.

The office of the public auditor is one of the main supervising institutions in such systems. Usually, audit offices are fairly large bureaucracies: e.g. the US federal audit agency alone, the Government Accountability Office (GAO), has a budget of roughly half a billion USD, and the German Bundesrechnungshof and its associated offices employ more than 1400 individuals. Despite these facts, there is almost no economic research on public auditing institutions. Auditors conduct financial audits and various forms of performance audits and are supposed to serve as watch-dogs over the executive and the bureaucracy to improve transparency, fight misappropriation, fraud, corruption, wasteful usage of public funds and general inefficiencies. Since the auditor is also an appointed agent who has to supervise other agents, the question of how accountability of the auditor affects public sector performance is essential.

This paper analyzes the influence of auditor tenure and term limits on fiscal outcomes. Term length and term limits are crucial since they shape incentives of public auditors. These aspects have not been the subject of economic analyses even though they proved to significantly influence accountability and auditor performance in the corporate sector. The debate on the topic

of tenure length and mandatory auditor rotation in corporate auditing, which is closely related to term limits in the public sector, is intense and an extensive body of research has been published. In the public sector the effect of term length and term limits has been the subject of research in political economy for public offices in the executive and the legislative, but not for auditors. This analysis combines these strands of economic research to gain insights into the hitherto unexplored area of public sector auditing.

The theoretical discussion of section 2 introduces the literature on the role and influence of public auditing institutions and presents the available evidence on term length and term limits for public officials (legislative and executive mandates) as well as for corporate auditors. I integrate the outlined theoretical considerations to formulate testable hypotheses on the influence of auditor term length and term limits. Moreover, this section establishes explicitly the link between auditor characteristics and fiscal outcomes. Section 3 contains the empirical part of the paper. It starts with a presentation of US State auditing institutions, continues with a description of the respective data and the empirical strategy, and finally presents and discusses the empirical results. Section 4 summarizes and concludes.

## **II. Auditor Basics, Term Length and Term Limits**

### ***Auditor Basics***

The fundamental agency problem between citizens and their agents in government positions is well established. In order to control the agent, the principal requires information. Such information is typically revealed through some procedural mechanism by the agent himself or by some third party. In many cases the information is reviewed by an external body in order to insure the accuracy of the information provided. In the political process the quality and quantity

of the available information is heavily determined by transparency and supervision requirements. Research on the influence of transparency in the budget process shows that improved transparency reduces information asymmetries between principal and agent and enhances government performance (e.g. von Hagen and Harden 1995, Alesina and Perotti 1996, Ferejohn 1999, Alt, Lassen and Skilling 2002, and Alt and Lassen 2006).

A crucial requirement fostering transparency is for governments to inform the legislature and the citizens about all relevant financial aspects of government activity by issuing financial reports. However, government agents have strong incentives to influence financial reporting in order to try to improve electoral chances. There is ample evidence for ‘creative accounting’ and misreporting (e.g. Milesi-Ferretti 2004, von Hagen and Wolff 2004 and Wallack 2007) and hence, an independent review of the financial statements is crucial. Such a review of financial statements is conducted by independent auditing institutions.

The few economic research contributions on public auditing so far emphasize the important functions of auditors in controlling the government and the bureaucracy by providing information to policymakers and citizens, and in exposing waste and corruption (e.g. Frey 1994, Olken 2007, Finan and Ferraz 2008). The studies by Olken (2007) and Ferraz and Finan (2008) do not primarily focus on the effect of independent audits, but provide, nevertheless, interesting insights for our purposes. Olken (2007) analyzes different methods of reducing corruption using a randomized field experiment in Indonesia. He finds that an increasing audit probability significantly reduces wasteful expenditure. Ferraz and Finan (2008) show in a randomized field experiment in Brazil that independent audits actually improve the level and quality of information available to the principal, which finally influences voting behavior. These two studies only focus on financial audits. However, some auditing institutions also conduct various forms of

performance audits. In a study analyzing US State auditors Schelker (2008) finds evidence that performance audits improve policy outcomes. According to Schelker and Eichenberger (2003, 2007) and Schelker (2008) extending the audit mandate even further to include not only standard ex post audits, but also ex ante audits of the budget draft and individual policy proposals leads to significantly lower taxes and expenditures.

Audits are only effective if the auditor has real incentives to reveal inconsistencies and cannot be sanctioned by the audited agent for doing so. Taking the principal-agent relation as a starting point, Tirole (1986) discusses a framework in which a principal hires a supervisor to control the agent. In this three-tier principal-agent model of the principal, the supervisor and the agent, the main problem arises if the supervisor and the agent collude. If the principal is naïve and does not anticipate such collusion, he could be even worse off than without hiring a supervisor (Antle 1984). In such a setting the principal wants to implement contracts that do not provide incentives for collusion between the agent and the supervisor. Models from contract theory assume that the principal himself writes the contracts with the agent as well as with the supervisor/auditor and that he tries to implement collusion-proof contracts (see e.g. Tirole 1986, Baiman, Evans and Nagarajan 1991, Bolton and Dewatripont 2005, and Khalil and Lawarée 2006). This literature shows that collusion between auditor and agent is a real concern. A first step towards reducing the risk of collusion is to keep the auditor institutionally independent from government agents, most notably from the executive, eliminating direct channels for side-payments and reciprocal behavior. Hence, auditor independence is crucial in order to strengthen the incentives to expose unlawful accounting practices or wasteful policy implementation. Auditor independence is likely to be influenced by the appointing and removal procedures and

the term length and limitations of the auditor (e.g. Schelker 2008). The available empirical evidence on auditor appointing and removal procedures is ambivalent and not conclusive yet.

### ***Tenure Length and Term Limits in the Public Sector***

Tenure length and term limits crucially impact on an agent's incentives. In the public sector this has been analyzed before. However, such studies mainly focused on executive and legislative mandates and did not include auditing institutions. In the literature on term length two advantages of short terms have been advanced: It enables principals to quickly exchange bad office holders, and the disciplining effect of frequent electoral pressure should improve accountability and the incentive for the agents to keep close to voters' preferences (Barro 1973 and Ferejohn 1986). In contrast to these arguments a recent contribution by Dal Bo and Rossi (2008) points out that short terms lead to distortions since frequent elections are costly in organization, could distract politicians and citizens from productive activities, and the short time horizon of officeholders could lead to inefficient investments. In a natural experiment in Argentina they empirically scrutinize this ambiguous question of whether shorter or longer terms seem to be more adequate in legislative institutions. They exploit random variation in term length for members in the Argentinean legislature in 1983, where half of the representatives were randomly assigned 2-year terms and the other half were assigned 4-year terms. The authors also study a second natural experiment in the same legislature in 2001. Their overall finding is that the 4-year terms seem to induce better performance of legislators relative to the shorter 2-year terms. They attribute their results to an investment effect. Longer terms induce representatives to work harder. Since the benefits of investments often do not occur instantaneously, but only in some future period, longer time horizons allow politicians to invest more strongly in political effort. They find evidence supporting their investment logic as opposed to the more traditional



accountability argument. This study only compares 2-year to 4-year and to some extent 6-year terms and it remains unclear if these positive effects dominate even for longer terms, since it is possible that at some point the accountability effect dominates the investment effect.<sup>1</sup>

Many countries have adopted term limits in recent years. Testing a political agency model Besley and Case (1995) show that US State governors subject to a binding term limit implement systematically different fiscal policies than governors who can stand for re-election. They suggest that governors eligible to run again care about reputation building and hence, adjust economic policy choices to this constraint. In States with binding term limits they find fiscal cycles with higher taxes and expenditure in the last term if the governor is a democrat.<sup>2</sup> However, the discussion on the longer term effects of term limits suggests that they might reduce entrenchment effects, due to the accumulation of political capital that undermines electoral discipline for long-lived incumbents (Besley and Case 1995). The general question is why voters should be in favor of term limits since they cannot retain good policymakers in office and cannot threaten a term limited official to be replaced with a challenger should he not perform well, e.g. induce inefficient fiscal cycles. Moreover, term limits reduce the value of being in office and might reduce the willingness to invest in welfare improving longer term projects. Motivated by the observation that voters regularly support the introduction of term limits Smart and Sturm (2006) theoretically analyze the influence of the existence of binding term limitations.<sup>3</sup> They in turn argue that term limits reduce the value of holding office which encourages politicians to

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<sup>1</sup> A similar randomized study by Titiunik (2008) on the influence of term length on legislative productivity in US State senates finds that shorter terms increase abstention rates and reduce the number of bills introduced in the legislature. The direction of these results can be interpreted in line with Dal Bo and Rossi (2008).

<sup>2</sup> Johnson and Crain (2004) extend this analysis to investigate the influence of term limits on fiscal policy in a cross-country setting.

<sup>3</sup> See Lopez (2003) for a summary and evaluation of the economic rationales of term limit implementation, and Franklin and Westin (1998) for a theoretical model predicting seniority turnover and transition consequences of term limit reforms.

implement policies that are closer to their private preferences. Such behavior can be welfare improving from a voter's perspective, if typical policymakers do not usually implement policies that are unpopular at the time of the decision, but welfare improving in the future. Such a mechanism suggests that term limits make it possible for policymakers to actually implement welfare improving long term projects, the costs of which are visible today but result in benefits only in the future. Various authors discuss further distortions that can be alleviated by implementing term limits. E.g. Dick and Lott (1993) and Buchanan and Congleton (1994) argue that the ability of a representative to transfer resources to his electoral district increases over time in office, which gives him an advantage relative to other delegates. At the aggregate level such behavior leads to reduced government efficiency. An alternative explanation is based on a well-documented incumbency advantage, suggesting that term limits have a positive effect since they limit the influence of incumbency advantages (Glaeser 1997). Daniel and Lott (1997) show that the introduction of legislative term limits in California dramatically reduced campaign expenditures and increased electoral competition. They attribute these effects to the reduced returns of a political career, which makes it more interesting for new candidates to enter electoral races since campaign expenditures and incumbency advantages are being lower. For a more extensive discussion of the available literature see Lopez (2003) and Smart and Sturm (2006).

The evidence of tenure length suggests that very short terms do not seem to be favorable and that longer terms allow policymakers to invest in political activity. However, it is unclear if even longer terms would be beneficial or if the positive effects vanish due to the reduced accountability induced by less frequent electoral pressure. Hence, one could imagine a non-linear relationship, in which very short and very long terms diminish performance of elected officials.

The effects of term limits seem to be controversial as well, since there are theoretical arguments that speak for as well as against term limits.

### ***Auditor Terms and Term limits in the Corporate Sector***

The literature on the role of auditors is much more extensive for the corporate sector. Corporate auditors are assigned to review financial statements and evaluate the accuracy of the information provided, which is crucial for investors and other stakeholders of a firm. From the previous discussion it seems obvious that auditors evaluating financial statements should be independent from the firm's management who is providing exactly this information. However, the lack of auditor independence is one of the major issues in the recent history of corporate governance (e.g. Enron, Tyco, Worldcom, Parmalat, etc.). In order to provide an unbiased and impartial view on financial statements, legal provisions usually require that financial reports are audited by an external professional body. However, independence is not guaranteed by the requirement that the auditor must come from an outside company. There are numerous additional threats to auditor independence, starting with the entanglement of audit and non-audit services provided by accounting firms to the same client, appointing and removal procedures,<sup>4</sup> as well as psychological ties to the appointing body<sup>5</sup>.

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<sup>4</sup> For further details on appointing and removal procedures in the corporate sector see e.g. Acemoglu and Gietzmann (1997), Mayhew and Pike (2004), and Davidson III, Jiraporn and DaDalt (2006). Schelker and Eichenberger (2003), Bebchuk (2007) and Benz and Frey (2007) stipulate the direct election of the corporate auditor by shareholders.

<sup>5</sup> In a series of experiments with professional auditors Bazerman, Loewenstein and Moore (2002) show that individuals evaluate the same facts systematically differently if tied (e.g. hired) to different bodies. Individuals do not even need to have strong ties to some party. In order to observe such bias it is sufficient that they are loosely connected (e.g. a hypothetical professional relationship is sufficient).

A major factor for audit quality is auditor tenure, which impacts on independence and expertise.<sup>6</sup> The literature on the corporate sector with regard to auditor tenure and mandatory auditor rotation – which in fact is a term limit on the audit firm – yields interesting results for the aim of this paper. At the core of the discussion is the trade-off between improving auditor independence and accountability, and the associated costs of forgoing auditor expertise. Proponents of short auditor terms and mandatory rotation requirements argue that these factors improve independence because managers cannot directly threaten auditors with dismissal and cannot promise future income due to reappointment. Furthermore, it is often suggested that extended client-auditor relationships alone impede on auditor independence due to evolving ties between auditor and client (e.g. Mautz and Sharaf 1961). This argument is underlined by psychological evidence showing that with increasing ties between client and auditor psychological bias grows stronger (Bazerman, Loewenstein and Moore 2002).<sup>7</sup> Opponents point out that short terms and mandatory rotation of the corporate auditor involves a loss of expertise because the new auditor does not know the company well and must first acquire the relevant company- and industry-specific know-how. This lack of expertise and the lack of incentives to invest in specific expertise due to the short period during which auditors can expect returns from such specific investments may lead to increased audit failure. Such failure worsens the agency problem and weakens credibility of financial statements. The theoretical and empirical findings suggest a trade-off between independence and expertise resulting in a potential non-linear relationship between tenure and audit quality.

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<sup>6</sup> Recent contributions are e.g. Dopuch, King and Schwartz (2001), Gietzmann and Sen (2002), Johnson, Khurana and Reynolds (2002), Myers, Myers and Omer (2003), Mansi, Maxwell and Miller (2004), Comunale and Sexton (2005), and Gosh and Moon (2005).

<sup>7</sup> Moreover, ‘low-balling’ is also constrained by shorter terms and rotation requirements. ‘Low-balling’ refers to audit firms offering fees that are lower than the marginal costs of the initial engagement with a new client. Such an offer is interesting if the audit firm anticipates declining marginal costs of future audits if it is rehired (Dopuch, King and Schwartz 2001).

### ***Integrating Insights: Auditor Terms and Term Limits***

The public auditing institutions typically include a chief auditor and a whole structure of departments with auditing and administration staff. The chief auditor is responsible for the overall activity of the office. Several units specialize on the various audits conducted. The chief auditor could be compared to the lead partner of a big auditing firm, who is responsible for the audit mandate and policy but is not necessarily directly working in the actual audit process. He defines the audit policy and audit strategy and he typically enjoys a high degree of autonomy within the legal and regulatory framework. He can usually influence what is the subject of the current audit, its timing, priorities and the degree of thoroughness, which are essential for the understanding of his role as supervisor of bureaucratic agencies in a principal-agent framework.

The key components discussed in the corporate auditing literature are also helpful in the context of public auditors. Tenure length is likely to influence audit quality in that short terms improve accountability but reduce audit expertise, and long terms improve expertise but reduce independence and objectivity. For public sector auditors tenure length is likely to play a very similar role, since the chief of the public auditing institution is also fairly independent and enjoys a wide range of autonomy in his task to supervise agents. Expertise as well as the mechanisms and incentives impeding on independence are similar – e.g. appointing and removal procedures and growing ties to the audited agent or institution. Therefore, one could infer from this evidence that very short as well as relatively extended auditor-client relationships are detrimental. The corporate sector discussion on tenure length suggests that inefficiencies from extended auditor tenure can be reduced by mandatory auditor rotation, which comes close to a term limit for the chief auditor in a public sector institution.

Let me turn to the evidence from the public sector. Generally auditors are appointed by the legislative or the executive branch and only in a few cases – such as some US State auditors and local auditors in Switzerland – auditors are directly elected by the citizens. For the purpose of this analysis it is important to note that auditors are subject to a regular evaluation mechanism by some public official, such as legislators and executives, or the citizens. Consequently, there is an accountability mechanism at work which takes effect at predetermined intervals.<sup>8</sup> It is certainly true that there is an important difference between auditor and legislative or executive mandates since auditors are not involved in actual policy making. They have a clearly defined audit mission that is regulated by standardized procedures. Such procedures do not confer as much leeway as is granted to public officials endowed with decision-making power over the provision of public goods. Nevertheless, auditors face a similar incentive structure since they enjoy important degrees of freedom in determining timing and thoroughness of audits, which are crucial factors in the audit process.

The theoretical discussion above reveals two basic effects: on the one hand, there is an accountability mechanism at work. On the other hand, auditors have to invest in office-specific expertise in order to become effective supervisors, which is less attractive for shorter office terms. Both the accountability and investment arguments are also important for public auditors. In the literature analyzing legislative representatives 4-year terms are substantially more effective than 2-year terms. Even though the trade-off between accountability and investment seems to be similar, the optimal term length might be very different compared to legislative or executive mandates. When it comes to term limits the literature was summarized as being ambiguous. This impression also seems true for public auditing institutions. On the one hand, a binding term limit

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<sup>8</sup> For a theoretical discussion on the influence of accountability mechanisms in the public sector see Maskin and Tirole (2004).

might induce auditors not to keep up with new developments and reduce specific investments in expertise due to the limited time horizon, and they might provide incentives to conceal audit specifics to the next auditor. On the other hand, a binding term limit might induce incentives to be even more rigorous and disclose information that would reduce the chances of being reappointed.

Given these arguments one could expect a non-linear relationship between tenure length and auditor performance. The evidence on the influence of term limits remains ambiguous and does not allow a clear-cut hypothesis.

### ***Auditors and Fiscal Outcomes***

From an economic perspective the pertinent research question is how auditor characteristics shape public sector performance. This is important for both citizens and financial market participants investing in public debt. Electoral decisions by voters and reactions by investors in financial markets require credible information on the state of public finance. As discussed above more stringent audits enable principals to better control government agents or make more appropriate investment decisions, because they can observe a more reliable signal about the state of public finances. Direct links between audited information and fiscal and electoral outcomes have been established in the papers by Olken (2007) who finds that independent government audits reduce wasteful spending, and Finan and Ferraz (2008) who find lower electoral chances for corrupt mayors that have been audited prior to elections. The cited literature on transparency in the fiscal process also relates transparency measures to fiscal outcome variables such as deficits and debt accumulation.

Analyzing the relevant effect of auditor terms and term limits on public sector performance presents some important challenges for empirical research. Since the quality of fiscal data itself depends on audit quality, fiscal variables such as expenditures, revenues, deficits, or debts are not appropriate as dependent variables (see Schelker 2008). In other words, data quality is endogenous to auditor characteristics, which undermines statistical inference. A research question focusing on the influence of institutional characteristics on audit thoroughness and audit quality can therefore not rely on reported fiscal measures. It is likely that this problem also affects other studies relying on fiscal data as dependent variables to analyze the influence of fiscal institutions enhancing transparency. Moreover, there are further problems directly linked to fiscal data. Most importantly, the absolute levels of fiscal measures are not necessarily informative about government performance since efficient governance can involve higher or lower levels of e.g. expenditures, deficits or debts, depending on the state of the economy and the characteristics and quality of the financed public goods (e.g. Eichenberger 1994, Ferejohn 1999, Alt, Lassen and Skilling 2002, and Schelker 2008). Therefore, for example, the level of accumulated debt is not necessarily indicative of the state of public finance and credit worthiness. The quality of the investments made may vary considerably, which impacts on public finance and the need for future tax hikes and thus, on a States' ability to repay its debts. From this perspective it seems natural to adopt long term State credit ratings. These measures have several advantages. State credit ratings reflect a market evaluation of State fiscal performance. They are forward looking evaluations of the creditworthiness of the borrower taking into account the credit history, accumulated debt, and the actual state of public finance. A further advantage is that pure fiscal level effects and data quality effects can be controlled for by including fiscal measures such as debt or expenditure levels into the regression framework.



## ***Hypothesis***

From the theoretical discussion it is not entirely clear if shorter or longer terms are more favorable. The influence of auditor term length on credit ratings might follow a non-linear pattern. Very short as well as long auditor-agent relationships seem to be unfavorable from a theoretical perspective. It is likely that auditor performance is weak in the beginning and for short terms due to the lack of expertise and the weak incentives to exert effort; then with longer terms, auditor performance increases due to stronger incentives to exert effort, invest in know-how and learning; and then decreases with ongoing tenure due to dwindling accountability. Therefore, I also examine if there are non-linear (quadratic) effects of auditor tenure on credit ratings. Theoretical considerations on the impact of term limits do not provide a clear-cut hypothesis either. There are arguments that speak in favor of, as well as against term limits. It is mainly an empirical question to determine the influence of auditor term length and term limits on government performance.

In the empirical section I estimate the following basic equations:

$$(1) \quad y = \alpha + \beta * \textit{term length} + \gamma * \textit{term limit} + \zeta * \mathbf{A} + \lambda * \mathbf{X} + \varepsilon$$

$$(2) \quad y = \alpha + \beta_1 * \textit{term length} + \beta_2 * (\textit{term length})^2 + \gamma * \textit{term limit} + \zeta * \mathbf{A} + \lambda * \mathbf{X} + \varepsilon$$

where  $y$  is the long term State credit rating, the variables *term length* and  $(\textit{term length})^2$  indicate auditor term length in years and the squared value respectively and *term limit* is a dummy variable that equals 1 if a term limit is enacted.  $\zeta$  and  $\lambda$  are parameter vectors,  $\mathbf{A}$  is a matrix capturing additional features of the various auditing offices,  $\mathbf{X}$  is a matrix including additional cross-section characteristics, and  $\varepsilon$  is, of course, the error term.

### **III. Empirical Evidence from US State Auditing Institutions**

#### ***US State Auditors***

In order to analyze the influence of auditor tenure and term limits I take advantage of the decentralized US federal structure. The US States enjoy a high degree of autonomy and every State has its own constitution that defines the primary governance structures and processes. The main advantage in this setting is that the States feature different regulations concerning the institutional details of their auditing institution. Variation can be observed on many different levels, notably in the term length and term limit requirements as well as in appointing and removal procedures. US State auditors are either elected by the citizens, or appointed by the legislative, or in a very few cases the executive branch. In the case of elected or legislative appointed auditors the agent (executive) can neither directly select the auditor, nor influence it by promising future appointment.

The focus of the empirical analysis is on the influence of auditor term length and term limits on public sector performance. In most US States auditors are not appointed for an open mandate, but for a fixed term that varies in length across States. Most commonly State laws define a fixed term length (2, 4, 5, 6, 7, 8, or 10 years) after which the auditor-principal relationship ends. Some States allow their auditor to reapply for the position and some States impose a binding term limit.

#### ***The Data***

In order to conduct the empirical analysis I adopt a unique dataset containing information on a variety of institutional details of US State auditing institutions (see Schelker 2008). In addition to the information on various characteristics of the US State audit offices, the dataset

contains a whole range of state-specific standard control variables (see Alt, Lassen and Rose 2006, and Besley and Case 2003) ranging from information on fiscal performance, State fiscal institutions such as balanced budget requirements, voter initiatives, etc. to population and income data. The panel dataset contains state-specific information between 1990 and 1999. More details and summary statistics for the main variables can be found in the Appendix.

Since officially reported fiscal variables are not appropriate, I adopt State long term credit ratings that reflect a market evaluation of State fiscal performance. This is comparable to e.g. S&P credit ratings that have been used in the empirical literature on corporate auditors (e.g. Mansi, Maxwell and Miller 2004). In order to obtain the market evaluation of anticipated audit quality I control for the influence of the reported state of public finance and hence, I include real per capita State debt accumulation as a covariate in the regression framework.

The data on State credit ratings are taken from Moody's Investor Services. The State general obligation bond ratings are available for 39 US States for the entire period 1990-1999, but do not include States that have no general obligation debt.<sup>9</sup> When observing States without general obligation debt ratings, selection bias seems a concern. When approaching this potential selection problem, I do not find a significant correlation between auditor characteristics and the excluded States. Furthermore, I cannot explain any of this selection with the auditor or institutional variables in a regression framework either. Hence, it seems that selection bias is not a major concern for the study. In the context of this study a further, though minor, adjustment is the exclusion of Alaska and Hawaii from the analysis, which is the general practice for studies analyzing fiscal institutions in US States (see e.g. Alt, Lassen and Skilling 2002). Alaska and

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<sup>9</sup> The States without a rating during the analyzed period are Arizona, Colorado, Iowa, Idaho, Indiana, Kansas, Kentucky, North Dakota, Nebraska, South Dakota and Wyoming.

Hawaii are outliers in many respects, but most importantly with regard to fiscal data, since these States depend disproportionately on federal transfers. Given the available data, the exclusion of Alaska and Hawaii does not affect the results associated with auditor term and term limits in the present study, while it enables the readers to compare the results to related work using fiscal data on the US State level.

### *The Empirical Strategy*

I present the results in two parts: First, I run a series of regressions analyzing the linear influence of auditor term length and term limits on credit ratings, and in a second part I examine the discussed potential non-linear relationship of term limits on outcomes and present the same series of regressions including a squared term of the term length variable to account for non-linear effects of auditor tenure.

Within these parts, I always start with estimating a linear model that abstracts from the fact that the dependent variable is of ordinal scale. These linear models are typically good approximations and the interpretation of the effects is straightforward. In a next step I take the ordinal scale into account and estimate ordered probit models. The OLS and ordered probit models assume that the variance of the cross-section specific effects ( $a_i$ ) is zero ( $\text{var}(a_i)=0$ ). In the present setting such an assumption is likely to be violated. In order to relax this assumption, I estimate random effects (RE) models that assume that the  $a_i$ 's result from a random draw and follow a normal distribution. I conduct Lagrange multiplier tests (Breusch/Pagan) which indicate that  $\text{var}(a_i)\neq 0$  and hence, the random effects estimates allowing for individual heterogeneity are

the preferred specification and will be presented in the following tables.<sup>10</sup> Due to the time persistence of the main explanatory variables I am not able to further relax the assumption and it is not possible to estimate fixed effects models allowing for arbitrary correlation between  $a_i$  and the explanatory variables, i.e. I cannot control for unobserved time-invariant heterogeneity.

Since the audit offices differ in various dimensions, I control for effects resulting from the different auditor selection and removal mechanisms and for differences in the audit mandate.<sup>11</sup> Furthermore, all regressions include real per capita State debt, and a range of standard covariates controlling for state-specific heterogeneity. This is important in order to take structural differences between the States into account. I always start by presenting a basic regression model only including the most standard control variables (real per capita income, population size, unemployment rate, fraction of young and aged population, and a dummy for southern States) and then present further specifications controlling for time effects and additional covariates that have proven to be influential in previous research on the US State level (population density, strict balanced budget rule, initiative rights). The second regression includes year fixed effects to control for year-specific factors. Likelihood ratio tests show that the model including the time effects fit the data significantly better than the basic model without time effects. Therefore, all following regressions include year fixed effects, but I continue to report the first basic regression for comparison. The third regression includes a dummy variable controlling for whether the auditor serves a predetermined fixed term length as opposed to an open mandate. The open

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<sup>10</sup> The random effects ordered probit models have been calculated by applying the estimation procedures proposed by Frechette (2001a, 2001b) using Gauss-Hermite quadrature. The estimation procedure is implemented in the statistical software package STATA.

<sup>11</sup> Not all states require the auditor to conduct exactly the same types of audit. In addition to standard financial audits several State auditors also conduct performance audits. Financial audits follow standard accounting rules and are comparable across states. The differences in the extent to which performance audits are conducted are controlled for in the empirical model.

mandate has been coded as a term length of zero years, which might be subject to discussion. Therefore, I control for these cases in the third and fourth regression and additionally present a separate table for a subsample of States in which the auditor serves a fixed term. This procedure is applied for both econometric model classes, the linear random effects models and the random effects ordered probit models.

The great disadvantage of the non-linear estimation approach is that the interpretation of the results is not straightforward. A meaningful interpretation beyond the sign of the coefficient including the magnitude of the effects seems overly ambitious since it requires arbitrary decisions on which category of the dependent variable the interpretation should focus. Therefore, the tables do not report category-specific marginal effects. The interpretation focuses on the direction of the effects and if interpretations of the magnitude are meaningful the linear estimates typically provide a good approximation.

### ***Empirical Results***

Table 1 to 4 present the regression results of auditor terms and term limits on Moody's State long term obligation bond ratings. The empirical analysis starts with a first part estimating the influence of term length and term limits on State credit ratings (Tables 1 and 2). In a second part the analysis proceeds by incorporating the squared value of the term length variable into the regression framework (Tables 3 and 4) in order to assess potential non-linear effects.

Note that the empirical results do not allow a causal interpretation of the influence of auditor characteristics – such as term and term limits – on credit ratings, since I cannot exclude endogeneity of the auditor characteristics. Unfortunately, I could not find valid instruments allowing to establish causal relationships. Since the present institutional frameworks remained

stable over time reverse causality should not be a major concern. However, simultaneity and omitted variable bias still undermine causal inference. In order to reduce such bias a whole set of control variables is included. Table 1 presents the estimation results of all control variables. It can be seen that the estimation results are in line with previous research using the same or similar covariates. For this reason and for the sake of legibility and clarity the estimation results of control variables will be omitted in the subsequent Tables 2 to 4.

Columns 1 to 4 of Table 1 summarize the linear random effects estimates while columns 5 to 8 present the random effects ordered probit estimates.

[Table 1 about here]

Columns 1 and 5 of Table 1 show the basic regression including the two main variables of interest – *term length* and *term limits* – and just a basic set of control variables. In the basic regression models in column 1 and 5 the influence of *term length* is only significantly estimated in the linear model (column 1). Including time fixed effects in columns 2 and 6 improves the model fit (likelihood ratio tests not reported) and hence, they are included in all follow-up regressions. The estimated coefficient of *term length* is negative and statistically significant when adding time fixed effects to the base regression. In columns 3 and 7 a dummy for auditors with a fix term is included. With this procedure I control for structural differences that might exist between auditors with an open mandate – i.e. who serve at the pleasure of the appointing body – and auditors with a predetermined fixed term length – e.g. 4 years with the possibility of renewing the appointment. Moreover, this mitigates possible concerns about the coding of the term length of auditors with an open mandate. These concerns are further addressed by a series of regressions focusing entirely on a sub-sample of States excluding auditors serving an open

mandate (see Tables 2 and 4). The estimated coefficient of the *term length* variable remains negative in most model specifications but is frequently not significant in the linear models. The estimated coefficient reacts fairly sensitively to the inclusion of the dummy variable for auditors with a fixed mandate. The inclusion of further control variables that proved to be important in previous research on the US State level (population density, strict balanced budget rule, and voter initiatives) has no major impact on the estimated coefficients of the *term length* variable. Overall, the estimated coefficients for the *term length* variable are negative in all further reported regressions, which indicate lower credit ratings with increasing term length. However, statistical significance is not always achieved.

The influence of auditor *term limits* is positive and statistically highly significant across all estimated models and specifications in Table 1. The coefficient is fairly robust to changes in model specifications and the choice of the estimation method. Hence, if a *term limit* constrains auditor tenure I find significantly higher credit ratings. In order to assess the magnitude of the effect I focus on the linear estimates that indicate an increase of the credit rating of roughly 0.7 to 1.0 rating categories on average. It might be a concern that the auditor term limit is just a mirror of a more general practice in the State to limit office terms. When investigating this concern, I find that the correlation of auditor term limits with term limits for the office of State governor is low (0.194) and the auditor term limit estimates are not affected at all by the inclusion of a dummy variable accounting for governor term limits. The coefficient of auditor term limits remains positive and significant with values close to the ones reported in the tables, while the influence of governor term limits is negative and significant in only some specifications.

The inclusion of the *fixed term* variable largely depends on the model specification and does not yield consistent results. The *auditor election and removal procedure* variables yield no



clear results. Only the variable capturing the audit mandate to conduct *performance audits* tends to produce statistically significant results. States which allocate a stronger mandate to conduct performance audits tend to be associated with higher credit ratings. All further included control variables follow the expected patterns, and are in line with previous research. The *real per capita State debt* variable is consistently negative and significant. This is according to the general expectation that higher public debt reduces credit worthiness and thus, reduces credit ratings. Higher *real per capita income* significantly improves ratings, while higher *unemployment* and a larger fraction of the *aged* population tend to reduce ratings. The fraction of the *young* population does not significantly impact on credit ratings. The *population variables* (size and density) tend to be negatively correlated with credit ratings pointing to diseconomies of scale; however, the coefficients are not always statistically significant. To put these results in perspective it is important to note that the literature is ambiguous with respect to these questions. Estimating population effects at such an aggregated level might not be representative for all classes of jurisdictions and the optimal size of jurisdictions depends on the context and the analyzed dimension. The strict *balanced budget requirements* (no carry-over rule) are positively correlated with credit ratings and confirm the disciplining effect of strict balanced budget rules as is established in the literature (e.g. Bohn and Inman 1996, Poterba 1994, 1996). The right to bring forward *citizen initiatives* tends to be positively correlated with credit ratings; however, the effect is not statistically significant in all specifications. This is in line with the recent literature on the effects of direct democracy (e.g. Matsusaka 2004) as well.

[Table 2 about here]

When restricting the analysis to solely include States with a fixed auditor term, and thus leaving aside all States in which the auditor serves at the pleasure of the appointing body, the

sample shrinks to 25 States over the same time period leaving us with 250 observations. Restricting the sample is a way to assess the robustness of the previous results. The estimates in Table 2 are presented in a similar way as in Table 1, but omitting the presentation of regression results of control variables. Columns 1 and 4 report the basic regression models, Columns 2 and 5 add time fixed effects, and Columns 3 and 6 include the additional controls already presented in Table 1.

The estimates of auditor *term length* are not statistically significant in the linear models (columns 1-3). In contrast, the coefficients of the random effects ordered probit models are consistently negative and statistically significant. Similarly to the results in the previous table, the coefficients are not especially robust to changes in model specifications. The estimated coefficients of the influence of auditor *term limits* are robust to changes of the sample size and various model specifications and they yield consistently positive and significant results. The additional control variables follow the same patterns as described above.

[Table 3 about here]

In Tables 3 and 4 I conduct the same empirical analyses as above but explore potential quadratic effects of auditor term length. Therefore, I add a squared term of the term length variable to all previously reported model specifications.

In Table 3 and 4 the estimated coefficients of the *squared term length* variable are mostly not estimated with great precision in the linear random effects models (see columns 1-4 in Table 3 and columns 1-3 in Table 4). Only the random effects ordered probit models yield some significant results (see columns 5-8 in Table 3 and columns 4-6 in Table 4). Overall, significant coefficients are often negative indicating an inverse U-shape relationship between term length

and credit ratings. Shorter as well as longer terms tend to be correlated with lower credit ratings. This is in line with the theoretical arguments discussed in the first part of this paper. However, the estimates are not robust to changes in model specifications and the choice of the empirical model. When estimating a model including a full set of control variables, the estimated coefficient becomes positive, though only marginally significant.

The coefficients of the *term length* variable reported in Tables 3 are – similar to the previous results – mostly negative, indicating lower credit ratings for States that allocate longer auditor terms. The estimates in the sub-sample of States with fixed auditor terms (Table 4) are not robust to specification changes and the coefficients are often not statistically significant. A meaningful interpretation of the effect of auditor term length and the combined (linear and non-linear) effect of the office term is not feasible under these circumstances.

*Term limits* are again a consistently estimated and I find a statistically significant positive correlation with credit ratings. The size of the effect is not affected by the inclusion of the squared term and remains very close to the previous estimates. Again, the inclusion of governor term limits does not affect the results.

Similar to the previously reported results, the estimated effect of *fixed auditor terms* is not clear and highly sensitive to specification changes. All remaining control variables follow the discussed patterns and are in line with standard research on the US State level.

[Table 4 about here]

In summary I find a relatively strong result for the influence of auditor term limits. The estimates consistently show a positive correlation between auditor term limits and State credit

ratings suggesting that States that have installed a term limit (after the second 4-year term) feature significantly higher credit ratings. The difference to States without such a term limit is on average a roughly 0.7 to 1.0 point higher credit rating. This effect is not only statistically but also economically significant. The concern that the result is driven by the practice of a State to generally limit office terms seems not valid, since the results are unchallenged by the inclusion of governor term limits in the regression framework. The theoretical discussion showed that there are arguments in favor of, as well as against, term limits. On the one hand, a binding term limit might induce auditors not to keep up with new developments and reduce specific investments in expertise due to the limited time horizon, and they might provide incentives to conceal audit specifics to the following auditor. On the other hand, a binding term limit might induce incentives to be even more rigorous and disclose information that would reduce the chances of being reappointed. The empirical findings support the second view that auditor term limits actually improve government performance. The findings on the influence of auditor term length on credit ratings are not unequivocal, since the estimates are not particularly robust. If the estimates are statistically significant I tend to find negative correlations of office term and credit ratings suggesting longer terms to be associated with lower credit ratings. The same is true for the squared value of the term length variable, which is not particularly robust either. Therefore, a final interpretation is difficult and not suitable. When statistically significant, the estimates tend to show a negative U-shape relationship between term length and credit rating suggesting short and longer terms to be less effective. Such a finding would be in line with the discussed literature, where there seems to be a trade-off between regular electoral pressure improving accountability and investment incentives improving auditor performance due to improved expertise and the longer time horizon.

#### **IV. Conclusion**

Controlling government agents is a major challenge in democratic government systems. In order to reduce information asymmetries between the principal and its agents, agents have to disclose information. However, disclosure requirements are ineffective if the information provided is not accurate and timely. Therefore, disclosure requirements must be backed by independent review. Review of financial information is usually conducted by independent public auditing institutions, which are supposed to verify and certify financial statements issued by the government. If the audits are of poor quality or the auditor is not independent from the government financial statements lose credibility. From the auditing literature in the corporate sector it is well known that auditor independence is influenced by the duration of the auditor-client relationship. This paper contributes to our understanding of the influence of public audits on policy outcomes by analyzing the influence of auditor term length and term limits on financial markets' perception of the state of public finances. This paper is one of the first attempts to test the influence of auditor characteristics empirically by assembling a unique dataset at the US state level.

After discussing the influence of auditor term length and term limits on government performance from a theoretical perspective, by exploiting available evidence from legislative and executive mandates as well as from research on corporate sector auditing, I turn to analyze genuine data on US State auditors. Every US State features a public auditing institution analyzing official financial statements. I take advantage of the variation in the institutional design of these audit offices across the States. Some State auditors are elected and some are appointed, both typically for a predetermined fixed period of time, and some States feature term limits. The study

focuses on the impact of auditor term length, and term limits on the state of public finances measured by State long term obligation debt ratings.

Focusing on the influence of auditor term length on public sector performance, the optimal term length cannot be directly inferred from the available literature on legislative or corporate auditor mandates. However, the theoretical arguments point to a non-linear relationship between term length and outcomes, since a lack of expertise for short terms as well as a lack of accountability for extended terms seem to weaken auditors' contribution to reducing the agency problem. The results from the empirical analyses are not entirely conclusive yet. Statistically significant results tend to show a negative u-shape relation between term length and credit ratings, though the estimates are sensitive to changes in model specifications. Therefore, a final interpretation of the overall effect of term length including the linear and the quadratic effect is not sensible.

When it comes to auditor term limits, I consistently find a strong positive and statistically significant correlation of auditor term limits and credit ratings. States in which a term limit constrains auditor tenure to a maximum of 8 years (2 consecutive 4 years terms) feature significantly higher credit ratings.

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## Appendix

**Table A1: Auditor variable description**

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<b><i>Term length</i></b> Official auditor term length. Code: official term length in years; if the auditor serves 'at pleasure of legislature, legislative committee, etc.' then coded as 0
<b><i>Term limit</i></b> Binding term limit. Code: 0 if no term limit; 1 if there is a term limit (some States have a limit of 2 terms of 4 years).
<b><i>Remove</i></b> Removal procedure for agency head. Code: 0 if single committee or public official can remove agency head, 1 if simple majority vote in both legislative chambers required, 2 if supermajority required in both chambers or if special procedures required (e.g. impeachment with supermajority in at least one house, or involving judicial branch), 3 if agency head cannot be removed during official term.
<b><i>Auditor elected</i></b> Selection procedure for agency head. Possible procedures: Elected by the citizens; appointed by the legislature, legislative committee, the executive. Code: 1 if elected by the citizens; 0 if appointed.
<b><i>Performance audits</i></b> Index adding all 3 types of performance audits: Economy & Efficiency, Program, and Compliance audits.
<b><i>Economy &amp; efficiency audits</i></b> Economy & Efficiency audit. Code: 1 if economy and efficiency audit is conducted; 0 otherwise
<b><i>Program audits</i></b> Program audit. Code: 1 if program audit is conducted; 0 otherwise
<b><i>Compliance audits</i></b> Compliance only audit. Code: 1 if compliance audit is conducted; 0 otherwise
<b>Notes:</b> Main source of information on US State auditing institutions: <i>Auditing in the States: A Summary</i> . National Association of State Auditors, Comptrollers and Treasurers (NASACT). 1989, 1992, 1996, 2000, 2002 2003, 2004, 2005, 2006. For more information on the construction of the dataset see Schelker (2008)

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**Table A2: Summary statistics**

Variable	Min. – Max.	Sample mean (Std. Dev.)	Description
Moody's State credit rating	(-1) – (-8)	-2.945 (-1.598)	Moody's State long term obligation rating (highest rating Aaa = -1, Aa1 = -2, Aa2 = -3, etc.)
Term length	0 – 10	3.037 (2.628)	Office term length of auditor in years
Term limit	0/1	0.088 (0.284)	Auditor term limit installed (1), otherwise (0)
Fixed term	0/1	0.678 (0.468)	If office term length defined (1), if auditor serves at pleasure of appointing body (0)
Auditor elected	0/1	0.353 (0.478)	Auditor is elected by the citizens (1), auditor is appointed by the legislature (0)
Performance audits	0 – 3	1.853 (1.128)	Index of performance audits conducted
Removal procedures	0 – 3	1.22 (0.934)	Index capturing various removal procedures for the State auditor.
Government debt	2366.41 – 23575.21	5053.18 (2483.51)	Real per capita government debt in USD
State Population	550000 – 2.00E+07	5343362 (4622413)	Total State population
State income	10023.86 – 22913.7	14677.58 (2371.28)	Real per capita State income in USD
Unemployment	2.7 – 11.3	5.725 (1.491)	Unemployment rate
Aged	0.084 – 0.188	0.128 (0.018)	Fraction of the aged population (65+)
Kids	0.153 – 0.269	0.187 (0.018)	Fraction of school-aged population (5-17)
Population density	0.966 – 1082.702	210.497 (257.882)	Population density (population per square mile)
Balanced budget rule	0/1	0.569 (0.496)	Balanced budget requirement (no carry-over rule)
Voter initiative	0/1	0.380 (0.486)	Voter initiative available (1), otherwise (0)

**Table 1: The effect of auditor term length and term limits on Moody's State credit ratings**

Full sample of States with obligation bond rating								
Moody's State credit rating 1990 – 1999 (Best Rating Aaa = -1, Aa = -2, etc.)								
Estimation method	Random Effects	Random Effects	Random Effects	Random Effects	RE-ordered probit	RE-ordered probit	RE-ordered probit	RE-ordered probit
	1	2	3	4	5	6	7	8
Term length	-0.329 (0.128)***	-0.241 (0.119)**	-0.036 (0.252)	-0.141 (0.216)	0.001 (0.038)	-0.097 (0.040)**	-0.235 (0.060)***	-0.416 (0.065)***
Term limit	0.727 (0.223)***	1.004 (0.223)***	0.997 (0.224)***	0.753 (0.222)***	0.953 (0.287)***	1.627 (0.317)***	1.352 (0.318)***	0.957 (0.433)***
Fixed term	-	-	-1.068 (1.068)	-0.450 (0.923)	-	-	1.261 (0.373)***	1.137 (0.355)***
Auditor election	-0.274 (0.637)	0.311 (0.635)	0.613 (0.603)	0.259 (0.549)	-0.025 (0.203)	0.872*** (0.211)	0.953*** (0.243)	-0.588** (0.240)
Auditor removal	0.435 (0.372)	0.001 (0.369)	-0.0790 (0.356)	-0.0210 (0.338)	-0.011 (0.132)	-8.3E-4 (0.141)	-0.386** (0.157)	-0.377*** (0.143)
Performance audits	-0.000 (0.049)	0.088* (0.048)	0.0817* (0.0474)	0.106** (0.0465)	-0.165** (0.082)	0.285*** (0.092)	0.303*** (0.098)	0.339*** (0.096)
Debt (real p.c)	-1.95E-4 (0.97E-4)**	-2.51E-4*** (9.30E-5)	-2.37 E-4*** (9.15E-5)	-1.70 E-4* (9.53E-5)	-5.15E-4*** (8.14E-5)	-6.89E-4*** (8.67E-5)	-6.35E-4*** (9.60E-5)	-4.72E*** (9.49E-5)
Population	-5.16E-8 (4.28E-8)	-5.76E-8 (4.21E-8)	-6.20E-8 (4.04E-8)	-5.47E-8 (3.47E-8)	-2.78E-8** (1.23E-8)	-1.43E-7*** (1.55E-8)	-7.15E-8*** (1.33E-8)	-1.33E-7*** (1.59E-8)
Income	0.64E-4 (0.54E-4)	3.58E-4*** (9.93E-5)	3.47E-4*** (9.83E-5)	4.96E-4*** (1.07 E-4)	2.17E-4*** (6.80E-5)	6.19E-4*** (8.22E-5)	5.19E-4*** (9.06E-5)	9.25E-4*** (9.89E-5)
% Unemployed	-0.052 (0.051)	-0.163** (0.066)	-0.161** (0.065)	-0.157*** (0.061)	-0.086 (0.065)	-0.561*** (0.085)	-0.496*** (0.090)	-0.605*** (0.092)
% aged	-19.850 (6.751)***	-15.76** (6.995)	-15.70** (7.077)	-20.63*** (7.337)	-46.91*** (6.066)	-43.45*** (6.229)	-29.13*** (6.311)	-57.60*** (7.293)
% young	0.506 (3.931)	3.836 (4.199)	3.628 (4.178)	0.749 (3.980)	-4.917 (6.347)	12.12* (6.737)	1.180 (7.361)	2.151 (6.848)
Pop. density	-	-	-	-2.16E-3* (1.14E-3)	-	-	-	-1.84E-3*** (5.3E-4)
Balanced budget law	-	-	-	1.497*** (0.464)	-	-	-	2.917*** (0.345)
Voter initiative	-	-	-	-0.0357 (0.386)	-	-	-	1.485*** (0.199)
Year effects	-	included	included	included	-	included	included	included
Observations	370	370	370	370	370	370	370	370
(pseudo) R <sup>2</sup>	0.061	0.188	0.166	0.392	0.064	0.118	0.110	0.160

Notes: Heteroscedasticity robust standard errors in brackets. Dummy for southern States included. Significance level: \* 0.05<p<0.1, \*\* 0.01<p<0.05, \*\*\* p<0.01. Source: Own calculations

**Table 2: The effect of auditor term length and term limits on Moody’s State credit ratings in a sub-sample of States with fixed term length**

Sub-sample of States with fixed auditor terms and obligation bond rating						
Moody’s State credit rating 1990 – 1999 (Best Rating Aaa = -1, Aa = -2, etc.)						
Estimation method	Random Effects	Random Effects	Random Effects	RE-ordered probit	RE-ordered probit	RE-ordered probit
	1	2	3	4	5	6
Term length	-0.093 (0.232)	-0.087 (0.196)	-0.171 (0.207)	-0.250 (0.062)***	-0.157 (0.062)**	-0.414 (0.072)***
Term limit	0.680 (0.274)**	1.018 (0.275)***	0.799 (0.245)***	1.061 (0.325)***	2.225 (0.393)***	1.579 (0.417)***
Basic controls	included	included	included	included	included	included
Year effects	-	included	included	-	included	included
Add. controls	-	-	included	-	-	included
Observations	250	250	250	250	250	250
(pseudo) R <sup>2</sup>	0.040	0.089	0.103	0.073	0.113	0.127

Notes: Heteroscedasticity robust standard errors in brackets. *Basic Controls*: Auditor election, performance audits, auditor removal procedure, real per capita State debt, State population, State income per capita, unemployment rate, fraction of aged, fraction of school-aged, dummy for southern States. *Add. controls*: population density, balanced budget requirement, voter initiative. Significance level: \* 0.05<p<0.1, \*\* 0.01<p<0.05, \*\*\* p<0.01. Source: Own calculations

**Table 3: The effect of auditor term length, term length squared, and term limits on Moody's State credit ratings**

Full sample of States with obligation bond rating								
Moody's State credit rating 1990 – 1999 (Best Rating Aaa = -1, Aa = -2, etc.)								
Estimation method	Random Effects	Random Effects	Random Effects	Random Effects	RE-ordered probit	RE-ordered probit	RE-ordered probit	RE-ordered probit
	1	2	3	4	5	6	7	8
Term length	-0.651 (0.257)**	-0.489 (0.246)**	-0.637 (0.691)	-0.865 (0.599)	0.132 (0.095)	-0.117 (0.106)	0.270 (0.235)	-0.658 (0.285)**
Term length squared	0.055 (0.043)	0.042 (0.042)	0.054 (0.074)	0.065 (0.064)	-0.039 (0.010)***	-0.025 (0.011)**	-0.063 (0.020)***	0.038 (0.023)*
Term limit	0.754 (0.221)***	1.014 (0.223)***	1.019 (0.224)***	0.792 (0.225)***	1.607 (0.317)***	1.453 (0.331)***	1.817 (0.347)***	-0.464 (0.346)
Fixed term	-	-	0.372 (1.579)	1.280 (1.330)	-	-	-1.425 (0.653)**	1.042 (0.763)
Basic controls	included	included	included	included	included	included	included	included
Year effects	-	included	included	included	-	included	included	included
Add. controls	-	-	-	included	-	-	-	included
Observations	370	370	370	370	370	370	370	370
(pseudo) R <sup>2</sup>	0.158	0.198	0.200	0.190	0.055	0.109	0.120	0.162

Notes: Heteroscedasticity robust standard errors in brackets. *Basic Controls*: Auditor election, performance audits, auditor removal procedure, real per capita State debt, State population, State income per capita, unemployment rate, fraction of aged, fraction of school-aged, dummy for southern States. *Add. controls*: population density, balanced budget requirement, voter initiative. Significance level: \* 0.05<p<0.1, \*\* 0.01<p<0.05, \*\*\* p<0.01. Source: Own calculations

**Table 4: The effect of auditor term length, term length squared, and term limits on Moody's State credit ratings in a sub-sample of States with fixed auditor term length**

Sub-sample of States with fixed auditor terms and obligation bond rating						
Moody's State credit rating 1990 – 1999 (Best Rating Aaa = -1, Aa = -2, etc.)						
Estimation method	Random Effects	Random Effects	Random Effects	RE-ordered probit	RE-ordered probit	RE-ordered probit
	1	2	3	4	5	6
Term length	0.104 (0.593)	0.032 (0.600)	-0.250 (0.638)	0.539 (0.242)**	0.197 (0.243)	-0.381 (0.285)***
Term length squared	-0.018 (0.062)	-0.017 (0.063)	0.007 (0.068)	-0.057 (0.020)***	-0.066 (0.020)***	-0.006 (0.023)
Term limit	0.683 (0.277)**	1.017 (0.280)***	0.817 (0.252)***	2.172 (0.374)***	2.389 (0.419)***	1.697 (0.466)***
Basic controls	included	included	included	included	included	included
Year effects	-	included	included	-	included	included
Add. controls	-	-	included	-	-	included
Observations	250	250	250	250	250	250
(pseudo) R <sup>2</sup>	0.041	0.091	0.105	0.059	0.114	0.121

Notes: Heteroscedasticity robust standard errors in brackets. *Basic Controls*: Auditor election, performance audits, auditor removal procedure, real per capita State debt, State population, State income per capita, unemployment rate, fraction of aged, fraction of school-aged, dummy for southern States. *Add. controls*: population density, balanced budget requirement, voter initiative. Significance level: \* 0.05<p<0.1, \*\* 0.01<p<0.05, \*\*\* p<0.01. Source: Own calculations