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## ► To cite this version:

Nicolas Gavaille. Who are the 'ghost' MPs? evidence from the french ParliaMent. 2017. halshs-01549022

**HAL Id: halshs-01549022**

**<https://shs.hal.science/halshs-01549022>**

Preprint submitted on 28 Jun 2017

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## WHO ARE THE 'GHOST' MPs? EVIDENCE FROM THE FRENCH PARLIAMENT



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# Who are the ‘ghost’ MPs? Evidence from the French Parliament

Nicolas Gavaille\*

## Abstract

This paper studies the characteristics of the ghost deputies of the French National Assembly, i.e. deputies who do not have any official recorded activity over a whole year. Using a rich dataset providing various information about all deputies from 1959 to 2012, the results indicate that the typical ghost deputy is an old man with a low level of schooling, member of a large party which does not support the government and who is elected in jurisdiction with a low level of political competition. However, personal characteristics are less and less correlated with performance over the years. Finally, ghost deputies face more difficulties to achieve reelection, but are penalized only at the first round, voters exclusively considering national factors at the second round.

**Keywords:** Bad politicians, Legislative activity, French politicians, Legislative elections, Vote-Popularity function

**JEL:** D72, J45

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*‘Only remain ‘back bencher’ the one who is not motivated nor talented enough<sup>1</sup>.’*  
-Guy Carcassonne, constitutional scholar (1989)

# 1 Introduction

In January 2016, after weeks of debates, the French National Assembly proceeded to the preliminary vote of the first article of a project of constitutional revision, giving to the state extended emergency powers during a security crisis. On 577 deputies, 103 voted for, 26 against and 7 abstained. 441 deputies did not show up for the vote. Such an absenteeism rate for a highly controversial project set off a wave of protest against the lack of involvement of MPs into the legislative process.

Notorious cases of frivolous elected officials shirking their duties are not restricted to a particular country: Andrew Thompson has been suspended from Canadian Senate for chronic absenteeism in 1997. German former Minister of Finance Peer Steinbrück was at the center of a scandal after having missed several important parliamentary sessions in order to give paid speeches elsewhere<sup>2</sup>. Neither it is restricted to a particular period: in order to fight endemic absenteeism and the ‘generally low’ level of morale of Roman senators, Augustus introduced a system of *quorum* and fines in 9 BC (Talbert, 1984). For the same reason, the Tudor’s House of Lords imposed a daily attendance register back in 1515 (Graves, 2014, p.35).

This paper provides a simple exploratory work depicting a portrait of the ghost deputies of the French National Assembly from 1959 to 2012. By ghost deputies, I mean deputies who do not have any registered activity over a whole year in the records of the Parliament. The traditional role of a deputy is threefold: to exert control on the government, to produce legislation and to represent the electorate (Duhamel, 2009). A deputy cannot reasonably achieve these tasks without leaving a trace in the official record. Having a zero output is hence unambiguously an indicator of shirking.

From a political agency perspective, the electoral mechanism plays a dual role to

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<sup>1</sup>*‘Ne reste ‘back bencher’ que celui qui n’est pas assez motivé ou pas assez doué pour cesser de l’être.’*

<sup>2</sup>This example is mentioned in Bernecker (2014).

prevent elected politicians to shirk. First, politicians are supposed to be accountable for their behavior in office. In order to get reelected, politicians have to provide a minimum level of effort. The situation is a typical moral hazard problem, and election can be seen as a disciplining device providing incentives to politicians not to shirk (Barro, 1973; Ferejohn, 1986). Second, since all politicians are not all of the same quality, institutions should be designed in order to favor the selection of the ‘good’ type, and voters typically face an adverse selection problem (Besley, 2005, 2006; Persson and Tabellini, 2000). This selection mechanism generated an extensive empirical research relating individual politicians’ characteristics to their behaviour and performance in office (for instance Besley et al., 2011; Dreher et al., 2009; Hayo and Neumeier, 2014; Jochimsen and Thomasius, 2014; Moessinger, 2014).

The purpose of the paper is threefold. First, it aims at providing evidence on the relationship between politicians’ individual characteristics and their *negative* performance. A large amount of papers develop a measure of performance attempting to capture incumbent’s influence on economic outcomes, such as GDP growth or public deficits. These aggregates are not under his/her direct control and hence very noisy. Focusing on MPs allows for a clear, direct observation of individual politicians’ behaviour. Galasso and Nannicini (2011) and Gagliarducci et al. (2010) use absenteeism rate as a measure of performance in the Italian Parliament. The major problem with these measures is that a politician might look good simply by sleeping on the bench of Parliament. Arnold et al. (2014), Gavaille and Vershelde (2017) and Hurka et al. (2017) propose measures of performance based on MPs’ parliamentary activity, i.e., on what deputies actually *do* within the Parliament. But contrary to these papers, the simple measure binary measure I use allows to isolate a set of MPs that fail to fulfil their duty<sup>3</sup>. For this reason, it is relevant to check whether the (sometimes tenuous) correlations between personal characteristics and politician’s performance observed in previous studies still hold using such a clearcut measure. Observing what are the characteristics associated with bad politicians is of specific importance since many papers use observable characteristics as *ex ante* measures of

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<sup>3</sup>This set is certainly only a subset of shirking deputies, but focusing on zero registered activities eludes the question of the importance and the quality of an individual activity item. It may be discussable whether the performance of deputy with 20 entries in the register is necessarily better than the performance of a deputy with 10 entries, as it would imply to assess and compare the relevance and quality of each item. Comparing the performance of any of these two MPs with a third MP having zero registered activity is however straightforward.

the quality of politicians, but rarely verify the relevance of these proxies with respect to performance<sup>4</sup>. The politicians' level of education is in particular commonly used for this purpose (Baltrunaite et al., 2014; De Paola and Scoppa, 2011; Kotakorpi and Poutvaara, 2011). If Besley et al. (2011) find a relation between national leaders' education and GDP growth, this relation remains to be verified in a more direct, simple setting. Other proxies for quality include the previous occupation (Baltrunaite et al., 2014; De Paola and Scoppa, 2011), the political local experience (Braendle, 2015; Galasso and Nannicini, 2011) and being born in the district of election (Shugart et al., 2005). This latter paper is in particular based on the assumption that MPs born in their district of election are more involved in parliamentary work. Studying the characteristics of the French ghost deputies over 50 years will allow to provide support - or not - to these common critical assumptions.

Second, I investigate whether the correlations between individual characteristics and the probability to be a ghost deputy are stable over the years. As illustrated above, problems related to shirking behaviours are far from being a recent phenomenon, but the characteristics of the ghost deputies may be different depending on the period. For instance, Gavaille and Verschelde (2017) observe a time-varying relationship between electoral competition and the activity of the French deputies. For this reason, I exploit the relatively large time span of the dataset to check whether the variables characterizing ghost deputies 50 years ago are the same variables as for the current ones. If the characteristics of the ghost deputies are not stable over time, it would raise the question of the relevance of the use of such variables to proxy the *ex ante* quality of politicians, as they might not be good indicators of future performance.

Third, this paper provides a simple test of whether voters punish ghost deputies in the ballot, using a Vote-Popularity function (Nannestad and Paldam, 1994; Paldam, 2008). For elections to be an effective disciplining device, deputies with a low implication in legislative activities should be associated with a lower probability to achieve reelection. The French parliamentary elections are a two-round majoritarian system<sup>5</sup>. Some papers highlighted the fact that determinants of the electoral out-

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<sup>4</sup>Alternatively, Besley et al. (2017) proposed a measure of politician's quality based on the residuals of a fully saturated Mincer equation.

<sup>5</sup>With the exception of the 1986 elections, which used a proportional system.

come may be round-specific (for instance Cassette et al., 2013). I thus check whether voters consider the personal record of their incumbent deputy in the same way at the first and at the second round.

To conduct the analysis, I use a comprehensive dataset containing precise information on the deputies of the Fifth French Republic, from the first year of the first legislature in 1959<sup>6</sup> to the last year of the *XIII<sup>th</sup>* legislature in 2012, for a total of more than 24,000 observations. This dataset encompasses various political variables, but also many personal characteristics, such as occupation and years of schooling. The French National Assembly is an ideal testing ground. First, the institutional context remains (quasi) stable since 1958, allowing meaningful comparisons over such a long period. Second, this institutional stability is paired with a highly heterogeneous political context: left-wing majorities followed by right-wing ones, the so-called *cohabitation* periods, during which the President and the Prime Minister were of opposite political sides, coalition governments, single-party majorities, etc.

The results of the analysis provide some insightful contributions to the literature on the quality of politicians. First, the results indicate that the typical ghost deputy is an old man with a low level of schooling, member of a large party which does not support the government and who is elected in jurisdiction with a low level of political competition. These results provide some insights into the actual debates about reforms of the National Assembly, such as gender quotas, limitation of multiple office-holding and a decrease in the number of deputies. Second, those results are however mitigated by the fact that the relationship between these factors and the probability of being a ghost deputy is not stable over time. In particular, personal characteristics are less and less related to this probability over the years. Concerning the electoral performance, ghost deputies overall face more difficulties to achieve reelection. However, voters do consider the incumbent’s record at the first round, as well as some other personal characteristics, but at the second round, only national politics matters. This confirms the saying ‘choosing at the first round, eliminating at the second’.

The rest of the paper is organized as follows. The next section provides an overview of the related literature. Section 3 presents the institutional context. The

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<sup>6</sup>The actual Constitution has been introduced in October 1958, so the first effective year of parliamentary work is 1959.

dataset is described in Section 4, while Section 5 presents the empirical analysis. Section 5 concludes.

## 2 Related literature

The idea that individuals, and not only institutions, matter has been formally introduced in political economy with Rogoff and Sibert (1988) and Rogoff (1990), who proposed the first theoretical models allowing politicians to differ in competence, aiming at explaining pre-electoral policy manipulations. In contrast to the Downsian paradigm, policy choices are not only influenced by the median voter but also by the identity of the decision-maker. This explicit acknowledgment that politicians have idiosyncratic characteristics is at the core of a second generation of political agency models, which combine both adverse selection and moral hazard issues (Besley, 2006). Contrary to earlier works (Barro, 1973; Ferejohn, 1986), these models conceive elections not only as a disciplining mechanism, but also as a selection device (Banks and Sundaram, 1993; Besley and Case, 1995; Besley, 2006; Persson and Tabellini, 2000 among many others): if politicians differ in *quality*, institutions should be designed to favour the selection of incumbents of the good type.

The role of institutions in political selection is often investigated within a citizen-candidate framework (Osborne and Slivinski, 1996; Besley and Coate, 1997). This model removes the categorization of agents between politicians and citizens by considering that politicians are selected among the set of citizens who decide to run for elections. As quality is not equally distributed among citizens, the determinants of the pool of candidates, such as the wage of politicians (Besley, 2004; Caselli and Morelli, 2004; Kotakorpi and Poutvaara, 2011; Messner and Polborn, 2004 for instance) and reservation quotas (Chattopadhyay and Duflo, 2004), are of primary interest. Instead of focusing on the offer of politicians, some papers focus on the demand-side (Mattozzi and Merlo, 2008; Galasso and Nannicini, 2011, 2015). Since parties play a gate keeping role in many context, they investigate the recruitment strategy of political parties and the factors that can incentivize them to recruit good candidates.

These theoretical considerations generated a very rich empirical literature about



individual politicians<sup>7</sup>. Jones and Olken (2005) study the impact of national leaders on GDP growth. Using the sudden death of the leaders, they are able to establish a causal link between the individual leader and the GDP growth of the country. If leaders matter, what are the characteristics of the ‘good’ leaders? Extending Jones and Olken (2005), Besley et al. (2011) observe that leaders’ level of education matters for national growth, highly educated leaders being associated with a higher economic growth. Similarly, Congleton and Zhang (2013) finds that US presidents with a higher human capital have better economic performance. Hayo and Neumeier (2016) uncover a relationship between leaders’ socio-economic status and the debt-to-GDP ratio in OECD countries.

But as stated by Jones and Olken (2005, p. 836), ‘looking at [economic] growth sets the bar for individual leaders quite high’. The transmission chain from the quality of the leader to growth (or to any other indicator of economic performance) is long, complex and noisy. To overcome this issue, two strategies can be adopted. First, several papers reduce the length of the transmission mechanism by studying lower tiers of government (see Jochimsen and Thomasius, 2014, Hayo and Neumeier, 2012, Hayo and Neumeier, 2014, and Moessinger, 2014). This strategy mitigates the problem but does not solve it. A second possibility is to focus on cases where the action of individual politician is *directly* observable. In this respect, the legislature is an ideal playground. Several papers focus on the MPs’ vote attendance and absenteeism rate, which can be considered as *valence issues*: all voters presumably agree that the lower absenteeism the better, and can thus be used as performance measures. Gagliarducci et al. (2010) and Becker et al (2009), for instance, investigate the link between outside earning of respectively Italian and German MPs and their presence in the parliament. Closer to this paper, Galasso and Nannicini (2011) observe that Italian MPs elected in contested districts have a lower absenteeism rate, even after controlling for reelection incentives. They also uncover a negative correlation between educational attainment and absenteeism.

The problem with performance measures based on presence/absence is that such measures do not necessarily reflect the input of politicians into the work of the Parliament. It remains possible that a deputy would have the same contribution to

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<sup>7</sup>See Braendle (2016) for a review of the literature on the institutional determinants of political selection.

the debates if he/she was away. To avoid this problem, Arnold et al. (2014) and Gavaille and Verschelde (2017) propose measures of performance based on *activity*: what matters is thus what MPs actually *do*. Still, even with such measures, it remains complicated, if not impossible, to assess the quality of each single piece of an MP’s work. It is thus complicated to define a set of MPs performing well. At the opposite, this paper adopts the most simple alternative: by focusing on the deputies who do not have any single recorded work over a whole year, it is possible to isolate a set of deputies that are undoubtedly ‘bad’, as will be argued in Section 4.

### 3 Institutional context

The French Parliament is bicameral, consisting of the *Sénat* and the *Assemblée Nationale*. The deputies of the National Assembly are elected through direct elections, while senators are indirectly elected, motivating the focus on the former. The natural duration of deputy’s mandate is five years. The president of the Republic however has the power to dissolve the National Assembly. Since 1958, this happened five times. Deputies are elected with a two-round majoritarian system. There is no term limit. Each constituency elects one deputy. If no candidate receives more than 50% of the votes at the first round, only candidates obtaining more than 12.5% of the votes in the first round are qualified for the second round. In a majority of cases only two candidates run for the second round. The only exception to these electoral rules is the 1986 elections, which adopted a proportional system, before moving back to the previous electoral system at the next election<sup>8</sup>. Since then, the total number of deputies is fixed to 577.

Concerning the legislative process, a bill is originated either by the government or by a MP. Once put on the agenda, the bill is discussed and amended within the relevant committee. There are eight permanent committees in the National Assembly (such as defense, foreign affair, finance, etc.)<sup>9</sup>. At this stage, a *rapporteur* is selected to follow the development of the bill. After debates, the amended project is then

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<sup>8</sup>The change of electoral system was a move from president François Mitterrand aiming at softening the upcoming defeat of his Socialist Party (Chevallier et al., 2012).

<sup>9</sup>There were six permanent committees before 2008 and a revision of the Constitution.

discussed in plenary sessions, where each article is first individually voted<sup>10</sup>. For important laws, another vote occurs at the end of this process on the overall text. Once voted by a first chamber, the bill goes to the second one, where it is again discussed in committee, amended and then discussed again in a plenary session. The bill is promulgated if the second chamber votes and validates the very same text as the one voted in the first chamber. In case of modification, the bill goes back to the previous chamber, where it is discussed again. The process is virtually endless until the two chambers agree. In case of persistent disagreement, a *Commission Mixte Paritaire* (a joint committee) can be created, composed of seven deputies and seven senators, with the aim of finding an agreement. If after this step there is still no consensus, the final decision goes to the National Assembly.

The party system can be described as ‘bipolar multipartism’ (Knapp and Wright, 2001): in line with the Duverger law, the two-round majoritarian electoral system is a force tending to bipolarisation, but each pole remains multiparty. The governing majority is based on a clear left-wing or right-wing coalition, and does not rely on a pivot party likely to change partner during a legislature, ensuring stability. This is evidenced by the fact that even if the government is responsible before the deputies, the National Assembly dismissed a government only once, in 1962. The length of the presidential mandate being of seven years (until the 2002 constitutional reform, shifting it to five years) whereas the mandate of a deputy is for five years<sup>11</sup>.

## 4 Data

To conduct the analysis, I constructed a dataset containing detailed information about all the deputies of the French  $V^{th}$  Republic from its beginning in 1958 to the last year of the  $XIII^{th}$  legislature, 2012. I only keep deputies who stayed in office the whole legislature (more than 2,400), for a total of over 24,000 observations. The dataset encompasses the main variable of interest, *Ghost*, and two sets of variables:

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<sup>10</sup>This is at this stage that most of deputies did not come for the vote in the first example in the introduction.

<sup>11</sup>The victory of the right in 1986 legislative elections lead to the first *cohabitation*, a period during which the President and the Prime Minister are of two opposite wings, resulting in a ‘two-headed executive’ (Lewis-Beck, 1997). Two other *cohabitation* periods took place between 1993 and 1995, and between 1997 and 2002.

a set of deputies' personal characteristics variables and a set of political variables. Summary statistics are displayed in Table 1.

[Table 1 around here]

The main variable of interest, *Ghost*, is a dummy variable that takes the value one for observations that do not have any recorded activity for a full year. This variable is built from the *Tables Nominatives*, an official document produced by the National Assembly itself summing up the achievement of each of its member year after year in plenary sessions. This National Assembly document records four activity items: debates in which the deputy has been involved in plenary sessions, law proposals, reports, and question to the government. A ghost deputy is thus a deputy who did not produce any report, did not participate to any debate, did not propose any bill nor ask any question to the government during plenary sessions.

In the political science literature, questions to the government are seen as a way to represent the electorate by transmitting concerns from the local jurisdiction (François and Weill, 2014) but also as a tool for controlling the action of the government by asking for clarification on government's intention. To play a role in the legislative process, a deputy can propose a bill. If between 80% and 90% of the laws are initiated by the government, proposing a bill is a part of the legislative process: bills initiated by the government are often based on previous bills proposed by deputies (Avril, 2005). Another way to participate in the legislative process is to be selected as a reporter for a bill. The reporter of a bill has a major role in its development, as he or she is for instance in charge of writing the text incorporating the committee suggestions. This text is then discussed in the plenary session, the reporter has to defend the amendments adopted during the committee work. The reporter thus exerts a great influence in the final output. As an important share of the bills is originated by the government, and considering the amendment power of the reporter, it is also a way to control government activity. Finally, a deputy can also take part in the debates during plenary sessions, for instance in order to defend an amendment.

Considering the mission of a deputy and the four activity items that are registered in *Tables Nominatives*, a deputy who does not leave a trace over a whole year

in the record cannot be considered as fulfilling his or her duty. Having a zero output is hence unambiguously an indicator of bad performance. Contrary to papers focusing on vote attendance or absenteeism (for instance Bernecker, 2014; Galasso and Nannicini, 2011; Gagliarducci et al., 2010), it focuses on what deputies actually *do* (or do not), on what is effort *and* competence demanding. The time structure of the dataset and the evolution of ghost deputies over time is provided in Table 2. This table describes the number of observations by legislature, and among them the number of observations having a 0 output. The share of ghost deputies per legislature shows a negative trend. During the first legislature, almost 25% of observations did not have a recorded activity. The share of ghosts almost continuously decreases, with the noticeable exception of the *III<sup>rd</sup>* legislature. This legislature took place during a period of massive social protest, which caused interruptions of the parliamentary work. The share of ghosts decreased to about 6% for the *XIII<sup>th</sup>* legislature. A potential critic is that the work in committee is not taken into account by the measure of activity. Some deputies could be specialized in committee work, while some others are specialized in plenary session work. Note however that the two types of session are mechanically linked. For instance, writing a report involves an important committee work, as the reporter follows the bill all along the legislative process. Moreover, statistics about attendance to committee meeting is available for the *XIII<sup>th</sup>* legislature (2007-2012), thanks to the watchdog website *nosdeputes.fr*<sup>12</sup>. For this legislature, the correlation between *Ghost* and committee attendance is equal to -0.235.

Several factors can contribute to understand this decrease. First, the large share of ghost deputies in the early legislatures can be justified by the time required to adapt to new institutions, new rules and new procedures. Many deputies already served under the *IV<sup>th</sup>* Republic, a fully parliamentary system granting them different powers and missions than under the *V<sup>th</sup>* Republic. Second, a professionalisation of the deputies occurred over the period, as documented by ?. This results in more politically experienced deputies, potentially more likely to follow and participate into the debates. Third, in addition to the ordinary parliamentary sessions, the Prime Minister can call extraordinary sessions if required by the political agenda. These sessions were rare at the beginning of the period, but became more and more used

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<sup>12</sup>[www.nosdeputes.fr](http://www.nosdeputes.fr).

over time. Fourth, the media coverage of the parliamentary work increased over time. Since 1983, the Wednesday afternoon session is live broadcasted on a national channel, since 2000 the National Assembly benefits of its own channel to broadcast the debates and a watchdog website scrutinizes MPs' activity since 2009. Finally, two reforms attempted to limit multiple office-holding, a prevalent situation in the context of the French parliament, in 1985 and 2000. Even if these restrictions are rather loose, they might have contributed to push deputies to focus on their mandate<sup>13</sup>.

[Table 2 around here]

The first set of variables contains personal characteristics that are typical from the literature on the quality of politicians (Galasso and Nannicini, 2011). It encompasses several demographics. *Age* may be related to the effort devoted to the mandate. For instance, considering career prospects, older deputies have less incentives to exert effort. *Woman* takes the value one for women. Several papers observed that women are more active in the legislative arena (for instance Hurka et al., 2017 and van Geffen, 2016). The National Assembly is often criticized for its low share of female deputies: as seen in Table 1, less than 10% of observations are women. MPs' occupation are represented through nine categories encompassing more than 65% of the deputies. The occupation can provide deputies with some specific skills. For instance, Dreher et al. (2009) find that politicians with a entrepreneur background are more successful at implementing market-oriented reforms. Here, less than 8% of the deputies have a business background, whereas the most represented category is teachers, with about 15% of the observations. This category is composed of civil servants, which are particular MPs in term of skills, public sector knowledge and motivation (Braendle and Stutzer, 2013). Finally, *Schooling* (measured as the difference between the number of years required to obtain the highest level diploma of a deputy and 6, the legal age for mandatory school) is a measure of social capital. Besley et al. (2011) established a causal link between the level of education

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<sup>13</sup>First, in 1985, MP were forbidden to simultaneously hold two additional mandates in this list: MEP, member of the regional council, member of the district council, mayor of a municipality of more than 20,000 inhabitants and deputy-mayor of a municipality of more than 50,000 inhabitants. Second, the 2000 reform extended the previous list to any position in a municipal council of a municipality of more than 3,500 inhabitants. It means that all over the period, a deputy can run a municipality (whatever its size) in parallel of his/her parliamentary mandate. Starting in 2017, deputies can no longer be simultaneously mayors and deputies.

of national leaders and GDP growth. On the other hand, Galasso and Nannicini (2011) show that for Italian MPs, years of schooling and absenteeism rate is positively correlated. The data also includes a dummy indicating deputies who were born in the jurisdiction they represent. Shugart et al. (2005) use this variable as a measure of the implication of politicians' local commitment. If this is the case, it should be negatively correlated with the probability of being a ghost. Another dummy takes the value of 1 for deputies who graduated from *ENA*, the prestigious administration school<sup>14</sup>. Their knowledge of the cogs of the institutions might affect as well their participation in the Assembly's activity. All the data was essentially obtained through the National Assembly website<sup>15</sup>, personal websites, biographies, *Who's who in France* dictionaries, and Wikipedia.

The second set of variables contains political variables. *Right*, *Centre* and *Left* are dummies indicating the political ideology of the deputy (based on his/her political group). *Exp* is a count of the number of years as deputy. A higher experience may be related to a greater understanding of the functioning of the Parliament and a greater authority. It can nevertheless also be associated with some fatigue and erosion of the interest in Parliamentary activity, leading to a lower participation. *Groupsize* is the number of members of the political group to which the observation belongs. Several papers (for instance Rogers, 2002) investigate free-riding in legislature, and posit that the greater the size of the political group, the lower the incentives to make efforts. In the same vein, *Maj* takes the value 1 for deputies supporting the government. Being in the opposition may reduce the incentive to exert effort, as documented in François and Weill (2014). *Mayor* is a dummy indicating deputies that are simultaneously mayor. This is a prevalent situation (51% of the deputies in the dataset have a municipal mandate in parallel), which is at the center of public debates for decades and suspected to be a major cause of low parliamentary implication (see Bach, 2011; François and Weill, 2014). Finally, Galasso and Nannicini (2011) suggest that the *ex ante* level of political competition impacts the quality of politicians that parties recruit, which is evidenced in the case of the French deputies by Gavaille and Vershelde (2017). *Competition* is a measure based on the Herfindahl index of the vote shares at the first round at the previous election. It is

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<sup>14</sup>Many French politicians and administrators are graduates from this school, including for instance Jacques Chirac and François Hollande.

<sup>15</sup>[www.assemblee-nationale.fr](http://www.assemblee-nationale.fr).

computed as follows:  $Competition = 1 - \sum_i s_i^2$ , with  $s$  the share of vote of party  $i$  at the first round. Using a measure based on a Herfindahl index, as in Larcinese (2014), De Paola and Scoppa (2011) and Gavaille and Vershelde (2017) for instance, presents several advantages compared to a measure based on the vote margin. First, because of the two-round electoral system, the decisive round is not everywhere the same. Winning with a 10% margin at the first round or winning with a 10% margin at the second round does not reflect the same level of political competition. Second, due to the so-called ‘bipolar multipartism’, a candidate winning with a large margin at the second does not mean that the candidate easily accessed to the second round. For instance, if several candidates of the left compete at the first round, but only one access to the second round, this candidate is likely to benefit from vote transfers. Focusing on the second round vote margin would overlook such mechanisms. Third, more practically, using a measure of competition based on the first round allows a greater number of observations, since a second round does not occur in every jurisdiction.

## 5 Empirical analysis

### 5.1 The characteristics of the ghost deputies

This subsection aims at determining the variables associated with the probability for a deputy to be a ghost, using a simple general set up that can be written as follows:

$$Ghost = f(\textit{personal characteristics}, \textit{political variables}).$$

Table 3 presents the result of four different specifications. In all the models, *Ghost* is the (binary) dependent variable, taking the value of 1 for deputies with an empty record over the year. All the regressions include controls for committee, legislature and regional dummies. Model 1 is a linear probability model (LPM), model 2 is a Logit model. Considering the usual caveats of the LPM model, the reference model is the Logit, the LPM being presented for robustness purpose. For both models, the Huber-White standard errors are displayed<sup>16</sup>. The marginal effects

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<sup>16</sup>Results are qualitatively similar with “standard” standard errors and with clusters at the individual or at the district level.



for the Logit model (evaluated at means) are summed up in Figure 1<sup>17</sup>.

[Table 3 around here]

[Figure 2 around here]

If *Age* and its square are significant in the LPM specification, only the squared term is in the Logit specification. To visualize how *Age* and the probability of being a ghost are related, the marginal effect of *Age* is displayed in the panel *a* of Figure 2, holding all other regressors at their mean value. One additional year increases more and more the probability of having a zero production, as shown in Figure 2. Holding the other variables at the means, a 40 years old deputy is almost three times less likely to be a ghost than a 70 years old deputy (7.5% compared to 20%). Women are also less likely to be a ghost deputy by about 4 percentage points, as can be seen in Figure 1: keeping all the covariates at their means, the probability for a female deputy to be a ghost is about 8%, while it is 12% for a male deputy. This is consistent with Hurka et al. (2017) and van Geffen (2016), who find that women have a higher activity in the European Parliament. Even though the theoretical rationale for this finding is unclear, many behavioural economics papers evidence that women have a higher working ethics (Dollar et al., 2001). For the 2017 election, the financial penalties for parties that do not respect the 50% quota for female candidates at the legislative elections has been drastically increased. This may help to reduce the number of ghost deputies, if it turns into a higher share of female in the National Assembly.

A deputy elected in his/her native neighbourhood is not less likely to be a ghost. This does not support the assumption made by Shugart et al. (2005), who posit that being a local implies a higher involvement in legislative activities. Holding all the variables at their mean, a deputy with the lowest level of education has a probability to be a ghost of about 12%, whereas a deputy with the highest level of education has a probability of only 6%. This is consistent with previous literature,

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<sup>17</sup>The models use the lagged level competition. For this reason, the first legislature is excluded and does not appear on the graph. Similarly, this variable is not available for the eighth legislature, as it follows a reform of the voting rules (see Section 3). Excluding this variable and using the full sample provides qualitatively similar results.

since Galasso and Nannicini (2011) find that schooling is associated with a lower absenteeism rate, and Besley et al. (2011) show that more educated leaders obtain better economic performance. The *énarques* turn out to be less likely ghosts. This has to be related to Padovano and Gavaille (2017), who observe that the higher the number of ENA graduates in the government, the lower the legislative production. This suggests that *énarques* may use their technical competence in favor of a higher qualitative legislative output, rather than a quantitative achievement. Concerning occupations, only three specific categories emerge. Deputies working in education and as industry workers (blue collars) are less likely to be a ghost. For the former, this is consistent with Braendle and Stutzer (2013), who find that a higher share of public servants in the German Laender parliaments is associated with a higher number of interpellations. Concerning the workers, they are often assumed to be low skilled politicians (see for instance De Paola and Scoppa, 2011), but it might be balanced by a higher motivation. Only one type of occupation is associated with a higher probability of being a ghost deputy: occupations related to healthcare. This result has to be put in perspective to the moonlighting politicians literature (for instance Gagliarducci et al., 2010 in the case of Italian MPs, and Becker et al, 2009 in the case of German federal assembly), which relates outside earnings to political effort, since, say, cardiologists are likely to keep their professional activity, at least partially.

Concerning the political variables, right and left-wing politicians are less likely to have a zero production than centrist politicians (the reference group). Experience is positively related to the probability of being a ghost deputy, even though the marginal effect is very weak: deputies with a 20 years experience are only 1 percentage point more likely to be a ghost than newcomers. A potential reform of the National Assembly often mentioned in the debate consists in imposing a term limit in order to renew a larger share of deputies at each election. This reform could help to reduce the share of ghost deputy. However, in accordance with the free-riding in legislature theory (Rogers, 2002), the larger the political group, the higher the probability of shirking. Deputies of the opposition are also more likely to be a ghost. At the same time, mayors are more prone to have a zero production. Those two results are in line with Bach (2011), who find that deputies holding a local executive office reduces committee attendance by one third, a decrease of the same magnitude as

that of belonging to the opposition. Since the 2017 legislative election, deputies cannot simultaneously hold a mayoral office. This should contribute to reduce the number of ghost deputies. Finally, deputies elected in an *ex ante* unsafe districts are also less likely to shirk. Holding other variables at their means, a deputy elected in a district with the minimum value of competition is two times more likely to be a ghost than a deputy elected in a district with the maximum value of competition, with respectively 13 and 6% probability. This is in line with Galasso and Nannicini (2011) and Gavaille and Vershelde (2017)<sup>18</sup>. As the decrease of the number of deputies was in the program of Emmanuel Macron, a potential redistricting should promote political competition in order to further minimize the share of ghost deputies.

[Figure 1 around here]

[Figure 2 around here]

In the previous models, all observations were pooled, implying that unobserved heterogeneity of the deputies was not accounted for. To check the sensitivity of the results to the introduction of individual effects, I estimate two additional models: a random effects logit and a conditional fixed-effect logit. In the former, the individual deputy component is modelled as a random variable following a Normal distribution with 0 mean and variance  $\sigma_c^2$ . The problem with this model is that the consistency of the estimates depends on the assumption that the regressors are independent of the unobservables (Wooldridge, 2010). This assumption does not seem realistic in the Parliament context: think for instance of rhetoric skills and occupation. With the conditional fixed-effect model, individual effects are allowed to be correlated with regressors. However, the estimation of this model implies a severe sample selection, as it requires the endogenous variable to vary within the same individual. All deputies who always had a production greater than 0 every year as well as deputies who never produced anything during their career are thus excluded. All the remaining deputies have been at one point considered as ghosts, and hence have different characteristics<sup>19</sup>. Also, as in the linear framework, I cannot

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<sup>18</sup>I also check whether there is a specific relationship between the region of election and the probability of being a ghost deputies. No specific pattern emerges: deputies from distant regions do not exhibit a higher probability of being ghost, neither is there a dichotomy between rural/urban regions.

<sup>19</sup>In particular, they have on average a lower level of education and are elected in ‘easier’ districts.

obtain estimates for time-constant regressors. Some variables, like *groupsize* and *Comp* are legislature-specific. For those variables, the estimates are computed using exclusively deputies who have been elected in more than one legislature. Finally, it is not possible to obtain marginal effects as the individual effects are not computed (see Wooldridge, 2010).

Column 3 of Table 3 reports the results obtained using a random effects logit. The estimates are remarkably close to those of the standard logit. Most of the coefficients have a similar sign to what was obtained in previous models, and in particular all the variables found previously found significant. The negative influence of *Woman* and *Schooling* on the probability to be a ghost deputy remain highly significant whereas *Mayor* and *Groupsize* keep their significant positive coefficient. The results concerning the conditional fixed-effect logit are displayed in column 4. *Age* appears in this specification negatively related to the probability of being a ghost, contrary to the previous models. However, the squared term has a rather low p-value (0.13), knowing that the sample size is now much smaller. *Experience* remains positively and significantly correlated with *Ghost*, and the other regressors keep their sign, except *Maj* which is now positive (but not significant).

## 5.2 The ghost deputies and their characteristics over time

The purpose of this subsection is to evaluate the evolution over time of several variables affecting the probability of being a ghost deputy. The large time span of the dataset, running over more than 50 years, allow such an investigation. To do so, I run the same model as the Logit above, including an interaction term between legislature and the variable of interest. To my knowledge, this the first time that such an analysis is performed, with the exception of Gavaille and Vershelde (2017) who focus on the time-varying relations between political competition and the productivity of deputies. Results are provided in Figure 3 and Figure 4. All the marginal effects are computed keeping other variables at their mean values.

[Figure 3 around here]

[Figure 4 around here]

Overall, the results indicate that the intensity of the relationship between observable personal characteristics and the probability to be a ghost deputy is decreasing over time. In other words, it becomes harder and harder to predict who will be a ghost deputy based on these characteristics.

First, if getting older, as observed in the previous subsection, has always a positive impact on the probability of being a ghost deputy, this effect tend to decrease over time. While one additional year was associated with almost one percentage point higher probability of begin a ghost deputy in the 60's (legislature 2 and 3), the impact is much lower in recent legislatures, although the mean and standard deviation of this variable remains roughly stable over time. A second interesting finding is related to *Schooling*, since it is a measure that is often used as a proxy for quality: an increase in education does not necessarily implies a decrease of the probability to shirk. If education can arguably be a relevant proxy for competence, it however does not always correlate with performance. The marginal impact of schooling was also much higher during the first legislatures. Also, the gender difference tends to vanish as well over time. The same pattern occurs for *Experience*, *Majority* and *Mayor*. It seems that these characteristics were much more important in the beginning of the period under consideration. In other words, while having a parallel local mandate was detrimental to legislative activity up the *VII<sup>th</sup>* legislature, since the *X<sup>th</sup>* it does not seem to play a role anymore. This decrease of significance of *Mayor* cannot be exclusively attributed to the limitation of multiple office-holding. During the *IX<sup>th</sup>* legislature (1988-1993, so after the implementation of the 1985 reform limiting office-holding), the effect of mayor is still significant. Mayor becomes insignificant only at the *X<sup>th</sup>* legislature (1993-1997), before the the implementation of a second reform in 2000. There is thus no strong evidence that these reforms directly impacted the prevalence of ghost deputies, at least in the short run. Concerning *Competition*, here also the relationship is not stable over time. During the first and the last legislature, an increase of the *ex ante* level of competition does not come with a decrease of the probability to shirk. This corroborates the results of Gavaille and Vershelde (2017), who find an inverse-U relationship over time between competition and productivity. Finally, the impact of *Groupsize* is much more erratic, but is always positive.

How to explain the weakening of the relationship between the personal characteristics and the probability to be a ghost deputy? Tentatively, this weakening could

translate a change in the political personnel over time. In particular, Boelaert et al. (2017) document a growing professionalization of the deputies over these last 40 years. In 1978, deputies on average spent 46% of their active life in politics, 67.7% in 2012. Considering the road to the National Assembly, deputies obtained their first mandate on average 6 years after entering politics in 1978. In 2012, this active partisanship period doubled. Finally, the percentage of deputies who previously had a position of parliamentary assistant increased from 14% to 33% between 1978 and 2012. This professionalisation may have resulted in an homogenisation of the deputies' practice, attenuating the importance of their background.

### 5.3 The ghost deputies and their reelection perspectives

The last part of this analysis investigates the reelection perspectives of the ghost deputies. The aim is to check whether voters punish deputies shirking in the parliament, hence, whether the electoral mechanism provides incentives to the deputies. To explore this issue, I simply estimate a Vote-Popularity function (Nannestad and Paldam, 1994) taking the general form of:

$$Vote=f(Ghost, controls).$$

Table 5 presents the results of four different models. They differ by their dependent variable. The endogenous variable of the first model is a binary variable indicating whether the deputy ran for reelection or not. In the second model, the dependent variable is another binary taking the value of 1 if the deputy achieved reelection. Finally, model 3 and 4 respectively use the vote share of the incumbent respectively at the first and the second round of the election. For all these models, the Huber-White standard errors are displayed.

[Table 5 around here]

The main independent variable of interest is *Ghost* (remind that it takes the value of 1 for a deputy who did not produce anything during a full year a the legislature). The controls include all the personal characteristics used in the previous subsections as well as the political variables. In addition, it introduces a measure of the unemployment level at the level of the *département* to take into account the local

economic context. An important data restriction has to be noted. Before the 1988 elections, the electoral results provided by the Ministry of Interior did not mention the name of the candidates but only the political parties. It implies that it is not possible to track individual politicians before this election. In other words, I cannot know if an incumbent quitting office did not run or has been defeated. This is why this subsection focuses on 5 elections: 1993, 1997, 2002, 2007 and 2012. Summary statistics are provided in Table 4.

Before discussing the VP-functions estimations, it is interesting to observe the factors associated with the probability to abstain from running again for office, estimated using a logit model. First, ghost deputies are less likely to seek for reelection. This suggests that a lower level of motivation affects legislative activity. It is however not excludable that parties act as gatekeepers and do not endorse ghost deputies. As one can expect, *Age* and *Experience* are also correlated with the decision not to run. Deputies holding a parallel municipal office are less likely to retire. Finally, a higher level of unemployment is associated with a higher probability to run for reelection.

Concerning model 2 (which is also a logit model) and the probability of reelection, the ghost deputies seem to face more difficulties to achieve reelection. Even if this result cannot be interpreted in a causal way (as there might be in particular reverse causation), the magnitude of the marginal effect is quite important: keeping all the variables at their mean, a deputy who did not have any activity in the parliament for at least a year sees his/her reelection probability decreasing by 6 percentage points. *Experience* helps to achieve reelection. At the opposite, leftist deputies and deputies of the majority are less likely to be reelected. The second result is consistent with the fact that except in 2007, the governing political wing never managed to keep its majority at the next election. Finally, the stiffer the competition at the previous election, the lesser the reelection probability.

Going in the details of the vote shares at the two rounds, an interesting pattern appears. At the first round, *Ghost*, *Age* and its square, *Schooling* and *Mayor* turn significant, and with the sign that one might expect. The effect of *Age* follows an inverse-U relationship, and mayors obtain better scores. This is consistent with Cassette et al. (2013), who find that mayors running for reelection are more easily reelected if they simultaneously hold a mandate in the parliament. But at the second

round, none of these (personal) variables is significant, and only political variables seem to matter: *Left* and *Center*, *Maj* and *Exp*. This suggests that except for experience, all that matters in the second round is political, national consideration. This is perfectly in line with Cassette et al. (2013), who observe the same pattern in the case of the municipal elections. With respect to *Ghost*, it indicates that ghost deputies achieve lower performance at the first round, but if they manage to access to the second round, this will not penalize them. This supports the saying ‘choosing at the first round, eliminating at the second’.

Finally, Figure 5 displays the marginal effect of *Ghost* obtained with model 2, conditional on the election year. First, the marginal effect is significantly different from 0 for all elections. Between 1993 and 2007, however, it appears that voters were less and less prone to punish ghost deputies: in 1993 a ghost deputy was on average about 9% less likely to obtain reelection, but the magnitude of this effect continuously decreased to reach only 3% at the 2007 elections. The 2012 election marked a break in this tendency, as ghost deputies were this time 6% less likely to succeed in getting reelected.

[Figure 5 around here]

## 6 Conclusion

The role of a deputy of the French National Assembly presupposes at least a minimum of activity to be achieved. Exploiting the activity register of the Parliament, I isolate a specific type of politicians, the *ghost deputies*, i.e., deputies who did not leave any trace in the record of the Parliamentary works. This new, simple measure of politicians’ performance has the merit of being unambiguous, contrary to previous measures used in the literature. Depicting the portrait of such a group of politicians allows to investigate the relationships between personal characteristics and performance previously observed in the literature in a more simple setting.

The results indicate that the typical ghost deputy is old man with a low level of schooling, member of a large party which does not support the government and who is elected in a jurisdiction with a low level of political competition. However, the relationship between these factors and the probability of being a ghost deputy is not



stable over time. For most of the personal variables, the link with this probability was much more pronounced during the first legislatures than in the recent period, it eroded over time. This suggests that the link between variables like schooling and experience, often used as proxies for quality in the literature, do not necessarily correlate with performance. More research is necessary to understand in which contexts personal characteristics are likely to be good predictors of decision maker's behaviour and in which context they are not.

Finally, the last step of the analysis consisted in investigating whether the ghost deputies are sanctioned by voters. Overall, ghost deputies face more difficulties to achieve reelection. However, studying separately the vote margin at the first and at the second round, a clear pattern appears: the personal characteristics of the incumbent candidate are correlated with voters' choices, and having been shirking in the parliament is associated with a decrease in the vote share. But at the second round, only national politics seems to matter, and personal characteristics, including the performance in the National Assembly, do not matter anymore. Future research should however find a context that will allow providing evidence of a causal link between shirking and electoral performance.

If we consider that institutions should be designed to avoid ghost deputies, these results have several public policy implications. Even though the predictive power of observable characteristics tend to decrease over time, the results provide insights on recent and potential future reforms of the French National Assembly. First, deputies elected at the 2017 legislative elections are forbidden to simultaneously hold a mayoral office. As multiple-office was found to be positively related to the probability of being a ghost deputy, this should contribute to reduce the number of ghost deputies. Second, since 2000, the legislation imposes a gender quota for the candidates, each party being required to nominate 50% of women. In practice, parties often fail to meet this requirement, and face financial penalties (only 41.6% of candidates were women in 2007, 40% in 2007). Assuming that it would result in more female deputies, the increase of this financial penalty implemented for the 2017 legislative election can be seen as a tool favouring the reduction of ghost deputies, as women are less likely to fall in this category. Third, seven candidates (out of eleven) running for the 2017 presidential election proposed to decrease the number of deputies. Emmanuel Macron proposed to reduce the number of deputies from

577 to roughly 300, in order to gain in "efficiency". This reform would imply a massive redistricting. If preventing ghost deputies is seen as a gain in efficiency, this redistricting should be conceived in a way that it enhances political competition, as deputies elected in district with stiff competition are less likely to shrink on average over the period. This downshift would also imply a limitation of the size of political groups, which would help to reduce free riding. Fourth, a potential reform often mentioned in the debates consists in limiting deputies' career to three consecutive terms. There is (little) evidence that the number of years spent in the parliament increases the probability of being a ghost deputy. In addition, this limitation in time could indirectly reduce the average age of deputies, hence reducing the number of ghost deputies. Finally, even though ghost deputies are associated with a lower probability to achieve reelection, there is no trace of such penalty at the second round. Independent watchdog initiatives such as *nosdeputes.fr*, providing since 2009 daily data about MPs' activity, can both reinforce voters' information and provide additional incentives for deputies not to shirk. In the vein of studies focusing on televised legislatures (Crain and Goff, 2012 for instance), the effect of introducing such voters' information devices on MPs' behaviour is a promising path for future research.

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<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>	<b>N</b>
ghost	0.13	0.337	0	1	24016
Age	53.922	9.702	26	93	24016
Woman	0.059	0.236	0	1	24016
Shooling	15.356	3.472	5	21	24016
Localbirth	0.471	0.499	0	1	22942
ENA	0.044	0.206	0	1	24016
Teaching	0.151	0.358	0	1	24016
Healthcare	0.12	0.325	0	1	24016
Legal	0.091	0.288	0	1	24016
Business	0.077	0.266	0	1	24016
Academics	0.056	0.23	0	1	24016
Farmer	0.053	0.223	0	1	24016
Politics	0.046	0.21	0	1	24016
Engineer	0.041	0.199	0	1	24016
Bluecollar	0.035	0.183	0	1	24016
Right	0.549	0.498	0	1	24016
Centre	0.075	0.264	0	1	24016
Left	0.376	0.485	0	2	24016
Maj	0.611	0.488	0	1	24015
Groupsize	178.53	103.26	0	363	24016
Exp	7.8	6.137	1	45	24016
Mayor	0.511	0.5	0	1	24016
Competition	0.725	0.077	0.206	0.960	20873

**Table 1:** Summary statistics



Legislature	Beginning	End	Observations	Ghosts	Share of ghosts
1	1958	1962	1736	441	0.254
2	1963	1966	1700	295	0.173
3	1967	1968	876	304	0.347
4	1969	1972	1564	207	0.132
5	1973	1977	1855	219	0.118
6	1978	1980	1323	107	0.080
7	1981	1985	2035	274	0.134
8	1986	1987	1074	147	0.136
9	1988	1992	2400	383	0.159
10	1993	1996	1908	145	0.075
11	1997	2001	2540	245	0.096
12	2002	2006	2610	216	0.082
13	2007	2011	2395	145	0.060

**Table 2:** Time span and observations

**Table 3:** Ghost deputies regression results

	(1)	(2)	(3)	(4)
	LPM	Logit	RE logit	Conditional Logit
Age	-0.00405** (0.00200)	0.00114 (0.0198)	-0.00432 (0.0348)	-0.149*** (0.0486)
Age <sup>2</sup>	0.0000695*** (0.0000188)	0.000303* (0.000173)	0.000515* (0.000309)	0.000559 (0.000373)
Woman	-0.0330*** (0.00742)	-0.535*** (0.131)	-0.771*** (0.281)	-
Localbirth	-0.00305 (0.00481)	-0.00926 (0.0501)	0.118 (0.120)	-
Schooling	-0.00477*** (0.000921)	-0.0447*** (0.00915)	-0.0734*** (0.0231)	-
Ena	-0.0211*** (0.00809)	-0.425*** (0.154)	-0.681* (0.366)	-
Academics	0.0142 (0.0106)	0.189 (0.115)	0.206 (0.298)	-
Bluecollar	-0.0964*** (0.0119)	-0.958*** (0.154)	-1.385*** (0.380)	-
Business	0.00265 (0.00920)	0.0203 (0.0921)	0.0413 (0.241)	-
Engineer	-0.000584 (0.0119)	-0.0438 (0.120)	-0.302 (0.336)	-
Farmer	-0.0102 (0.0125)	-0.0987 (0.104)	-0.0581 (0.283)	-
Healthcare	0.0203** (0.00907)	0.206** (0.0948)	0.439* (0.245)	-
Legal	0.00885 (0.00899)	0.134 (0.0986)	-0.0579 (0.244)	-
Politics	-0.00911 (0.00953)	-0.120 (0.131)	0.0423 (0.302)	-

**Table 3:** (continued)

	(1)	(2)	(3)	(4)
	LPM	Logit	RE logit	Conditional logit
Teaching	-0.0338*** (0.00705)	-0.361*** (0.0760)	-0.326* (0.194)	-
Right	-0.0205** (0.0103)	-0.280*** (0.107)	0.272 (0.199)	-
Left	-0.00867 (0.0102)	-0.200* (0.110)	0.299 (0.220)	-
Exp	0.000559 (0.000465)	0.00913* (0.00467)	0.0286** (0.00977)	0.0749** (0.0262)
Groupsize	0.000307*** (0.0000296)	0.00369*** (0.000406)	0.00342*** (0.000715)	0.00123 (0.000892)
Maj	-0.0101* (0.00573)	-0.162** (0.0704)	-0.107 (0.120)	0.105 (0.149)
Mayor	0.0156*** (0.00445)	0.173*** (0.0474)	0.197** (0.0871)	0.0721 (0.113)
Competition	-0.0942*** (0.0337)	-1.064*** (0.354)	-1.097* (0.612)	-0.577 (0.706)
Legislature dummies	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	-
Committee dummies	Yes	Yes	Yes	Yes
$N$	20872	20872	20872	9086
$R^2$	0.0898			
AIC		13534.1	11279.0	5716.3

Standard errors in parentheses

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Variable	Mean	Std. Dev.	Min.	Max.	N
Ghost	0.238	0.426	0	1	3001
Age	55.954	9.463	30	90	2987
Sex	0.084	0.278	0	1	3001
Localbirth	0.471	0.499	0	1	2468
Schooling	15.765	3.232	5	21	2987
Ena	0.06	0.238	0	1	2987
Right	0.581	0.493	0	1	2996
Center	0.033	0.18	0	1	2996
Left	0.419	0.493	0	1	3001
Maj	0.618	0.486	0	1	2987
Exp	10.47	6.734	2	45	2987
Maj	0.618	0.486	0	1	2987
Mayor	0.503	0.5	0	1	2987
Comp	0.734	0.073	0.401	0.961	2450
Unemp_elect_year	8.822	2.174	4.350	15.65	3001

**Table 4:** VP-function summary statistics

**Table 5:** VP function regression results

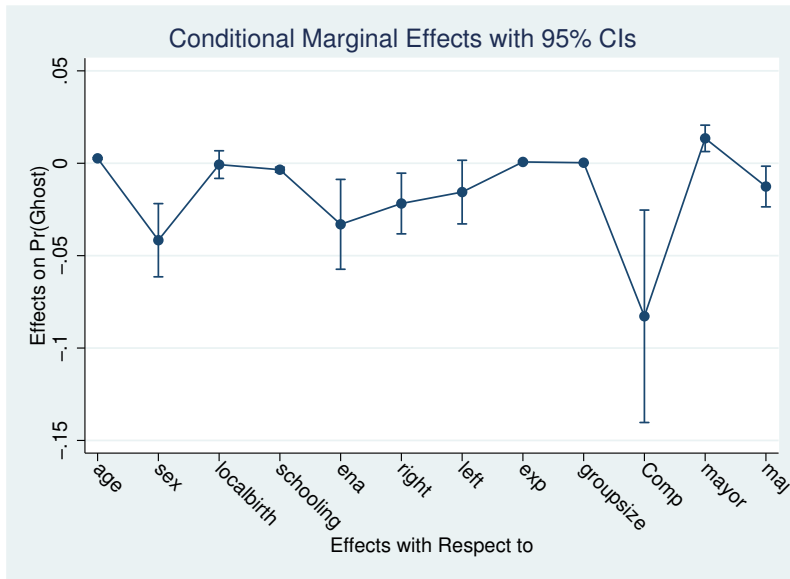
	(1)	(2)	(3)	(5)
	Not stand	Reelection	Voteshare Round 1	Voteshare Round 2
Ghost	0.344** (0.141)	-0.334** (0.134)	-0.0159*** (0.00493)	-0.000152 (0.00545)
Age	-0.101 (0.0792)	0.0682 (0.0672)	0.00985*** (0.00268)	0.00163 (0.00313)
Age <sup>2</sup>	0.00163** (0.000658)	-0.000891 (0.000609)	-0.000102*** (0.0000244)	-0.00000890 (0.0000287)
Sex	0.0227 (0.233)	0.254 (0.214)	0.0149* (0.00846)	0.0121 (0.00862)
Localbirth	-0.131 (0.133)	0.225* (0.123)	-0.00394 (0.00582)	0.00241 (0.00593)
Schooling	-0.0477* (0.0266)	0.0208 (0.0239)	0.00242** (0.00106)	0.000582 (0.00110)
Ena	0.175 (0.282)	0.126 (0.268)	-0.00106 (0.0113)	0.00661 (0.0137)
Left	0.290* (0.162)	-0.340** (0.163)	-0.0559*** (0.00580)	-0.0456*** (0.00594)
Neutral	0.176 (0.337)	1.061** (0.460)	0.0237 (0.0148)	0.0774*** (0.0192)
Exp	0.0464*** (0.0100)	0.0545*** (0.0126)	-0.000612 (0.000511)	-0.00152*** (0.000534)
Maj	-0.0219 (0.131)	-2.253*** (0.164)	-0.0522*** (0.00416)	-0.0713*** (0.00490)
Mayor	-0.566*** (0.131)	0.0963 (0.117)	0.00926** (0.00466)	-0.00173 (0.00493)
Comp	1.969 (1.240)	-5.710*** (1.213)	-0.165*** (0.0471)	-0.119** (0.0589)
Unemp_elect_year	-0.124*** (0.0466)	-0.0443 (0.0392)	-0.000939 (0.00292)	-0.00316 (0.00349)

**Table 5:** (continued)

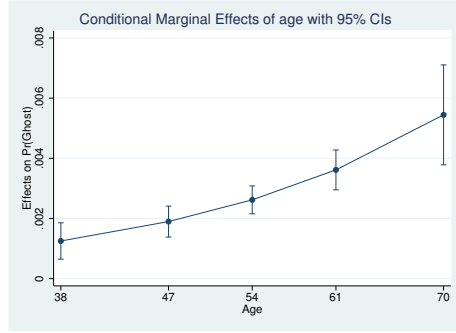
	(1)	(2)	(3)	(4)
	Not stand	Reelection	Votes share Round 1	Votes share Round 2
Region dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Election dummies	Yes	Yes	Yes	Yes
$N$	2449	2049	2049	1717
$r^2$			0.670	0.948
aic	1853.2	2046.8	-5596.3	-4920.0

Standard errors in parentheses

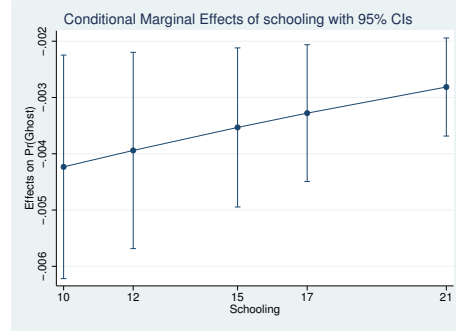
\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$



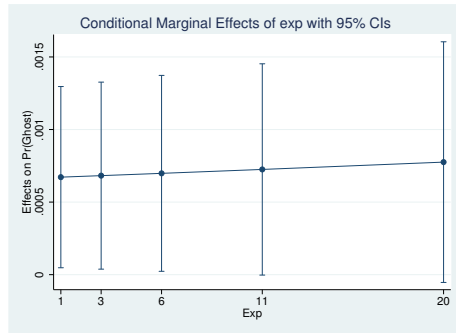
**Figure 1:** Overall marginal effects



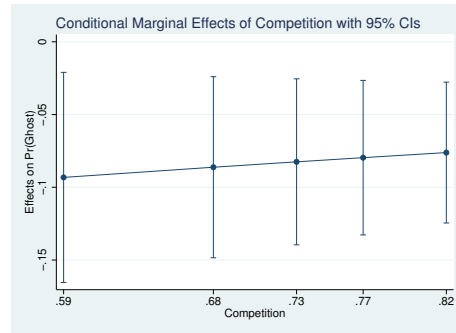
(a) Age



(b) Schooling



(c) Experience

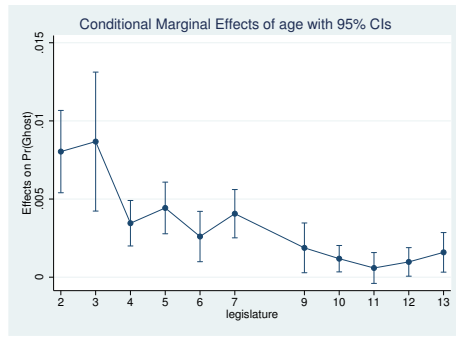


(d) Competition

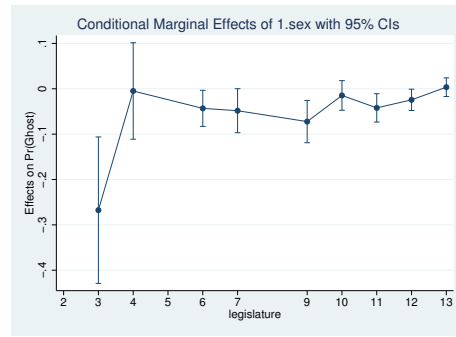
**Figure 2:** Marginal effects

Note: The marginal effects are plotted at the 5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 95<sup>th</sup> percentile ranks.

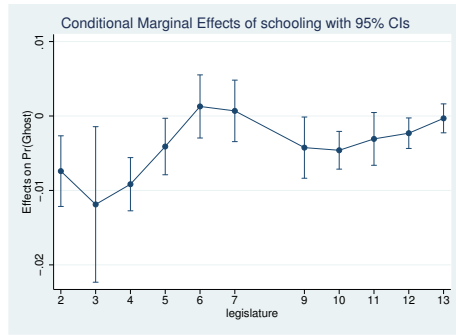




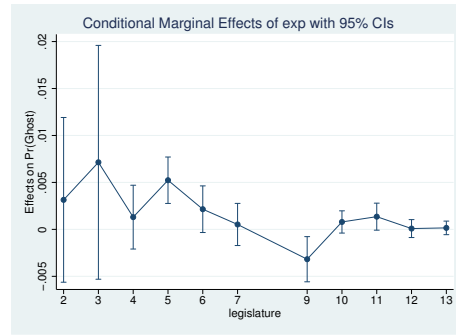
(a) Age



(b) Woman

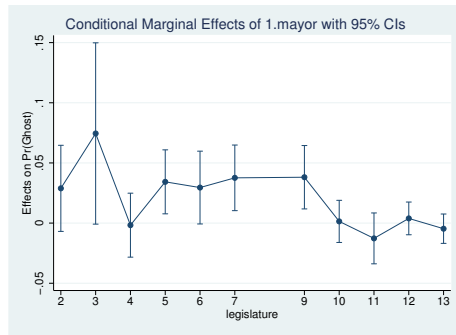


(c) Schooling

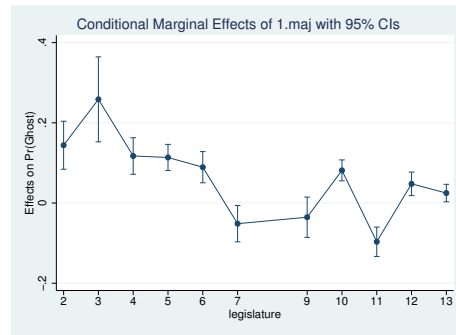


(d) Exp

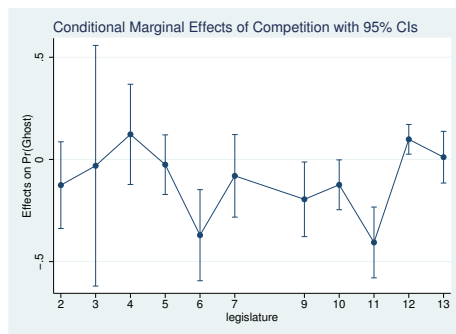
**Figure 3:** Evolution over time (1)



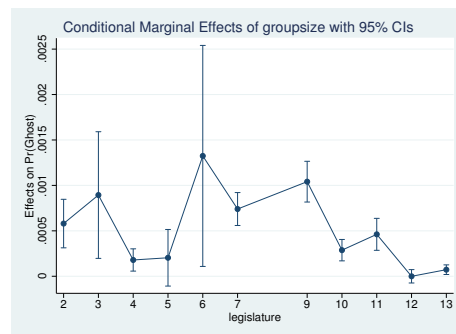
(a) Mayor



(b) Majority

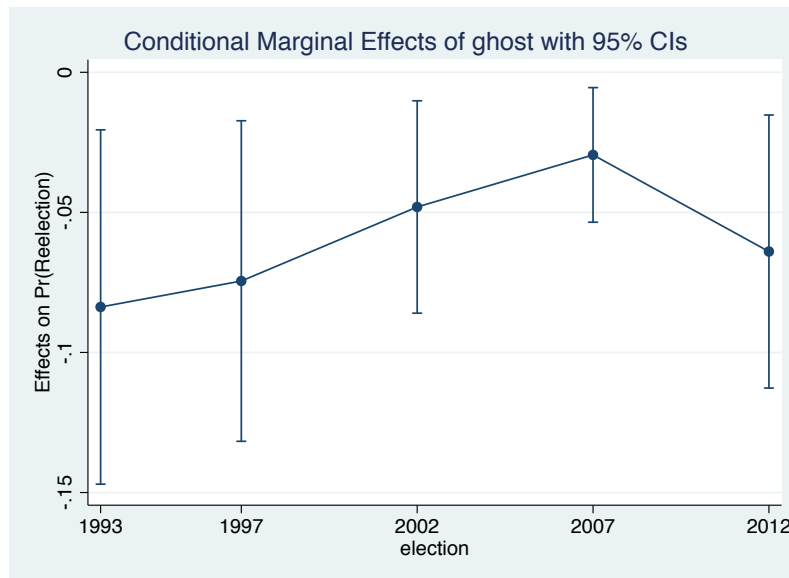


(c) Competition



(d) Groupsize

**Figure 4:** Evolution over time (2)



**Figure 5:** Conditional Marginal effects