

## SALARIES AND WORK EFFORT: AN ANALYSIS OF THE EUROPEAN UNION PARLIAMENTARIANS\*

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Before July 2009, salaries of the Members of the European Parliament (MEPs) were paid by their home country, and there were substantial salary differences between MEPs representing different countries. Starting in July 2009, salaries are pegged to 38.5% of a European Court judge's salary, paid by the European Union. This created an exogenous change in salaries, the magnitude and direction of which varied substantially. Using information on each MEP between 2004 and 2011, we show that an increase in salaries decreases attendance at plenary sessions and reduces the number of questions asked but it has no impact on other job-related activities.

As recent research has emphasised the importance of political institutions and the quality of government on economic development (Dollar and Kraay, 2003; Rigobon and Rodrik, 2005; Aghion *et al.*, 2007; Acemoglu and Dell, 2010), it has become increasingly important to investigate the determinants of the quality and performance of elected officials. Although some models predict that better compensation for political posts would motive higher quality individuals (e.g. those who are more educated) to run for office (Besley, 2004; Caselli and Morelli, 2004), others predict that higher compensation would attract low-quality candidates (Messner and Polborn, 2004; Mattozzi and Merlo, 2008). Ferraz and Finan (2009) analyse data from Brazil and find that higher salaries attract more educated individuals to run for political office. A similar finding is reported by Gagliarducci and Nannicini (2012) who analysed data on Italian municipal governments. While it is important to understand the determinants of the quality and competence of an elected body, it is equally important to analyse the relationship between the compensation of politicians and their performance while in office. Performance of public officials is difficult to measure. Besley (2004) uses data from the US and investigates the extent to which governor salaries increases congruence between state governors and the residents of the state. Gagliarducci and Nannicini (2012) find that municipality budgets in Italy are smaller when the mayors are paid more.

In this article we analyse the change in job-related behaviour of the members of the European Union (EU) Parliament following an exogenous increase in their salaries. Each member of the EU Parliament receives a fixed salary, which is independent of the work effort and the attendance record of the parliamentarian. EU Parliament members also receive a *per diem* compensation for every parliamentary session they attend. This *per diem* compensation, which was €304 in 2011, is not intended to cover

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travel expenses, because travel expenses that are related to attendance in parliamentary sessions are reimbursed separately by the European Parliament.

We exploit an exogenous change in salaries due to an alteration in the salary structure of the European Parliament, implemented in 2009. Prior to July 2009, members of the European Parliament received salaries which were determined by their home country. As a result, there was substantial variation in salaries between members representing different countries. For example, the salary of a member from Poland was €29,043, whereas the salary of a member from Italy was €142,512. Starting with the seventh term in the summer of 2009, salaries were equalised between the members of the Parliament to €91,983 (about \$132,500) and then were increased slightly in each subsequent year. This created an exogenous change in salaries, the magnitude and direction of which varied substantially between parliamentarians. We investigate how parliamentarians' attendance and other performance indicators have responded to this shock to their salaries.<sup>1</sup>

Similar quasi-natural experiments are used in the labour supply literature. For example, Imbens *et al.* (2001) employed a sample of lottery players and estimated the elasticity of labour supply using the exogenous increase in the unearned income of the lottery winners. Another example is the work of Holtz-Eakin *et al.* (1993) and Joulfaian and Wilhelm (1994) who utilised the increase in the non-labour income of the individuals who received an inheritance. Pal (2004) showed that labour supply of Norwegian mothers of young children decreased due to a government subsidy that aims to provide incentives to increase child care at home.

Our article is also related to a wider literature on workers absenteeism. A large number of papers investigated potential causes of worker absenteeism ranging from personal characteristics of workers and group-interaction to regulatory effects (Ichino and Maggi, 2000; Johansson and Palme, 2002; Ichino and Riphahn, 2005; Ziebarth and Karlsson, 2010). A strand of related research has analysed the influence of the firm's organisational and pay structure on worker's decision to skip work (Allen, 1981; Barmby *et al.*, 1991, 1995; Delgado and Kniesner, 1997; Barmby, 2002; Johansson and Palme, 2002; Dionne and Dostie, 2007). When the compensation is associated with a fixed work schedule, the worker has an incentive to be absent from work if his/her marginal rate of substitution between leisure and income is not equal to the effective wage rate (Allen, 1981; Dionne and Dostie, 2007) and absence from work implies that the shadow price of time is greater than the contracted wage. In this set-up, an increase in non-labour income induces absenteeism. This framework fits well with the compensation structure of the EU Parliament where the members of the parliament receive a fixed base salary (which is independent of the work effort) plus a variable labour income which depends on attendance to the parliamentary sessions.<sup>2</sup> In this context, an increase in the fixed component of the compensation package is akin to an increase in non-labour income and it is expected to reduce the labour supply.

<sup>1</sup> In empirical analyses we employ Purchasing Power Parity-adjusted salaries and *per diem* payments because the purchasing power of one euro is different between the EU counties.

<sup>2</sup> Extreme absenteeism may draw criticism and it may jeopardise the re-election probability of the parliamentarian. The theoretical framework summarised here addresses this issue by incorporating a penalty function which depends on absenteeism. Thus, the absenteeism decision of the worker incorporates the loss of future earnings (Allen, 1981).

We compiled the attendance record of each member of the European Parliament during the sixth and the seventh parliamentary terms of the European Parliament. Merging this information with personal characteristics of the members obtained from their CVs and the information on their purchasing power parity (PPP)-adjusted salaries and *per diem* compensation, produced a panel data set that spans July 2004 to December 2011. We find that an increase in base salaries of the parliamentarians reduces the number of days attended, although the estimated elasticity is small. Our estimates, however, are similar in magnitude to those obtained from inheritance recipients (Holtz-Eakin *et al.*, 1993) and lottery winners (Imbens *et al.*, 2001). Parliamentarians from low-income countries attend fewer meetings and there is some evidence that those who represent countries where domestic political power is more centralised attend more meetings. Although higher salaries negatively impact the number of written and oral questions posed by the parliamentarians, salaries have no impact on other job performance measures, ranging from speeches delivered to motions filed and reports written.

The rest of the article is organised as follows: Section 1 presents background information on the European Parliament. In Section 2, we describe the empirical framework. Section 3 presents the data. Section 4 describes the results, Section 5 includes robustness analyses and extensions, and Section 6 is the conclusion.

## 1. The Structure of the European Union Parliament

The European Parliament is the elected legislative body of the EU. The elections of the European Parliament are held every five years by voters in each of the 27 member countries of the EU. The most recent elections were held in the summer of 2009 for the seventh parliamentary term. Because of proportional representation, countries with bigger populations seat more parliamentarians. Currently, the number of seats ranges from 6 (Malta) to 99 (Germany) in a total of 754 seats.

Members of the parliament convene both in Brussels and Strasbourg for plenary sessions (which are a series of meetings) to discuss policy issues and to vote on them.<sup>3</sup> Some members of the parliament live in their home country rather than in Brussels, and their travel expenses are paid by the parliament. The parliamentarians also receive allowances for their expenses related to costs of running their offices. Furthermore, each parliamentarian receives a *per diem* compensation for each day they attend the parliamentary sessions. This *per diem* pay, which was €262 in 2004, was increased each year and went up to €304 in 2011 (about \$438).

Until the seventh parliamentary term, the salary of each member was pegged to the salary of a parliamentarian in their home country. For example, the salary of a European parliamentarian from Spain was the same as the salary of the members of the Spanish Parliament in Madrid, and the salary of an EU parliamentarian representing Austria was equal to the salary of the member of the Austrian parliament in Vienna. A new statute for the European Parliament, enacted on 23 June 2005, equalised the salaries of the Members of the EU Parliament. More specifically, each

<sup>3</sup> In Brussels, they also attend meetings of the parliamentary committees and political groups.

Table 1

*European Parliament Plenary Session Dates & Parliamentarian Salary Sources*

Salary source	Period	Parliament	Meeting days	Start date	End date
Home country	1	6th	23	20 July 2004	31 December 2004
Home country	2	6th	36	1 January 2005	31 August 2005
Home country	3	6th	23	1 September 2005	31 December 2005
Home country	4	6th	37	1 January 2006	31 August 2006
Home country	5	6th	25	1 September 2006	31 December 2006
Home country	6	6th	37	1 January 2007	31 August 2007
Home country	7	6th	25	1 September 2007	31 December 2007
Home country	8	6th	39	1 January 2008	31 August 2008
Home country	9	6th	24	1 September 2008	31 December 2008
Home country	10	6th	28	1 January 2009	13 June 2009
Election					
EU; €91,983	11	7th	23	14 July 2009	31 December 2009
EU; €93,686	12	7th	35	1 January 2010	31 August 2010
EU; €93,686	13	7th	24	1 September 2010	31 December 2010
EU; €95,483	14	7th	34	1 January 2011	31 August 2011
EU; €95,483	15	7th	24	1 September 2011	31 December 2011

*Notes.* Although the official end date of each plenary session is August 31, the sessions effectively end in mid-July. There are no meetings between mid-July and end of August. Until the seventh Parliament, the salaries of the EU Parliamentarians were paid by their home country.

parliamentarian's salary is now equivalent to 38.5% of a European Court judge's salary, paid out of the EU budget. This new salary structure became effective in the seventh term of the parliament, in summer 2009. This amount is currently €95,483.

Table 1 displays information about the 15 parliamentary periods that is used in this article. Periods 1–10 pertain to the sixth parliamentary term spanning July 2004 to June 2009. Each calendar year consists of two periods: the first period runs from January to the end of August while the second starts in September and ends at the end of the year.<sup>4</sup> The duration of the terms right before and right after an election is slightly different because they are disrupted by elections (periods 1, 10 and 11). Table 1 also displays the number of meeting days that took place in each period. For example, in 2008, there were a total of 63 meeting days (39 + 24). A member of the parliament who attended all of these 63 meeting days would have earned €18,081 in *per diem* allowance, in addition to the fixed base salary.<sup>5</sup>

Table 2 displays the number of parliamentarians from each EU country in June 2009 (at the end of the sixth parliament), the share of that country in total seats in the EU Parliament, and their average nominal salaries during the sixth term, from July 2004 to June 2009.<sup>6</sup> There is substantial variation in salaries. The highest salary in the EU Parliament was €142,512 paid by the Italian government to the Italian Members of the EU Parliament. Bulgarians received the lowest salary of €10,363.

<sup>4</sup> There are no meetings between mid-July and end of August.

<sup>5</sup> This means, for example, that a member of the parliament from Slovakia would have doubled his/her income by attending all sessions (the salary received by Slovakian members was €18,000 in 2008). A parliamentarian from Spain would have increased his/her income by 41%, and the income of a member from Finland would have increased by 26%.

<sup>6</sup> Romania and Bulgaria became members on 1 January 2007.

Table 2

*Salaries and Distribution of Seats in the European Parliament at the end of the Sixth Parliament in June 2009*

Country	Number of seats	% of seats	Average salary in euro
Austria	18	2.32	110,147
Belgium	23	2.96	72,897
Bulgaria	18	2.32	10,363
Cyprus	6	0.77	44,737
Czech Republic	24	3.09	28,240
Denmark	14	1.80	72,654
Estonia	6	0.77	30,678
Finland	14	1.80	65,420
France	78	10.05	76,826
Germany	98	12.63	85,428
Greece	24	3.09	75,911
Hungary	24	3.09	42,116
Ireland	12	1.55	94,884
Italy	78	10.05	142,512
Latvia	8	1.03	16,365
Lithuania	13	1.68	14,197
Luxembourg	6	0.77	68,670
Malta	5	0.64	16,636
Netherlands	27	3.48	79,343
Poland	53	6.83	29,043
Portugal	24	3.09	49,988
Romania	33	4.25	21,636
Slovakia	14	1.80	15,650
Slovenia	7	0.90	51,697
Spain	52	6.70	41,621
Sweden	19	2.45	64,736
United Kingdom	78	10.05	82,937

*Notes.* Distribution of seats reflects the composition of the European Parliament before the 2009 elections. Salaries represent average annual salaries paid by home country during the sixth parliament, between July 2004 and June 2009.

As mentioned earlier, starting with the seventh parliamentary term in July 2009, each member's salary was set to the 38.5% of the salary of a European Court Judge regardless of the country of representation, which amounted to €91,983 in 2009. Figure 1 displays this information, where the dashed line is the average PPP-adjusted real salary of those members of the European Parliament (weighted by the number of the seats), whose salaries were greater than the unified post-2009 salary. This group consists of the members of the parliament from Italy, Ireland and Austria. The solid line shows the weighted average PPP-adjusted real salaries of the parliamentarians from the remaining countries where salaries were below that of the post-2009 salary.

Figure 2 displays the difference in salaries between the two groups of parliamentarians. More specifically, the heavy line in Figure 2 is the difference in average salaries between the Italian, Irish and Austrian members of the parliament, and those of the second group, consisting of other members. This salary difference (measured on the right-hand scale) was about €60,000 between 2004 and 2009, and it went down to about negative €18,000 in the seventh parliamentary term after the European Parliament started paying each member the same salary. Although nominal salaries are equalised

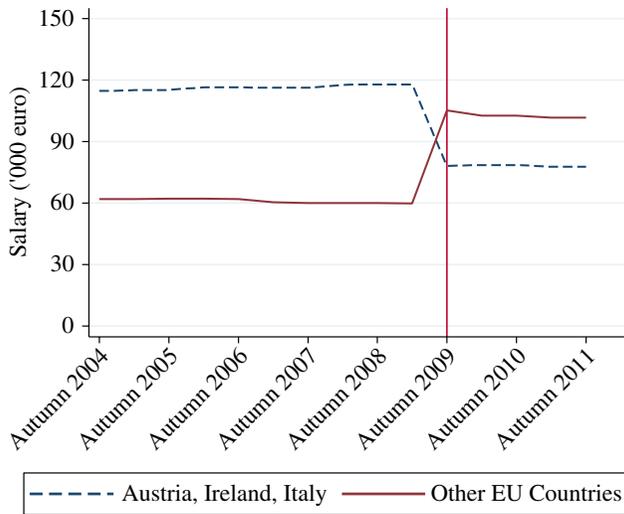


Fig. 1. Salaries of the Members of the European Parliament by Country of Representation

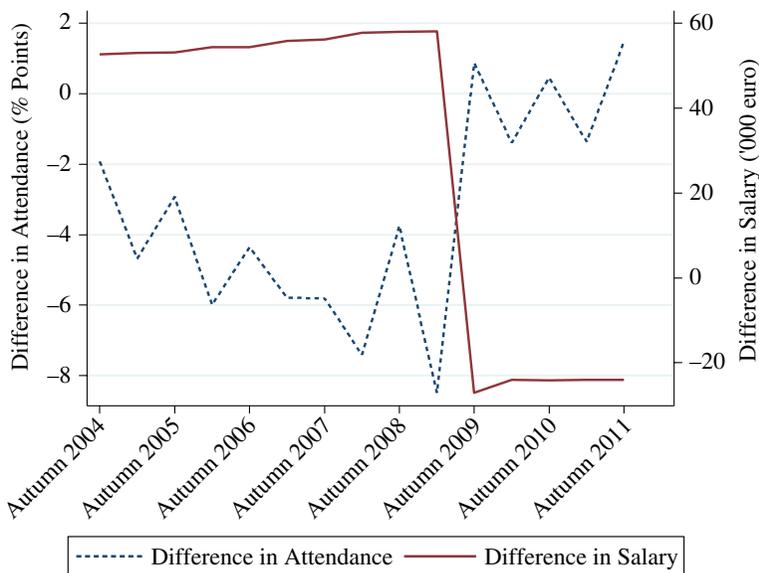


Fig. 2. Difference in Salary and Attendance Between the Austrian, Irish and Italian Members, and Other Members

between members from different countries after 2009, the difference in salaries is not zero after 2009 because the PPP-adjusted salaries are different between countries even after 2009.<sup>7</sup>

<sup>7</sup> In the earlier version of the study we employed salaries that were adjusted for inflation but not for PPP (Mocan and Alundag, 2011). The results obtained from those specifications were similar to the ones reported in this article.

The key variable of the analysis is attendance of the members of the parliament to the meeting days. This variable is based on official attendance records. Figure 2 also displays the difference in average attendance rate between the two groups. Between 2004 and 2009, the attendance rate of the first group (high earners) was about five percentage points lower than that of the second group (low earners). With the start of the seventh parliamentary term, where the salaries of the members in the first group declined and the salaries of the members in the second group increased, the difference in the attendance rates went down to about zero. Figure 2 is informative as it suggests that hours of work of those who faced a decline in their salaries went up in comparison to those who faced an increase in salaries.

## 2. Empirical Implementation

The empirical specification is as follows:

$$Attendance_{ict} = \alpha + \beta Salary_{ict} + \gamma Per\ diem_{ict} + \mathbf{X}'_{ict}\boldsymbol{\Omega} + \mathbf{C}'_{ct}\boldsymbol{\Psi} + \tau_t + \mathbf{P}'_t\boldsymbol{\lambda} + \varepsilon_{ict} \quad (1)$$

where  $Attendance_{ict}$  stands for the number of the meeting days attended by the  $i$ th member of the European Parliament who represents country  $c$ , in period  $t$ .  $Salary_{ict}$  represents the salary of the Parliamentarian  $i$  from country  $c$  in period  $t$ .  $Per\ diem_{ict}$  is *per diem* compensation for daily attendance. Both  $Salary$  and  $Per\ diem$  are in PPP-adjusted real euros.  $\mathbf{X}_{ict}$  includes personal characteristics such as gender, age, education and tenure in the parliament. It also includes the average attendance record of other parliamentarians in  $i$ 's political group as explained in the data section below.  $\mathbf{C}_{ct}$  includes real per capita income of the country and a measure of the competition between political parties in home country. If the EU parliamentarian has won the election by a close margin this may motivate him to exert more effort on the job and to attend more meetings if he is concerned about voters' reaction to his attendance record. On the other hand, a close election may prompt the parliamentarian to spend more time in the home country to increase the chances of re-election; or alternatively, if a close election is a signal of the low probability of re-election he may decide to reduce his efforts in the parliament during the current term and engage in other income-generating activities.<sup>8</sup> We measure the extent of competition faced by the parliamentarians in their home country by the Herfindahl index, which is calculated using the share of votes cast for each party during the relevant domestic EU elections where each country's representatives to the EU Parliament are elected. More specifically, Herfindahl index representing political party competition in country  $c$  during the EU elections in year  $k$  ( $H_{ck}$ ) is measured as  $\sum s_{cki}^2$ , where  $s_{cki}$  stands for the share of the votes received by the parliamentarian  $i$ 's political party in country  $c$  during

<sup>8</sup> Becker *et al.* (2009) analyse data on the politicians of the Germany's federal assembly, Bundestag, and find that if a member of the parliament is elected by a close margin on the first vote of the Bundestag's majoritarian election system, this has a negative impact on annual income earned from outside activities. The implication is that stiff competition in elections increases the politician's time devoted to effort in the parliament. Gagliarducci *et al.* (2011) analyse Italian House of Representative majoritarian elections and find that those who won by a narrow margin have lower absenteeism rates. Similarly, Galasso and Nannicini (2011) find that politicians who won general elections in Italy in contestable districts have fewer absences in the parliament if they won in contestable districts.

the EU election year  $k$ , where  $k$  is either 2004 or 2009. These are the years in which the EU Parliament elections are held across Europe.  $\mathbf{P}_t$  represents a set of period dummies,  $\tau_t$  stands for a time trend and  $\varepsilon_{ict}$  is the error term. The time trend controls for a potential secular trend in attendance. Period dummies are included to control for seasonal effects (the autumn periods spanning September–December are shorter than the winter–spring periods) and also for the possibility that some periods require heavier legislative action than other due to idiosyncratic political circumstances. Robust standard errors are clustered at the parliamentary level. We also estimate specifications which include parliamentary fixed effects instead of personal attributes as well as specifications that include country fixed effects. These fixed effects are included to capture the impact of differential opportunity costs of time for each parliamentarian. More specifically, parliamentarians who live farther away from Brussels and Strasbourg face a greater commuting time and consequently they are more likely to be absent from meetings.<sup>9,10</sup>

To make use of the exogenous variation in the salaries of parliamentarians, we focus on parliamentarians who served in the sixth parliament where the salaries were paid by their home country, and who also served in the seventh parliament where the salaries are paid by the EU. These parliamentarians faced an exogenous change in their salaries between the sixth and the seventh terms. This strategy involves the evaluation of the differences in parliamentarians' attendance records before and after the change in the salary structure. The attendance record of the parliamentarians who served both in the sixth and the seventh parliamentary terms may have worsened during the seventh term, not because of the increase in salary but because of ageing or because they are more seasoned in the seventh term and therefore feel less pressure to attend the sessions. We include controls for age and tenure to capture the impact of a potential change in 'tastes for work'. However, to address this potential issue, we also estimate the model using the sample of freshmen and the sample of seasoned parliamentarians. We define freshman parliamentarians as those who have never been elected before and seasoned parliamentarians as those who had been elected at least once before. We compare the attendance records of freshmen who were elected for the first time to the sixth parliament in 2004 to that of those who entered the seventh parliament in 2009 as freshmen. The former group faced a different salary structure than the latter one. The same strategy is applied to the sample of seasoned parliamentarians, where we compare seasoned parliamentarians who faced the new salary regime in the seventh parliament to seasoned parliamentarians from the same country who faced a different salary in the sixth parliament. If characteristics that may affect the attendance of the parliamentarians are controlled for, the comparison of the attendance records of freshman and seasoned parliamentarians before and after the change in the salary structure identifies the impact of salary on attendance.

It can be argued that the composition of the re-elected parliamentarians for the seventh parliamentary term may depend on the change in salaries. Specifically, the

<sup>9</sup> van Ommeren and Gutiérrez-i-Puigarnau (2011) show that commuting time has a positive effect on absenteeism.

<sup>10</sup> We do not consider intertemporal substitution of effort as was done in dynamic labour supply models (MaCurdy, 1981; Altonji, 1986; Barmby *et al.*, 1995; Johansson and Palme, 2002).

increase in salaries between the sixth and the seventh terms could have attracted a certain breed of individuals to the EU Parliament whose aim was to earn high salaries but not work hard. However, we show that the re-election propensity is not related to the extent of the increase/decrease in salaries, suggesting that the probability of being re-elected is about the same in a country regardless of whether the parliamentarians received a pay raise or a pay cut.

Each period of the parliament consists of about eight plenary sessions, which are two to three weeks apart. Each plenary session consists of about two to four consecutive working days. The attendance record of the parliamentarians depends on whether they travel to Brussels and Strasbourg to appear in a given plenary session and it also depends on the intensity with which they attend the daily meetings of each plenary session. For example, if a parliamentarian chooses not to travel to Brussels for a particular plenary session, he/she will miss all the corresponding meeting days of that session. On the other hand, the parliamentarian may travel to Brussels and Strasbourg for each plenary session but may still decide to skip some of the working days. We investigate the extent to which attendance to parliamentary sessions has an impact on total days attended. As explained in detail in Section 5, we argue and demonstrate empirically that the timing of national holidays in each country has an impact on the parliamentarians' propensity to attend plenary sessions of the EU Parliament in Brussels and Strasbourg. We show that a change in plenary session attendance, induced by holiday conflicts, has an impact on voting days attended and that salaries have an additional effect on both types of attendance, driven by freshman parliamentarians.

Finally, it can be argued that a change in salaries may prompt parliamentarians to modify their other work-related activities in addition to their attendance. For example, although we find that a decrease in salaries motivates parliamentarians to increase their attendance, these parliamentarians may reduce their job efforts despite increased attendance. In other words, they may show up more in the parliament but they may work less. We investigate if this is the case by analysing the impact of the salary change on parliamentary job-related activities such as speeches delivered and questions asked in each parliamentary period, as well as on reports filed, motions and the number of times acted as an opinion rapporteur.

### 3. Data

Individual level data on parliamentarians are obtained from the website [www.votewatch.eu](http://www.votewatch.eu) which is an independent monitoring website of EU politics. It provides detailed information about the members of the European Parliament regarding their activities in the parliament as well as their personal characteristics. [Votewatch.eu](http://Votewatch.eu) uses the European Parliament's attendance, voting and activity data, which are available through the Parliament's website, and organises them to make them available to the general public. The website covers the activities of the parliamentarians during the entire sixth and seventh parliamentary terms, between 2004 and 2012.

The attendance records of the parliamentarians are provided as the proportion of the meeting days each member has attended in each period. Periods are defined in Table 1. For example, the first period starts on 20 July 2004 (the first day of the sixth

parliamentary term) and continues until 31 December 2004. Because we know the number of meeting days in each period, multiplying the official attendance rate for each period by the number of meeting days in that period generates the number of meeting days attended by each member.<sup>11</sup>

Salaries of the members of the EU Parliament were set to €91,983 in July 2009 as described earlier. They were increased to €93,686 in January 2010, and to €95,482 in January 2011.<sup>12</sup> Before July 2009, parliamentarians' salaries were determined by their country of origin. The salary information prior to this date is obtained from two sources. The information pertaining to 2004 is obtained from the EU information website of the Folketing (the National Parliament of Denmark).<sup>13</sup> For the years 2005–9, we used the information provided by the UK Office of the European Parliament's Directorate General for Communication. Because parliamentary salaries were not available for all countries and all years, we assigned to each parliamentarian the average of their country's parliamentary salary in the years before 2009.<sup>14</sup>

Parliamentarians spend most of their time with their constituencies in their home countries.<sup>15</sup> Consequently, they may spend most of their earnings in their home countries. The purchasing power of a euro, however, is different from country to country. For example, 1 euro in Bulgaria buys more goods and services than it does in France. Therefore, we adjusted salaries for differential purchasing power by converting salaries into PPP terms. In addition, to eliminate the effect of inflation, we deflated salaries by the consumer price index. We constructed the PPP-adjusted real salaries of the representatives in three steps. First, we converted the representatives' salaries in euro to domestic currencies using the exchange rates. In the second step, we utilised the PPP conversion factors to adjust the purchasing power of the representatives' salaries. PPP conversion factors measure the amount of domestic currency that an individual has to spend in their home country to buy 1 euro worth of consumption goods and services in an average European Union country. Consequently, the ratio of the domestic currency denominated salaries to the PPP conversion factor provides the PPP-adjusted nominal salaries in euro. The base country is the European Union's average. In the final step, we deflated these nominal salaries with the Harmonized Consumer Price Index (HCPI). We applied the same procedure to the *per diem* payments. In these calculations, we employed the exchange rate, the PPP conversion factors and the HCPI data from the Eurostat.

<sup>11</sup> For example, if a particular member of the parliament has a reported attendance rate of 80% in Period 1 (20 July 2004 to 31 December 2004), given that there were 23 meeting days during that period, we calculate that this particular parliamentarian has attended 18 meeting days during this period.

<sup>12</sup> Salary information is obtained from Francisco José Estela Burriel, head of the Members' Travel and Subsistence Expenses Unit of the European Parliament.

<sup>13</sup> [http://www.eu-oplysningen.dk/euo\\_en/spsv/all/32/](http://www.eu-oplysningen.dk/euo_en/spsv/all/32/).

<sup>14</sup> Country-specific salary information is obtained from Michelle Kneeshaw of the UK Office of the European Parliament's Directorate General for Communication, who provided us with three fact sheets on the salaries of the members of national parliaments in the EU. The fact sheets dated 1 July 2005, 8 November 2007, and 14 April 2009 display the salaries of the members of the national parliaments in 2005, 2006/2007, and 2007/2008/2009, respectively.

<sup>15</sup> This is because, as mentioned in <http://www.europarl.europa.eu/aboutparliament/en/0081ddfaa4/meps.html>, parliamentarians divide their time between plenary sessions and their constituencies. In a given year, there are only few weeks for plenary sessions. Therefore, it is reasonable to think that parliamentarians spend most of their time in their home countries.

Other individual level variables are constructed using information provided by the [www.votewatch.eu](http://www.votewatch.eu). Specifically, we went to the web segment of each EU parliamentarian to identify their gender and to obtain information on the date of birth, which is used to calculate age.<sup>16</sup> The web site also contains short CVs of the parliamentarians. Using the information on their CVs, we created a dummy variable, PhD-MD, which takes the value of one if the member of the parliament has a PhD or an MD. The variable titled Political Group Attendance measures the average attendance of other members of the parliamentarian's political group.<sup>17</sup> This variable is intended to capture the extent of involvement of the member's political group in the legislative process.<sup>18</sup> We also created seven indicator variables to identify whether the individual was a member of any of the seven European parliamentary terms.<sup>19</sup> Indicator variables first parliament, second parliament, and so on identify whether an individual has served in the first parliament, second parliament and so on respectively.

Table 3 reports the descriptive statistics. The four columns pertain to four different samples that are used in various specifications. Column 1 includes the whole sample, which consists of the members of the European Parliament who were elected to the sixth and/or seventh parliament.<sup>20</sup> Average attendance per period is about 25 days, PPP-adjusted average real salary is about €79,000 and PPP-adjusted average real *per diem* pay is €311. Tenure in the sixth or seventh parliament is intended to be a proxy for the experience of the parliamentarian. This variable measures the cumulative number of periods attended. For example, the value of this variable for a member who attended at least one meeting day in all periods of the sixth term would be 1 in period 1 and 10 in period 10 (see Table 1). For a member, who was part of the sixth parliamentary term and who is re-elected for the seventh term, and who attended at least one meeting day in each period, this variable would take the value of 15 in period 15. A person who is elected for the seventh term but who was not part of the sixth term, would have a value of 5 for this variable in period 15.

Table 4 displays the summary statistics for member attributes, using each member as a unit of observation. There are 1,150 different members of the parliament in the data

<sup>16</sup> In a few cases, the web site does not contain a picture of the member of the parliament. In those cases, we tried to identify gender by the first name.

<sup>17</sup> Parliamentarians are grouped by political affiliation and not by nationality. There are currently seven political groups in the European Parliament. Parliamentarians may not belong to more than one political group but some do not belong to any political group.

<sup>18</sup> There are currently seven political groups in the EU Parliament: European People's Party (EPP), Progressive Alliance of Socialists and Democrats (S&D), Alliance of Liberals and Democrats for Europe (ALDE), European Conservatives and Reformists (ECR), The Greens-European Free Alliance (Greens-EFA), European United Left-Nordic Green Left (GUE-NGL), Europe of Freedom and Democracy (EFD). In addition, some members of the parliament do not belong to any political groups. These members are referred to as Non-Inscrits (NI). The ECR group is recently formed - from the beginning of the seventh parliament. Two political groups from the sixth parliament, Independence/Democracy (IND/DEM) and Union for Europe of the Nations (UEN) merged to form EFD in the seventh parliament. The political group European People's Party-European Democrats (EPP-ED) in the sixth parliament is divided into two political parties in the seventh parliament, EPP and ECR.

<sup>19</sup> The first EU parliamentary term spanned the years 1979-84, and there is one person in the seventh parliament who was a member of all seven parliamentary terms, thus serving continuously from 1979 to 2011. We obtained the information about whether a member of the sixth or seventh parliament was also a parliamentarian in the previous terms from the data set used by Hix *et al.* (2006).

<sup>20</sup> At the end of the sixth parliament, in the summer of 2009, there were 776 Members in the European Parliament.

Table 3  
*Summary Statistics*

	Whole sample ( <i>N</i> = 10,521)	Re-elected to seventh parliament ( <i>N</i> = 5,100)	Freshmen ( <i>N</i> = 5,883)	Seasoned ( <i>N</i> = 4,638)
	(1)	(2)	(3)	(4)
Days attended	25.516 (6.341)	25.678 (6.226)	25.413 (6.465)	25.647 (6.179)
Real salary ('000 €, PPP-adjusted)	78.977 (31.557)	77.902 (30.615)	74.098 (33.604)	85.167 (27.537)
Real <i>per diem</i> pay (PPP-adjusted)	311.497 (100.138)	307.677 (98.557)	336.394 (112.203)	279.907 (70.669)
Age	53.281 (10.173)	53.064 (9.610)	51.188 (10.611)	55.938 (8.908)
Female	0.317 (0.465)	0.325 (0.468)	0.314 (0.464)	0.320 (0.467)
PhD-MD	0.242 (0.428)	0.257 (0.437)	0.262 (0.440)	0.217 (0.412)
Member in first parliament	0.011 (0.104)	0.006 (0.076)		0.025 (0.156)
Member in second parliament	0.030 (0.170)	0.024 (0.152)		0.067 (0.251)
Member in third parliament	0.062 (0.240)	0.072 (0.259)		0.140 (0.347)
Member in fourth parliament	0.159 (0.365)	0.179 (0.383)		0.360 (0.480)
Member in fifth parliament	0.323 (0.468)	0.380 (0.485)		0.733 (0.442)
Member in sixth parliament	0.827 (0.378)	1.000	0.701 (0.458)	0.986 (0.116)
Member in seventh parliament	0.658 (0.474)	1.000	0.639 (0.480)	0.682 (0.466)
Tenure in sixth or seventh parliament	6.040 (3.900)	7.721 (4.261)	4.493 (2.712)	8.003 (4.277)
Political group attendance (%)	87.698 (2.795)	87.853 (2.695)	87.478 (2.841)	87.977 (2.711)
Herfindahl index	0.206 (0.073)	0.208 (0.075)	0.206 (0.075)	0.206 (0.070)
Per capita GDP	26.004 (8.324)	26.567 (8.403)	24.002 (7.860)	28.544 (8.204)
Speeches	10.007 (19.808)	11.059 (18.870)	10.540 (20.977)	9.454 (18.505)
Reports	0.266 (0.973)	0.343 (1.107)	0.218 (0.938)	0.315 (1.007)
Motions	2.234 (5.708)	2.533 (6.036)	2.103 (5.605)	2.370 (5.811)
Opinions	0.191 (0.534)	0.213 (0.563)	0.209 (0.540)	0.172 (0.528)
Questions	6.156 (17.194)	6.446 (14.115)	6.664 (20.158)	5.630 (13.430)

*Notes.* The entries are sample means. The numbers in parentheses are standard deviations.

set who were part of the sixth and/or the seventh parliament. Thirty-two per cent of the members are women, and 22% have a PhD or MD degree. The average age is 50. The mean value of the dichotomous variable Member in the 1st Term is 0.01 in column 1. This means that 1% of the 1,150 members (12 people) served in the first parliamentary term (1979–84).

Table 4  
*Individual Descriptive Statistics*

Variable	Mean	SD	Minimum	Maximum
Age	50.382	10.327	24	81
Female	0.322	0.467	0	1
PhD-MD	0.223	0.416	0	1
Member in first parliament	0.010	0.097	0	1
Member in second parliament	0.025	0.157	0	1
Member in third parliament	0.047	0.212	0	1
Member in fourth parliament	0.123	0.329	0	1
Member in fifth parliament	0.251	0.434	0	1
Member in sixth parliament	0.675	0.469	0	1
Member in seventh parliament	0.638	0.481	0	1
Herfindahl index	0.208	0.079	0.086	0.464
Per capita GDP	25.689	11.215	9.808	74.422

*Notes.* There are 1,150 different parliamentarians who served in the sixth and the seventh parliaments between July 2004 and December 2011. The summary statistics in the Table pertain to the first time the parliamentarian is observed during this time period. This date is either July 2004 (for those who are elected to the sixth parliament), July 2009 (for those who were elected to the seventh parliament and who were not in the sixth parliament), or 2007 for the members from Romania and Bulgaria as these countries became members of the EU in 2007. Statistics for the Herfindahl index for domestic political competition and per capita GDP are the averages at the country level.

Column 2 of Table 3 displays the descriptive statistics of those parliamentarians who served in the sixth parliamentary term and were re-elected for the seventh term. This group consists of 360 people. Note that these individuals were exposed to the exogenous change in salaries that was implemented at the beginning of the seventh parliament. Column 3 of Table 3 presents descriptive statistic pertaining to freshman members in the sample. Put differently, these statistics pertain to the freshman years of the parliamentarians. Note again that our data set spans the sixth and the seventh parliaments (see Table 1). Therefore, if a member is elected to the sixth parliament as a freshman and re-elected to the seventh parliament, then only his/her information (attendance, salary etc.) during the sixth parliament is included in this freshmen sample. Similarly, this sample contains information on those individuals, who are elected to the European Parliament first time for the seventh term.

Finally, column 4 of Table 3 displays descriptive statistics on seasoned member-periods. A seasoned member is defined as somebody who has served at least one prior term in the European Parliament. For example, if a member has served only in the sixth and the seventh parliaments, data summarised in column 4 contain information about this person in his/her seventh term only. As another example, if a member has served in the third, sixth and seventh parliaments, column 4 contains data on this member's activity during the sixth and seventh parliaments.<sup>21</sup>

<sup>21</sup> Note that attendance data are only available for the sixth and the seventh parliaments. Therefore, our data are restricted to these terms (2004–11). However, we have information on whether any member has served in previous parliaments. Therefore, we can identify whether parliamentarians in our sample have served in prior terms.

Real GDP per capita is obtained from World Bank's World Development Indicators database.<sup>22,23</sup> To calculate the Herfindahl index of domestic political competition, we obtained data from the European Election Database compiled by the Norwegian Social Science Data Service.<sup>24</sup> In each country and for each EU election, we focused on political parties that obtained at least 5% of the popular vote. The proportion of the votes obtained by parties that received less than 5% of the vote are not reported in some countries. However, focusing on parties that received at least 5% of the popular vote does not generate significant measurement error in the Herfindahl index. For example, in the 2004 EU elections in Germany, there were five German political parties that each received more than 5% of the vote. CDU/CSU (Christian Democratic Union), SPD (Social Democratic Party of Germany), Bündnis-90/Grüne (The Green Party), PDS (Party of Democratic Socialism) and FDP (Free Democratic Party) gathered 44.51%, 21.52%, 11.94%, 6.12%, and 6.07% of the total votes respectively. The Herfindahl index that uses these parties is 0.2661. In that same election in Germany, the parties that gathered less than 5% of the vote were as follows. REP (1.88%), MUT (1.29%), Graue (1.22%), FAMILIE (1.04%) and other parties (4.4%). Using all parties, including those with less than 5% of the vote, the Herfindahl index is 0.2669, which is very similar to the one that uses parties which received more than 5% of the total vote.<sup>25</sup>

The last five variables listed in Table 3 pertain to the activities of the parliamentarians in the parliament. In addition to speeches given, these actions include reports, which stands for the number of times a parliamentarian has drafted a report to summarise the results of the vote taken on an issue.<sup>26</sup> Motions are the number of times the parliamentarian proposed the enactment of a new law. Motions are written/signed by a committee, a political group in the parliament or at least 40 members. Opinions rapporteur represents the number of times a member of the parliament acted as opinion rapporteur. Questions stand for the questions posed by the parliamentarian to the parliament or to the Council of the EU, which may be submitted in writing or may be delivered orally during the meetings.

## 4. Results

### 4.1. *Whole Sample*

Columns 1–3 of Table 5 present the results that employ the entire sample, consisting of all parliamentarians who participated in the sixth and/or the seventh parliaments. All regressions in all tables include dummy variables for the 15 periods and a time trend. Standard errors are clustered at the parliamentarian level. Column 1 reports result from the model that includes parliamentarian fixed effects and country fixed effects. Column 2 presents the estimates obtained from the specification that includes

<sup>22</sup> <http://data.worldbank.org/indicator>.

<sup>23</sup> GDP per capita is not available for 2010 and 2011, therefore it is extrapolated linearly.

<sup>24</sup> [http://www.nsd.uib.no/european\\_election\\_database/election\\_types/ep\\_elections/](http://www.nsd.uib.no/european_election_database/election_types/ep_elections/).

<sup>25</sup> Using data from the countries that reported the votes received by all parties, we calculate that the correlation between the Herfindahl index that uses all parties and the Herfindahl index that uses parties that received at least 5% of the vote is 0.9.

<sup>26</sup> A typical report includes an explanatory statement for the motion for resolution proposal for law, amendments and votes on them.

Table 5  
*The Impact of Salary on Attendance*

	Whole sample			Re-elected for the seventh parliamentary term		
	(1)	(2)	(3)	(4)	(5)	(6)
Real salary ('000 €)	-0.009*** (0.003)	-0.019*** (0.003)	-0.015*** (0.003)	-0.011*** (0.003)	-0.011*** (0.004)	-0.011*** (0.003)
Real <i>per diem</i> pay	-0.004 (0.002)	0.006*** (0.001)	-0.002 (0.002)	-0.005* (0.003)	0.006*** (0.002)	-0.005 (0.003)
Tenure in sixth or seventh parliament	0.745 (0.846)	0.025 (0.048)	-0.050 (0.061)	1.193 (1.421)	0.045 (0.064)	-0.046 (0.079)
Political group attendance (%)	0.016 (0.027)	0.096** (0.041)	0.094** (0.040)	0.065* (0.035)	0.163** (0.065)	0.181*** (0.061)
Per capita GDP	0.014 (0.010)	0.026 (0.017)	0.004 (0.012)	0.045*** (0.013)	0.058*** (0.021)	0.043*** (0.013)
Herfindahl index	4.786** (2.211)	1.010 (1.132)	-0.212 (1.947)	4.546** (2.179)	2.752* (1.542)	4.946** (2.176)
Age		0.239*** (0.064)	0.210*** (0.064)		0.310*** (0.092)	0.294*** (0.093)
Age <sup>2</sup>		-0.002*** (0.001)	-0.002*** (0.001)		-0.003*** (0.001)	-0.003*** (0.001)
Female		0.053 (0.165)	0.022 (0.162)		-0.009 (0.232)	-0.045 (0.231)
PhD-MD		-0.013 (0.209)	-0.094 (0.202)		-0.202 (0.273)	-0.260 (0.282)
<i>N</i>	10,521	10,521	10,521	5,100	5,100	5,100
Individual fixed effects	Y	N	N	Y	N	N
Country fixed effects	Y	N	Y	Y	N	Y
Previous parliamentary membership	N	Y	Y	N	Y	Y

Notes. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors, which are clustered at the parliamentary level, are reported in parentheses. Dependent variable is the number of days attended in a parliamentary period. The first three columns cover the whole sample, and the last three columns cover the parliamentarians who served both in the sixth and the seventh parliaments. All regressions include indicators for parliamentary periods (see Table 1), an overall time trend and time dummies.

personal attributes of the parliamentarians instead of individual fixed effects. This specification does not include country fixed effects. Column 3 is similar to column 2 but country fixed effects are included.

The coefficient of Salary is negative and highly significant, indicating that an increase in salary generates a decline in the number of meeting days attended. The coefficients in columns 1 and 2 imply an income elasticity from  $-0.03$  to  $-0.06$ .<sup>27</sup> *Per diem* pay has a positive and statistically significant impact on attendance in column 2.

<sup>27</sup> This estimate is similar in magnitude to those obtained from inheritance recipients and lottery winners. For example, Holtz-Eakin *et al.* (1993) analysed the labour force participation behaviour of individuals, who received inheritance and reported an implied unearned income elasticity of  $-0.03$ . Imbens *et al.* (2001) employed data on lottery winners in Massachusetts in the mid-1980s to investigate the impact of lottery prizes on labour market earnings. The estimated marginal propensity to earn was about  $-0.11$ .

The implied uncompensated wage elasticity is 0.73, which is consistent with estimates reported by previous research that used European data.<sup>28</sup>

Peer pressure seems to have an effect on attendance behaviour. If there is a 10 percentage point increase in the sittings attended by the colleagues of the parliamentarian who belong to the same political group, he/she attends one additional day during a period.<sup>29</sup> Age has a small non-linear impact on attendance. In most specifications, attendance peaks at the age of early 50s.

#### 4.2. *Re-elected Parliamentarians*

Columns 4–6 report the results that employ data on the parliamentarians, who are observed both before and after the change in the salary structure. There are 360 such members in our sample (who had served in the sixth parliament and were re-elected and served in the seventh parliament). This analysis involves a comparison of the attendance of the same parliamentarians before and after the change in the salary structure. The results, which are presented in columns 4–6 of Table 5, are very similar to the ones obtained from the whole sample.

There is little variation in per capita income within a country from year to year. This makes it difficult to estimate the coefficients with precision. Nevertheless, the coefficient of country income indicates that members of the European Parliament who represent lower income countries have a tendency to attend fewer sessions. The coefficient of the Herfindahl index of political competition is about 4 in models with country fixed effects. This indicates that an increase in concentration in domestic political power (i.e. a small number of parties sharing most of the votes) has a positive impact on attendance. A one standard deviation increase in the Herfindahl index increases the number of days attended by 0.33. This could be because parliamentarians who come from countries with concentrated political power feel more secure about re-election and do not feel a strong desire to frequently go back to their home countries to keep in touch with their constituents. It could also be the case that in countries where votes are concentrated, national party leaders have the authority to determine the candidates to be nominated to run for the EU Parliament and this structure reduces uncertainty around re-election.

The specification that uses the re-elected parliamentarians identifies the impact of salaries through the exogenous change in salaries faced by these individuals. The salary increase, however, was implemented between the sixth and the seventh parliamentary sessions. Therefore, it is possible that those re-elected parliamentarians had a strong desire to enjoy the higher salaries that would be forthcoming in the seventh term. Similarly, the desire for re-election could have been curtailed for those who were going to face a salary cut. This argument suggests that the upcoming salary

<sup>28</sup> For example, Bargain *et al.* (2010) estimate a wage elasticity of 0.6 for women using the German Socio-economic panel. Donni and Moreau (2007) estimate a wage elasticity of 0.42 for French couples. Van Soest *et al.* (2002) use Dutch data and estimate an elasticity of about 1 for married women. Brewer *et al.* (2006) employ British data and find an estimate of 1.02 for males.

<sup>29</sup> A causal interpretation is difficult here because the political groups are being formed endogenously. Although political views are arguably the most significant determinants of group formation, proclivity towards shirking could be one aspect of self-selection into groups.

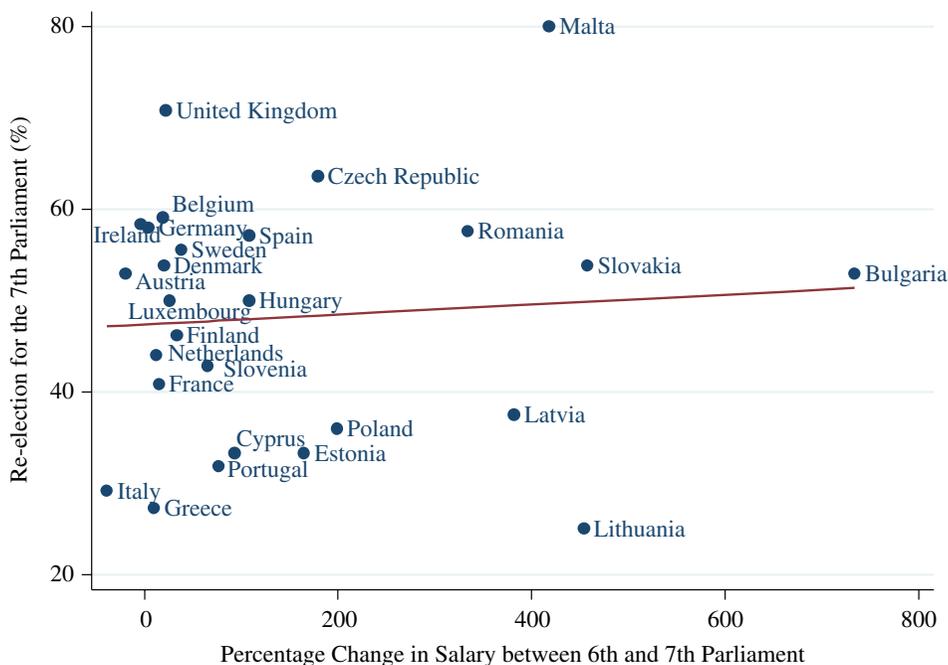


Fig. 3. *Re-election Rate and Change in Salary*

increase/decrease may have altered the willingness and the propensity to re-enter the seventh parliament. The data do not support this hypothesis. Figure 3 displays the re-election rates among the incumbent parliamentarians of the sixth parliament (the proportion that is re-elected to the seventh parliament) in each country as a function of the change in salary between the two terms. The solid line shows the fitted values from a regression of the former on the latter. No clear pattern emerges. The highest salary increase was enjoyed by Bulgarians with an increase of more than 733%. Yet, the re-election rate among the Bulgarian members of the European Parliament was a moderate 53%. Members of the European Parliament from the UK had a higher re-election rate (71%), although the salary increase they faced between the sixth and the seventh parliaments was only 27%. Parliamentarians from Malta and Slovakia had very similar salary increases (460% and 407%) but their re-election rates are 80% and 5% respectively. Members of the EU Parliament from Germany, Greece, the Netherlands and France have similar increases in their salaries (4% in Germany, 10% in Greece, 12% in the Netherlands and 15% in France), but the re-election rates range from 27% in Greece to 59% in Germany.

As a complementary analysis we calculated the proportion of re-elected parliamentarians in each country between the fifth and the sixth parliaments and compared these rates to the re-election rates between the sixth and the seventh parliaments. There was no change in the salary structure between the fifth and the sixth parliaments. Thus, the re-election rates between the fifth and the sixth terms are the product of domestic political processes and the structure of political establishment in each country and they do not depend on expected EU parliamentary compensation.

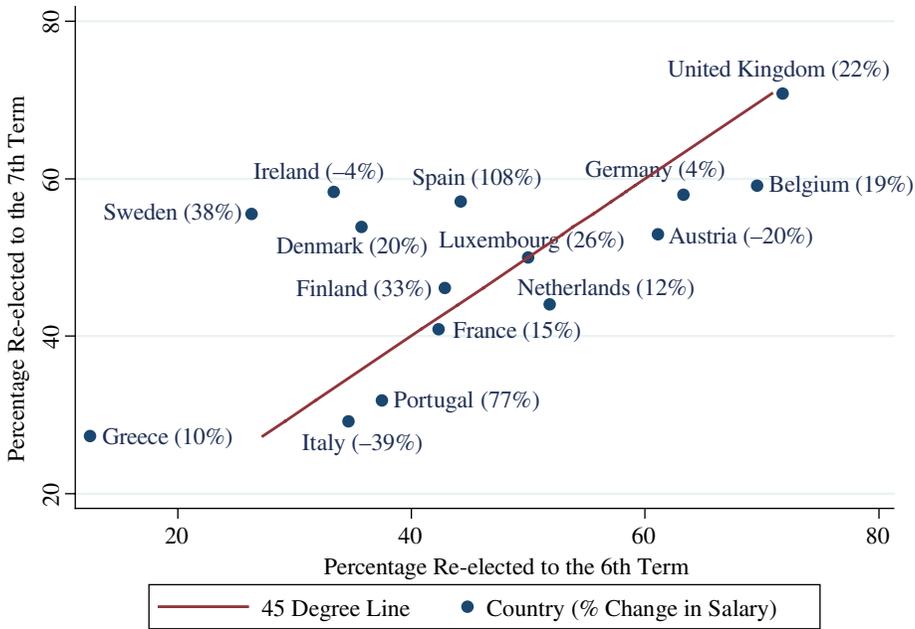


Fig. 4. Re-election Rate to the Sixth and the Seventh Terms of the European Parliament

If the new salary structure implemented by the EU has altered the re-election dynamics, the re-election probabilities would be different between the transitions from fifth to sixth and from sixth to the seventh parliaments.

Figure 4 shows that this is not the case. The re-election rates between the fifth and sixth parliaments are measured on the horizontal axis and the rates between the sixth and the seventh parliament are measured vertically. The line in the graph has a 45-degree angle to the axes. The numbers in parentheses following country names show the percentage change in salaries between the sixth and seventh parliaments. For example, the members of the European Parliament from the UK faced a 22% increase in their salaries between the sixth and the seventh parliaments. Their re-election rate to the seventh term was 72%, which was essentially equal to the re-election rate to the sixth term when there was no change in salaries.<sup>30</sup> Similarly, the re-election rates of Portuguese members were very similar between the two elections (38% and 32%), despite the fact that the election for the seventh parliament was associated with a 77% salary increase for the Portuguese members. The same is true for Italians who faced a 39% decline in salary when the European parliament equalised salaries in the seventh parliament. Yet, the re-election rate of Italians in 2009 is very similar to their re-election rate five years earlier when there was no change in salaries. The biggest increase in the re-election rate took place in Sweden (29 percentage points increase between the sixth and the seventh parliaments) and their salaries increased by 38%. On the other hand, a similar increase in the re-election rate took place in Ireland (25 percentage points), yet salaries went down for

<sup>30</sup> This graph contains only 15 countries because the EU had 15 member countries in the fifth parliament (Poland became the 16th member and sent appointed members to the parliament in May 2004).

the Irish members by 4%. In summary, there is no evidence that the change in the salary structure between the sixth and the seventh parliaments has altered the re-entry behaviour of the incumbents.<sup>31</sup> These results are consistent with those reported by Gagliarducci and Nannicini (2012) who analysed mayoral elections in Italy. Exploiting information on term limits and discontinuity in mayoral salaries at a certain population cut-off, they conclude that salaries do not incentivise re-election.

#### 4.3. *Freshman and Seasoned Parliamentarians*

In Table 6 we report the results obtained from two other groups. The first group consists of freshman parliamentarians. These are the individuals who were elected for the very first time to the European Parliament, beginning with the sixth or the seventh term. The idea behind this exercise is to create a sample of individuals who are similar by the virtue of being a newcomer to the parliament. Thus, their general attitude towards attendance should be similar.

The second sample consists of seasoned politicians. They have been members of the European Parliament in previous terms. In this sample of experienced members, we retain observations that belong to parliamentarians who have served at least one previous term in the European Parliament since its inception in 1979. The results that are obtained from the freshmen sample and the seasoned parliamentarian sample are similar to those reported in Table 5.

The overwhelming majority of the variation in salaries is generated by the change in salaries between the sixth and the seventh terms in 2009. Therefore, as an alternative identification strategy, we focused on re-elected parliamentarians who were present both in the sixth and the seventh parliaments. There are 360 re-elected parliamentarians. We calculated the average attendance and the average salary for these parliamentarians within the sixth and the seventh parliaments. Because each re-elected parliamentarian contributes two observations to this specification, we ran the model in first differences.<sup>32</sup> The results, which are reported in column 1 of Table 7, are very similar to ones reported earlier.<sup>33</sup> Columns 2–5 of Table 7 report the results of similar regressions. Here, we use the freshmen sample and the sample of seasoned parliamentarians. For example, in columns 2 and 3 we use the sample consisting of the 850 freshman parliamentarians who were elected for the first time either to the sixth parliament or to the seventh parliament, and we employ their average attributes (attendance, salary, age and so on) in the regressions. These regressions are run in

<sup>31</sup> This discussion assumes that the incumbent member of the European Parliament has an advantage in the elections over the challengers. It is also possible that an upcoming salary increase may motivate a large number of challengers to enter the election, which may lower the chances of re-election of the incumbent. Anecdotal evidence suggests that is not the case. For example, in Romania, which experienced a 340% jump in salary, the number of candidates went down to 289 in the 2009 elections from 549 candidates in the previous election (<http://www.alegeri.tv/>). In Bulgaria, where the salary increase was the largest, the number of candidates also went down to 215 in 2009 from 218 candidates in the previous election (obtained from the Bulgarian Central Election Committee of the European Parliament – Centralna Izbiratelna Komisija Evropeyski Parlament; <http://www.cikep2009.eu/?page=244>).

<sup>32</sup> We did not use one parliamentarian who changes his nationality between the two parliamentary terms and thus represented two different countries in two consecutive parliaments.

<sup>33</sup> Running the regression in levels and adding individual fixed-effects provides identical results.

Table 6

*The Impact of Salary on Attendance Sessions Freshman and Seasoned Parliamentarians*

	Freshmen members		Seasoned members		
	(1)	(2)	(3)	(4)	(5)
Real salary ('000 €)	-0.022*** (0.004)	-0.018*** (0.004)	-0.016** (0.008)	-0.011 (0.009)	-0.026*** (0.005)
Real <i>per diem</i> pay	0.005*** (0.001)	-0.004 (0.003)	0.005* (0.003)	-0.005 (0.005)	-0.004 (0.004)
Tenure in sixth or seventh parliament	0.089 (0.064)	0.001 (0.078)	-0.080 (0.056)	-0.100 (0.073)	0.765 (0.698)
Political group attendance (%)	0.087* (0.048)	0.073 (0.047)	0.080 (0.060)	0.098* (0.057)	0.022 (0.036)
Per capita GDP	0.012 (0.021)	-0.020 (0.018)	0.029 (0.025)	0.016 (0.014)	0.024** (0.011)
Herfindahl index	0.423 (1.462)	-2.120 (2.805)	1.625 (1.786)	0.976 (4.054)	-0.092 (2.945)
Age	0.210*** (0.079)	0.188** (0.079)	0.328*** (0.101)	0.267** (0.107)	
Age <sup>2</sup>	-0.002** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.002** (0.001)	
Female	0.149 (0.209)	0.157 (0.204)	-0.049 (0.243)	-0.174 (0.241)	
PhD-MD	-0.061 (0.263)	-0.013 (0.257)	0.026 (0.291)	-0.269 (0.278)	
<i>N</i>	5,883	5,883	4,638	4,638	4,638
Individual fixed effects	N	N	N	N	Y
Country fixed effects	N	Y	N	Y	Y
Previous parliamentary membership	n/a	n/a	Y	Y	N

Notes. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors, which are clustered at the parliamentary level, are reported in parentheses. The dependent variable is the number of days attended in a parliamentary period. Columns 1 and 2 cover the sample of freshman members (who are elected to the parliament for first time in either the sixth or the seventh parliament). Columns 3–5 cover the sample of seasoned members (who had been elected to the parliament at least once before). For all regressions on the seasoned members sample indicators for parliamentary periods are included. In all regressions, control variables include indicators for periods and an overall time trend.

levels and we cannot add parliamentary fixed effects because each individual contributes one observation (they are either a freshman in the sixth parliament or in the seventh parliament). Columns 4 and 5 report the results pertaining to the sample of seasoned parliamentarians. There are 521 different seasoned parliamentarians who contribute 660 observations to these regressions.<sup>34</sup> The results are consistent between specifications, although the coefficient of salary is not significant at conventional levels in the sample of seasoned members when we control for country fixed-effects.

## 5. Robustness Checks and Extensions

After the implementation of the new salary structure in July 2009, there have been only five parliamentary periods in the European Parliament until December 2011, whereas

<sup>34</sup> Some seasoned parliamentarians contribute two observations (for the sixth and for the seventh parliaments) because they were 'seasoned' when they entered the sixth parliament (i.e. they served before the sixth parliament) and they also got re-elected to the seventh parliament.

Table 7  
*The Impact of Salary on Average Attendance*

	Re-elected to the seventh parliament	Elected as freshman to the sixth or the seventh parliament		Seasoned members: elected to the sixth or the seventh parliament; but has served previously	
	First differences	Levels	Levels	Levels	Levels
	(1)	(2)	(3)	(4)	(5)
Real salary ('000€)	-0.022*** (0.004)	-0.023*** (0.004)	-0.018*** (0.006)	-0.017** (0.008)	-0.012 (0.009)
Real <i>per diem</i> pay	-0.010* (0.005)	0.007*** (0.002)	-0.002 (0.012)	0.007** (0.003)	-0.009 (0.012)
Tenure in sixth or seventh parliament	-0.729*** (0.179)	0.357*** (0.110)	0.277* (0.142)	-0.067 (0.060)	-0.119 (0.072)
Political group attendance (%)	0.068 (0.054)	0.142** (0.058)	0.132** (0.061)	0.147** (0.071)	0.148** (0.073)
Per capita GDP	0.143*** (0.038)	0.051* (0.029)	-0.021 (0.067)	0.040 (0.034)	0.015 (0.049)
Herfindahl index	2.389 (2.389)	0.769 (1.371)	-0.889 (3.165)	1.255 (1.762)	0.601 (4.336)
Age		0.201*** (0.072)	0.203*** (0.072)	0.359*** (0.101)	0.294*** (0.107)
Age <sup>2</sup>		-0.002*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)
Female		0.154 (0.194)	0.147 (0.191)	-0.059 (0.228)	-0.150 (0.229)
PhD-MD		-0.031 (0.249)	0.014 (0.250)	-0.038 (0.270)	-0.327 (0.262)
<i>N</i>	360	850	850	660	660
Country fixed effects	n/a	N	Y	N	Y

Notes. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors that are clustered at the individual level are reported in parentheses. The dependent variable is the average number of days a parliamentarian attended in a parliamentary period. First regression is estimated with OLS on the first differences in the variables. Only those who were re-elected for the seventh parliamentary term are included in the first column. Regressions include full set of control variables. All regressions except the one reported in column 1 include an indicator for the seventh parliamentary term.

there were 10 periods in the sixth parliament between 2004 and 2009 (see Table 1). We re-estimated all models using the five periods in the seventh parliament (July 2009 to December 2011) and the first five periods of the sixth parliament. The results did not change. In the interest of space we only report one table. Table 8 is the counterpart of Table 6, but the sample consists of the 10 parliamentary periods described above.

We re-estimated all specifications using the logarithms of attendance, salary and *per diem*. These results are reported in Table A1 in Appendix A. The statistical significance of the estimated coefficients of salary and *per diem* are very similar to those reported in Tables 5–8. The elasticities generated by the two specifications are also very similar.<sup>35</sup>

<sup>35</sup> We also estimated the effect of salary on attendance using a regression discontinuity approach. We used the observations from the whole sample (corresponding to column 1 of Table 3). We used the percentage change in number of days attended between the periods as the outcome variable, and the per cent change in salary between the periods as the assignment variable. The local treatment effect at the cut-off point of zero change in salary was estimated to be -0.44 with a standard error of 0.05.

Table 8

*The Impact of Salary on Attendance Freshman and Seasoned Parliamentarians  
(Using the First Five Periods of the Sixth and Seventh Parliaments)*

	Freshmen members		Seasoned members		
	(1)	(2)	(3)	(4)	(5)
Real salary ('000 €)	-0.020*** (0.004)	-0.020*** (0.005)	-0.026*** (0.006)	-0.015* (0.008)	-0.010 (0.009)
Real <i>per diem</i> pay	0.004** (0.001)	-0.007 (0.006)	-0.013** (0.005)	0.005* (0.003)	-0.010 (0.007)
Tenure in sixth or seventh parliament	-0.193 (0.185)	-0.204 (0.199)	0.705 (0.938)	-0.065 (0.060)	-0.102 (0.075)
Political group attendance (%)	0.108** (0.051)	0.092* (0.053)	0.011 (0.043)	0.129** (0.060)	0.131** (0.058)
Per capita GDP	-0.011 (0.019)	-0.035** (0.016)	0.015 (0.012)	0.025 (0.022)	0.011 (0.013)
Herfindahl index	0.329 (1.367)	-3.183 (2.790)	0.281 (3.426)	1.535 (1.648)	2.218 (4.313)
Age	0.116 (0.074)	0.101 (0.071)		0.354*** (0.099)	0.297*** (0.102)
Age <sup>2</sup>	-0.001* (0.001)	-0.001 (0.001)		-0.003*** (0.001)	-0.003*** (0.001)
Female	0.172 (0.194)	0.205 (0.189)		-0.042 (0.225)	-0.116 (0.224)
PhD-MD	-0.065 (0.250)	-0.032 (0.249)		-0.023 (0.263)	-0.287 (0.255)
<i>N</i>	3,580	3,580	3,219	3,219	3,219
Individual fixed effects	N	N	Y	N	N
Country fixed effects	N	Y	Y	N	Y
Previous parliamentary membership	n/a	n/a	N	Y	Y

*Notes.* \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors, clustered at the parliamentarian level are reported in parentheses. The dependent variable is the number of days attended in a period. Regression employ ten periods (the five periods between 2009 and 2011 in the seventh parliament and the first five periods of the sixth parliament). The first two columns cover the sample of freshman members (who are elected to the parliament for first time), and the last three columns cover the sample of seasoned members (who had been elected to the parliament at least once before). All regressions include indicators for time periods and an overall time trend.

Although there is no evidence that the re-election rates have changed between the sixth and the seventh parliaments as discussed earlier (see Figures 3 and 4), we re-visit the postulate that those who are elected to the seventh parliament in 2009 could be shirkers. Under this scenario, salaries increased and attendance declined in the seventh parliament because this parliament has attracted those individuals who have a strong desire to enjoy high salaries and at the same time they have high proclivity for shirking on the job, we call these type-S individuals. If the labour supply of such type-S individuals is highly responsive to income, this could be the reason for estimating a significant relationship between salaries and attendance. Columns 1 and 2 of Table 6 have reported the results obtained from the freshmen sample. These are the individuals who are elected for the first time to the sixth or the seventh parliaments. Freshmen of the sixth parliament consist of two groups: those who are re-elected to the seventh parliament, and those who did not run for re-election, or did not get

re-elected. Based on the argument above, dropping the group of not-re-elected freshmen of the sixth parliament from the sample of all freshmen generates a sample of arguably type-S freshmen (those who arguably got themselves elected to the seventh parliament). Table A2 in Appendix A displays various models estimated using type-S freshmen. The estimated coefficients are not different in the type-S sample in comparison to those obtained the sample of all freshmen, suggesting that the results are not likely due to self-selection of type-S individuals to the seventh parliament.

Members of the parliament may have other sources of income as well. We assume that variations in the European Parliament salary are uncorrelated with other components of total income of the parliamentarians. We control for age and education which should be correlated with opportunities for moonlighting. If, however, a decrease in salaries prompts the parliamentarians to spend (more) time in moonlighting, the estimated impact of salary on parliamentary attendance will be biased towards zero.<sup>36</sup> To investigate whether parliamentarians' outside earnings are correlated with the salary reform in 2009, we collected data on outside work activities of the re-elected parliamentarians who were exposed to the salary reform in 2009. Each year, members of the European Parliament declare their current employment outside the parliament as well as the jobs they held before they took office. This declaration is done through filing the 'Declaration of Financial Interest' form. More specifically, the parliamentarians list 'their occupation(s) during the three-year period before they took office with the parliament, and memberships during that period of any boards or committees of companies, non-governmental organisations, associations or other bodies established in law' and 'their regular remunerated activities which they undertake alongside the exercise of their office, whether as employees or as self-employed persons'. Of the 360 parliamentarians re-elected to the seventh parliament, 205 did not change their outside work activities between the sixth and the seventh parliaments (161 were not involved in other income-generating activities either before or after 2009; 44 held other jobs both before and after 2009). Seven parliamentarians currently pursue outside income-generating activities but they did not do so before they took office in the parliament. The remaining 148 parliamentarians involved in income-generating activities prior to becoming a member of the European Parliament, but they quit when they became parliamentarians.

We investigated more formally whether outside job activities of the parliamentarians are correlated with the salary change. Using the data mentioned above, we generated an indicator variable that takes the value of 1 if the parliamentarian holds/held a job other than being a member of the parliament. We regressed the change in this indicator for each parliamentarian between the sixth and the seventh parliaments on the percentage change in his/her average salary between the sixth and the seventh parliamentary terms. The coefficient on the salary change was 0.00000532 and statistically not different from zero. We also ran the change in the indicator variable on a dummy that signifies whether the parliamentarian's country experienced a salary cut following the reform in 2009. The coefficient on the dummy variable was 0.135 and

<sup>36</sup> Gagliarducci *et al.* (2010) find that if high-ability people do not have to give up their private businesses when they are elected to office, they are more likely to shirk.

again statistically insignificant. These results suggest that parliamentarians' outside employment is uncorrelated with the salary reform of 2009.

It is possible that salary has an asymmetric impact on attendance. More specifically, the marginal impact of salary on attendance may be different when salary is rising than the impact when salary is declining. To test this hypothesis, we followed Mocan and Bali (2011) and the literature they cite, and decomposed  $Salary$  into  $Salary^+$  and  $Salary^-$  as described below, which are used as two separate regressors in (2).

$$Salary_t^+ = \begin{cases} Salary_t & \text{if } Salary_t \geq Salary_{t-1} \\ 0 & \text{if } Salary_t < Salary_{t-1} \end{cases}$$

$$Salary_t^- = \begin{cases} Salary_t & \text{if } Salary_t < Salary_{t-1} \\ 0 & \text{if } Salary_t \geq Salary_{t-1} \end{cases}$$

$$Attendance_{ict} = \alpha + \beta^+ Salary_{ict}^+ + \beta^- Salary_{ict}^- + \gamma Per\ diem_{ict} + \mathbf{X}'_{ict}\boldsymbol{\Omega} + \mathbf{C}'_{ct}\boldsymbol{\Psi} + \tau_t + \mathbf{P}'_t\boldsymbol{\lambda} + \varepsilon_{ict} \tag{2}$$

The results are reported in Table A3 in Appendix A. There is no evidence for asymmetry to speak of. The estimated coefficients of  $Salary^+$  are very similar to those of  $Salary^-$  and the difference is not different from zero with the exception of the freshmen sample spanning the first five periods of the sixth and the seventh parliaments. Thus, the results in Table A3 suggest that the impact of salary on attendance is similar when salaries are decreasing and when they are increasing.

The models estimated in the article so far reveal the impact of salary on days attended. This impact consists of decisions at the extensive and intensive margins. The decision at the extensive margin is about whether or not the parliamentarian should travel to Brussels or Strasbourg to attend a particular plenary session.<sup>37</sup> The decision at the intensive margin involves how many days of a plenary session to attend. More specifically, it can be postulated that

$$Days\ Attended = f_1(Salary, Per\ diem, Sessions\ Attended, \mathbf{X}, \mathbf{C}, \theta) \tag{3a}$$

$$Sessions\ Attended = f_2(Salary, Per\ diem, \mathbf{X}, \mathbf{C}, \theta) \tag{3b}$$

where  $\theta$  in (3a) and (3b) represents unobservable attributes of the parliamentarians that influence their general proclivity for work. Substituting (3b) into (3a) provides the reduced form employed in the article. To investigate the extent to which showing up for plenary sessions has an impact on the total number of days attended, we estimate (3a). Because unobservable  $\theta$  influences both the number of plenary sessions attended and the number of days attended conditional on plenary session attendance, we estimate (3a) with instrumental variables, where the number of plenary sessions attended is instrumented by the overlap between national holidays and the plenary sessions. The hypothesis is that if a national holiday in a given EU country overlaps with a particular plenary session of the parliament, a parliamentarian from that EU country may decide to stay in his/her country instead of attending that parliamentary session in Brussels or Strasbourg.

<sup>37</sup> As described earlier, a plenary session consists of consecutive meeting days.

We compiled information from the US embassies in the capital of each country about the national holidays of that country for each year between 2004 and 2012. The list of national holidays is presented in Appendix B. Holidays that are celebrated in every EU country are not listed in the table because during such holidays the EU Parliament is not in session and there is no conflict between attending a plenary session *versus* staying in the home country. Examples of such holidays include the New Year's Day (1 January), Europe Day (9 May), Labour Day (1 May), Assumption Day (15 August) and Christmas. There is significant variation not only in the overlap between national holidays and the EU parliamentary sessions between countries but also within a country. The latter variation exists because of two reasons. First, the EU Parliament does not have a fixed schedule. Consequently, the national holiday of a country may overlap with an EU parliamentary session in one year, but not the next year. For example, the national day of Austria is 26 October. One of the EU plenary sessions span 24–27 October in 2005. Thus, this particular parliamentary session in 2005 overlapped with the national day holiday in Austria. In 2006, a plenary session was scheduled for 23–26 October, again overlapping with the Austrian holiday. On the other hand, EU Parliament plenary sessions were scheduled for 22–25 October in 2007, and for 22–23 October in 2008, avoiding the Austrian holiday. In 2009, there was only one meeting day around that time period (which was on 2 October), and there were no plenary sessions in late October in 2010. In 2011, there was a plenary session that was scheduled for the period of 24–27 October, thus coinciding with the Austrian holiday. In this example, an EU parliamentarian from Austria had the incentive to stay in Austria, rather than attending meetings at the EU Parliament in 2005, 2006 and 2011 but not in the years between 2007 and 2010.

In addition to a variety of national holidays in each country, there are also religious holidays. Although the EU Parliament is closed for religious holidays, these religious holidays do not always coincide with the religious holidays in each member country. For example, in 2008, the EU Parliament was closed for the Catholic Easter holiday between 21 and 24 March. The Orthodox Easter holiday (Good Friday until Easter Monday), on the other hand, was between 25 and 28 April in that same year in Bulgaria, Cyprus, Greece and Romania when the EU Parliament was open for business.

Each period of the parliament (e.g. from July to December) consists of plenary sessions, which are a sequence of meeting days. Each plenary session covers 2–4 consecutive meeting days, and the plenary sessions are typically 3 weeks apart. Not every meeting day includes a vote call. If at least one item was voted on in a given meeting day, we call this a voting day. We can determine whether or not a member of the EU Parliament cast a vote on the first agenda item of a voting day. For example, consider a period (such as from July to December) that consists of eight plenary sessions and assume that these sessions cover a total of 26 meeting days.<sup>38</sup> Assume that 20 of these 26 meeting days involve a vote call. Thus, there are 20 voting days and each parliamentarian has an opportunity to cast a vote in each of these 20

<sup>38</sup> The first plenary session of this period may take place during week one and may cover Monday, Tuesday and Wednesday of that week. The second plenary session may take place 3 weeks later and may cover Tuesday and Wednesday, and so on.

voting days. We use the number of voting days attended in each period as the dependent variable in (3a).<sup>39</sup> If the parliamentarian has cast a vote in any of the voting days of a particular plenary session, we consider that particular plenary session as being attended.<sup>40</sup>

The instrument is the number of plenary sessions which conflicts with the timing of a holiday in the country of the parliamentarian in each period. We considered a particular EU plenary session as being in conflict with a given national holiday of a particular EU country if any day of that holiday has overlapped with the plenary session. To also account for travel time, we consider a national holiday being in conflict with the plenary session if the holiday has overlapped with the day preceding the first day of the plenary session, or if it coincided with the day after the last day of the plenary session. For example, 3 October is the day of German Unity and it is a national holiday in Germany. If an EU plenary session spans 2–4 October, it overlaps with the German holiday. If the session spans 4–5 October it is still considered an overlap with the national holiday under the assumption that it would take one day to travel between the home country and Brussels or Strasbourg.

The results are presented in Table 9. The first three columns report the results pertaining to the sample of freshman parliamentarians. Column 1 presents the results of the first-stage regression. Holiday conflicts stands for the number of plenary sessions that conflict with the national holiday of the parliamentarian in a period (autumn or spring). This variable is the instrument for the number of plenary sessions attended. The first stage is powerful with an F-value of 10.4 and a holiday conflict has a negative impact on the number of plenary sessions attended. Column 2 displays the results of the IV regression, where the number of plenary sessions attended is instrumented with holiday conflicts. Each plenary session attended by the parliamentarian increases voting days attended by about 3. The impact of salary is negative and significant, indicating that an increase in salary reduces the propensity to attend plenary sessions as well as the number of days attended, conditional on sessions attended. Column 3 presents the estimated reduced form of this specification. The number of plenary sessions that overlap with a national holiday (holiday conflicts) of the parliamentarian has a small negative impact on attendance. Specifically, five holidays that conflict with plenary sessions reduce attendance by one day. The impact of salary on voting days attended is negative and significant in this reduced form also. The estimated coefficient of salary is slightly smaller than the ones estimated in previous specifications but the mean of the dependent variable is also smaller here in comparison to previous models. The dependent variable in Table 9 is the number of voting days attended, whereas the dependent variable in previous regressions is the number of total days (voting and non-voting) attended.

<sup>39</sup> This information is obtained, as before, from [votewatch.eu](http://votewatch.eu) that provides the votes cast by each parliamentarian.

<sup>40</sup> The average number of plenary sessions in a period is 9.4, and the average number of voting days in a plenary session is 2.2. The average number of voting days in a period (autumn or spring) is 20. Parliamentarians attended 7.4 plenary sessions on average per period, and the average voting-day attendance by the parliamentarians is 17 voting days per period with a standard deviation of 6.

Table 9  
*The Impact of Holiday Conflicts on Attendance*

	Freshmen			Seasoned		
	2SLS		OLS	2SLS		OLS
	1st stage	2nd stage	Days attended	1st stage	2nd stage	Days attended
	Sessions attended	Days attended		Sessions attended	Days attended	
(1)	(2)	(3)	(4)	(5)	(6)	
Sessions attended		3.416*** (0.528)		0.751 (1.416)		
Holiday conflicts	-0.055*** (0.017)		-0.189*** (0.046)	-0.025 (0.018)	-0.019 (0.045)	
Real salary ('000 €)	-0.003*** (0.001)	-0.004* (0.002)	-0.015*** (0.003)	-0.002 (0.002)	-0.006 (0.006)	
Real <i>per diem</i> pay	-0.000 (0.001)	-0.002 (0.002)	-0.002 (0.003)	-0.002** (0.001)	-0.003 (0.004)	
Tenure in sixth or seventh parliament	0.228*** (0.022)	-0.304** (0.125)	0.475*** (0.062)	0.055** (0.022)	0.088 (0.097)	
Political group attendance (%)	0.040* (0.021)	-0.030 (0.037)	0.109* (0.057)	0.035** (0.017)	0.111 (0.074)	
Per capita GDP	-0.006 (0.005)	0.022*** (0.011)	0.001 (0.015)	0.005 (0.004)	0.015 (0.011)	
Herfindahl index	0.497 (0.513)	-1.100 (0.938)	0.597 (1.787)	0.161 (0.784)	-1.806 (2.143)	
Age	0.055*** (0.018)	-0.070* (0.041)	0.118** (0.054)	0.081*** (0.020)	0.164 (0.132)	
Age <sup>2</sup>	-0.001*** (0.000)	0.001* (0.000)	-0.001** (0.001)	-0.001*** (0.000)	-0.001 (0.001)	
Female	-0.002 (0.042)	0.132** (0.064)	0.126 (0.134)	-0.053 (0.041)	-0.002 (0.142)	
PhD-MD	-0.060 (0.055)	0.199** (0.088)	-0.005 (0.168)	-0.069 (0.047)	-0.166 (0.178)	
F-statistic ( $H_0$ : coefficient of holidays = 0)	10.356			2.078		
N	5,881	5,881	5,881	4,620	4,620	

Notes. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors, clustered at the parliamentary level, are reported in parentheses. First (last) three columns pertain to Freshmen (Seasoned) members. First two columns in both freshmen and seasoned regressions present the results of the 2SLS estimation. The third column of each sample shows the estimates from the reduced form. The dependent variable in the first stage is the number of plenary sessions the parliamentarian attended. The dependent variable in the second stage and the reduced form regressions is the number of voting days attended in a period. The F-statistic for the significance of the instrument in the first stage is reported in the F-statistic row. All regressions include indicators for periods and an overall time trend and period dummies.

As columns 4–6 show, the instrument is not powerful in explaining the number of plenary sessions attended by seasoned parliamentarians. One can only conjecture why this is the case but the insensitivity of this group to holiday conflicts may be due to variety of reasons, one of which is age. Seasoned parliamentarians are on average five years older than the freshmen and because of the age effect and by the virtue of having been in the parliament for at least one prior term, their attendance at plenary sessions

may be less sensitive to holiday conflicts as they may have decided to travel less frequently to their home country and decided to stay in Brussels for a larger portion of the year.<sup>41</sup>

5.1. *Other Activities of the Parliamentarians*

Although a change in salaries has an impact on the attendance to the parliament, this may not necessarily translate into a change in the work effort. We have obtained data on five work-related activities of the parliamentarians. These are speeches given, questions asked, reports drafted, motions for resolution, and the number of times the member was an opinion rapporteur. Questions may be posed by the parliamentarian to the parliament or to the Council of the EU. They may be submitted in writing or they may be delivered orally during the meetings. Reports are the number of times a parliamentarian has drafted a report to summarise the results of the vote taken on an issue. It includes an explanatory statement for the motion for resolution proposal for law, amendments and votes on them. Motions are proposals to enact a law. It is written/signed by a committee, a political group in the parliament or at least 40 members. Opinion rapporteur represents the number of times a member of the parliament acted as opinion rapporteur for a committee in response to a question or to declare the views of the committee.

Figures 5–9 display the extent of these activities among the parliamentarians during the sixth and the seventh parliaments. The dashed line represents the mean value among the parliamentarians who are from countries that faced a pay cut in with the beginning of

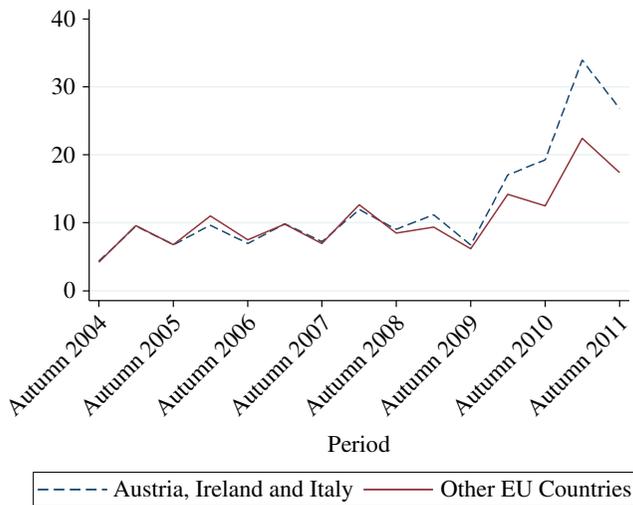


Fig. 5. *Speeches Delivered by Parliamentarians*

<sup>41</sup> When we ran the first stage, the IV, and the reduced form using the whole sample, we found that holiday conflicts was highly significant with a coefficient of  $-0.04$  in the first stage ( $F = 10.2$ ), that the IV coefficient of sessions attended was 2.98 and highly significant, and that the reduced form coefficient of holiday conflicts was  $-0.12$  and highly significant.

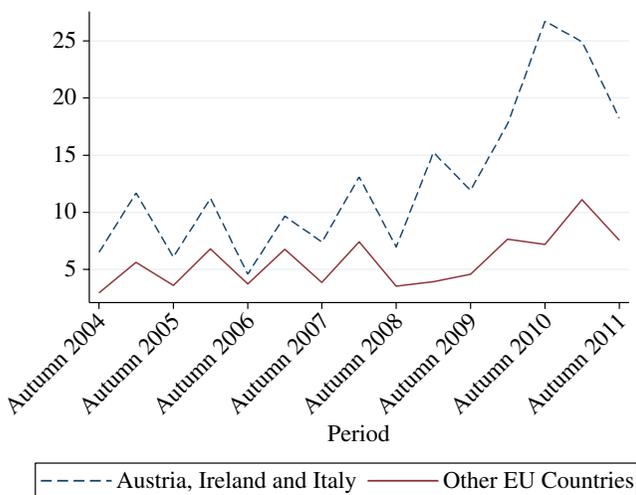


Fig. 6. *Written or Oral Questions Asked by Parliamentarians*

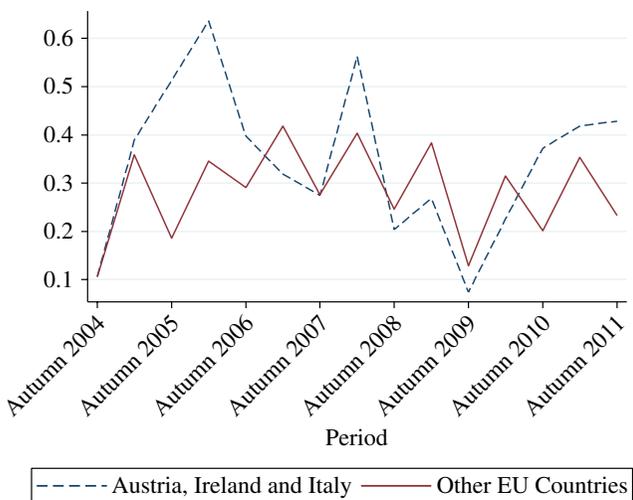


Fig. 7. *Reports Filed by Parliamentarians*

the seventh parliament in autumn 2009, and the solid line is the average among the parliamentarians of the other EU countries. Figure 5 shows that per capita number of speeches delivered has increased after autumn 2010 but the increase was larger among the Italian, Irish and Austrian parliamentarians who faced a pay cut. The same is true for the written or oral questions, displayed in Figure 6. On the other hand, Figures 7–9 show that there is no visible difference between the two groups in other activities.

To analyse formally whether salaries have an impact on these activities we ran regressions using as the unit of observation the number of times each parliamentarian was involved in each of these activities in each parliamentary period. That is, we

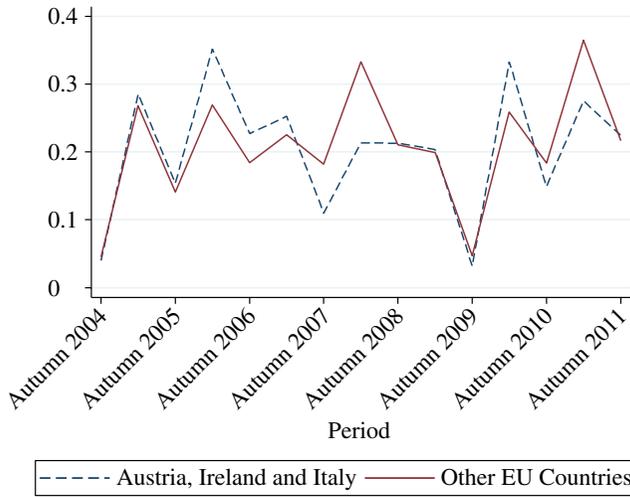


Fig. 8. Number of Times Parliamentarians Acted as an Opinion Rapporteur

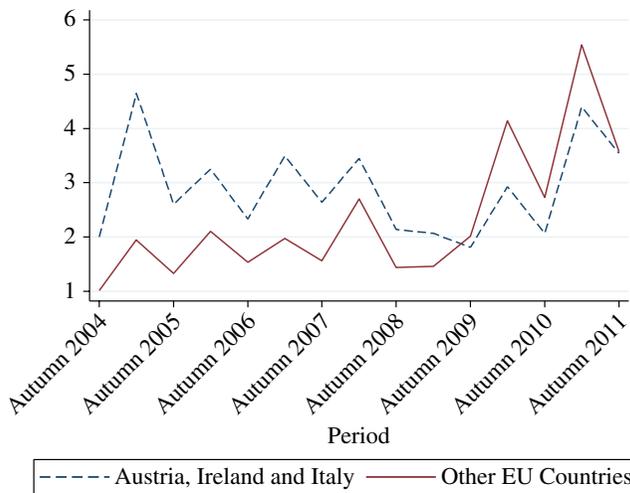


Fig. 9. Motions by Parliamentarians to Enact a Law

replaced the variable Attendance in (1) with Speeches, Reports, Questions, Motions, or Opinion rapporteur in a parliamentary period. The results are presented in Table 10. In the specifications of Table 10, a political group’s activity represents the percentage of the members of the group who participated in the activity (e.g. giving speeches, filing reports).

As the tenure of the parliamentarian goes up, so does the intensity of his/her activities in the parliament, ranging from giving speeches to writing reports to making motions to enact a law. The proportion of the political group that has involved in an activity has a positive impact on the propensity of the parliamentarian to engage in that

Table 10  
*The Effect of Salary on Activities of the Parliamentarians*

	Reports (1)	Speeches (2)	Motions (3)	Opinions (4)	Questions (5)
<b>Freshmen</b>					
Real salary ('000 €)	-0.002 (0.001)	-0.001 (0.022)	0.001 (0.006)	-0.000 (0.000)	-0.041* (0.021)
Real <i>per diem</i> pay	-0.001 (0.001)	0.003 (0.018)	-0.001 (0.005)	0.000 (0.000)	0.009 (0.010)
Tenure in sixth or seventh parliament	0.036*** (0.007)	0.633*** (0.225)	0.210** (0.103)	0.017*** (0.005)	0.780*** (0.244)
Political group's activity (%)	0.059 (0.088)	0.696*** (0.160)	1.039*** (0.120)	0.380*** (0.109)	0.755*** (0.184)
Per capita GDP	0.006* (0.004)	0.895*** (0.236)	0.087** (0.043)	-0.004 (0.003)	0.150 (0.113)
Herfindahl index	0.238 (0.677)	-83.030*** (28.954)	8.497 (6.331)	0.371 (0.276)	-10.181 (15.705)
<i>N</i>	5,869	5,869	5,869	5,869	5,869
<b>Seasoned</b>					
Real salary ('000 €)	0.002 (0.002)	-0.082 (0.059)	-0.005 (0.035)	-0.000 (0.001)	-0.121*** (0.041)
Real <i>per diem</i> pay	0.001 (0.002)	0.044* (0.024)	-0.004 (0.008)	-0.000 (0.001)	-0.010 (0.015)
Tenure in sixth or seventh parliament	0.197* (0.104)	4.990*** (1.810)	1.584* (0.926)	0.193* (0.115)	1.202 (0.738)
Political group's activity (%)	-0.465** (0.228)	-0.168 (0.190)	0.429*** (0.149)	-0.359** (0.169)	0.003 (0.072)
Per capita GDP	-0.003 (0.004)	0.267*** (0.097)	0.011 (0.022)	0.000 (0.004)	0.074 (0.065)
Herfindahl index	0.967 (1.832)	32.722 (24.798)	6.154 (12.015)	0.261 (0.697)	32.945** (13.724)
<i>N</i>	4,578	4,578	4,578	4,578	4,578

*Notes.* \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors, clustered at the parliamentary level, are reported in parentheses. Reports are the number of times a parliamentarian has drafted a report to summarise the results of the vote taken on an issue in a given parliamentary period. Motions are the number of times the parliamentarians made a proposal to enact a law. Questions may be posed by the parliamentarian to the parliament or to the Council of the EU, which may be submitted in writing or they may delivered orally during the meetings. Opinions represent the number of times a member of the parliament acted as opinion rapporteur. All regressions include indicators for periods, an overall time trend and country fixed effects. In addition, in the regressions on the seasoned members sample individual fixed effects are included as controls.

activity if the parliamentarian is a freshman. For seasoned members the picture is different. As the intensity of activity among their political group goes up, seasoned members' propensity to draft reports and to act as a rapporteur (Opinions) goes down. On the other hand, as the group gets more active to make proposals to enact a law (Motions), this has a positive impact on the number of motions put forth by seasoned parliamentarians.

As Table 10 shows, an increase in salary has a negative impact on the number of questions asked, which is consistent with Figure 6, but salary has no impact on reports filed, speeches given, motions, or the number of times the parliamentarian acted as an opinion rapporteur.

## 6. Summary and Conclusions

Using data on the members of the European Parliament from July 2004 to December 2011 we investigate the impact of an exogenous change in parliamentary salaries on attendance to the parliament. The compensation structure of the European Parliament and the data compiled by the European Union provide a unique setting for this analysis. For each member of the European Parliament the number of meeting days attended, *per diem* compensation for each meeting day attended (the daily wage), and salary (which is independent of attendance) are measured with precision. We exploit a major exogenous change in the salary structure that took place in 2009. Prior to July 2009, each member of the European Parliament was paid a salary determined by their home country. As a result, there was considerable variation in salaries, ranging from €10,363 (Bulgarian members) to €142,512 (Italian members). Starting with the seventh parliament in July 2009 the salary of each member of the parliament is pegged to 38.5% of a European Court judge's salary, paid by the EU. Thus, salaries were set to €91,983 in July 2009, which created an exogenous, and in most cases substantial, increase/decrease in unearned income for the members of the parliament.

We control for personal attributes of the parliamentarians as well as country characteristics such as per capita income and the extent of political competition in the home country. We analyse various samples of parliamentarians, including those members who were in the European Parliament both before and after the change in the salary structure. We find that an increase in salaries is statistically significantly related to labour supply with an elasticity of about  $-0.04$ . When we analyse the sample of freshman parliamentarians or the sample of seasoned parliamentarians we find similar elasticities.

We also find that age has a non-linear impact on attendance and that attendance peaks at about age 52, and that parliamentarians representing lower income countries have a reduced propensity to attend sessions. An increase in salaries has a negative impact on written or oral questions asked by parliamentarians during parliamentary periods but salaries are not related to other job-related activities such as declarations of formal statements, opinions drafted, motions filed, reports written, or speeches delivered.

European Union parliamentarians are responsible for passing laws that govern the 27 member countries; they have control over the EU budget, and they supervise the other EU institutions.<sup>42</sup> Consequently, given the significance of the job, it could be presumed that the work effort of the parliamentarians would not react to the variation in salaries. The results show that this is not the case and that salaries have an impact on the work effort. Although the estimated elasticity is very similar to those obtained from other settings, such as the inheritance recipients in the US (Joulfaian and Wilhelm, 1994), it is important to note that this is a specific group of individuals in a specific job environment and that we have not estimated a conventional labour supply elasticity where labour supply is measured by hours of work.

<sup>42</sup> For more information about the duties and responsibilities of the EU Parliament see [http://europa.eu/about-eu/institutions-bodies/european-parliament/index\\_en.htm](http://europa.eu/about-eu/institutions-bodies/european-parliament/index_en.htm)

## Appendix A

Table A1

*The Impact of Salary on Attendance Log (Attendance) on Log (Salary) and Log (Per diem)*

	Whole sample			Re-elected for the seventh parliamentary term		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel (a)						
Log real salary ('000 €)	-0.021*	-0.055***	-0.045***	-0.029**	-0.027**	-0.027**
	(0.011)	(0.010)	(0.010)	(0.011)	(0.013)	(0.011)
Log real <i>per diem</i> pay	-0.022	0.070***	0.000	-0.065	0.077***	-0.053
	(0.040)	(0.018)	(0.048)	(0.044)	(0.024)	(0.045)
<i>N</i>	10,521	10,521	10,521	5,100	5,100	5,100
Individual fixed effects	Y	N	N	Y	N	N
Individual Characteristics	N	Y	Y	N	Y	Y
Country fixed effects	Y	N	Y	Y	N	Y
Previous parliamentary membership	N	Y	Y	N	Y	Y
Panel (b)						
		Freshmen members		Seasoned members		
		(1)	(2)	(3)	(4)	(5)
Log real salary ('000 €)		-0.063***	-0.059***	-0.038	-0.039	-0.078***
		(0.013)	(0.016)	(0.026)	(0.030)	(0.017)
Log real <i>per diem</i> pay		0.066***	-0.008	0.039	-0.048	-0.044
		(0.023)	(0.076)	(0.033)	(0.068)	(0.049)
<i>N</i>		5,883	5,883	4,638	4,638	4,638
Individual fixed effects		N	N	N	N	Y
Individual characteristics		Y	Y	Y	Y	N
Country fixed effects		N	Y	N	Y	N
Previous parliamentary membership		n/a	n/a	Y	Y	N

*Notes.* \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors that are clustered at the parliamentarian level are reported in parentheses. The dependent variable is the natural logarithm of the number of days attended in a parliamentary period. Panel (a) (Panel (b)) presents results from the all members of the parliament and those who served both in the sixth and the seventh parliaments (freshman and seasoned members). All regressions include all explanatory variables used in previous models (e.g. Table 4).

Table A2  
*Responsiveness of Type-S Freshman Parliamentarians*

	Dependent variable: days attended in each period			
	Unit of observation: parliamentary period		Unit of observation: parliamentary term	
	All 15 periods	First five periods	All 15 periods	First five periods
	(1)	(2)	(3)	(4)
Real salary ('000 €)	-0.018*** (0.006)	-0.019** (0.008)	-0.021*** (0.008)	-0.015 (0.012)
Real <i>per diem</i> pay	-0.008* (0.005)	-0.010 (0.007)	-0.014 (0.014)	-0.009 (0.011)
Tenure in sixth or seventh parliament	2.650 (3.593)	1.438 (3.800)	3.874 (3.968)	5.522 (4.310)
Political group attendance (%)	0.225* (0.120)	0.013 (0.263)	0.658*** (0.242)	-0.060 (0.650)
Per capita GDP	0.166*** (0.056)	0.135** (0.061)	0.203*** (0.071)	0.165** (0.073)
Herfindahl index	-0.025 (0.019)	-0.032* (0.016)	-0.035 (0.079)	-0.035 (0.096)
Age	0.124 (0.088)	0.074 (0.082)	0.124 (0.086)	0.072 (0.089)
Age <sup>2</sup>	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Female	0.136 (0.208)	0.097 (0.195)	0.118 (0.199)	0.134 (0.202)
PhD-MD	0.043 (0.277)	0.114 (0.276)	-0.028 (0.282)	0.048 (0.290)
<i>N</i>	3,756	2,666	585	546

*Notes.* \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors clustered at the individual level are reported in parentheses. The dependent variable in columns 1 and 2 is the number of meeting days a parliamentarian attended in a period. The dependent variable in columns 3 and (4) is the average number of meeting days a parliamentarian attended in a parliamentary term. Type-S freshmen constitute a subset of all freshmen. They are those who are either: (1) newly elected to the seventh parliament (2) are freshmen in the sixth parliament and will be re-elected to the seventh parliament. All regressions include the complete set of independent variables as well as country fixed effects.

Table A3  
Asymmetry

	All periods		First five periods	
	(1)	(2)	(3)	(4)
Panel (a): Re-elected				
Salary <sup>(-)</sup>	-0.012*** (0.004)	-0.013*** (0.004)	-0.019*** (0.005)	-0.020*** (0.005)
Salary <sup>(+)</sup>	-0.011*** (0.003)	-0.011*** (0.003)	-0.018*** (0.004)	-0.019*** (0.004)
H <sub>0</sub> : Equality (p-value)	0.615	0.514	0.797	0.598
N	5,100	5,100	3,337	3,337
Country fixed effects	Y	Y	Y	Y
Individual fixed effects	N	Y	N	Y
Panel (b): Freshmen				
Salary <sup>(-)</sup>	-0.020*** (0.004)	-0.016*** (0.005)	-0.017*** (0.004)	-0.017*** (0.005)
Salary <sup>(+)</sup>	-0.023*** (0.004)	-0.019*** (0.004)	-0.022*** (0.004)	-0.022*** (0.005)
H <sub>0</sub> : Equality (p-val)	0.282	0.242	0.066	0.025
N	5,883	5,883	3,580	3,580
Country fixed effects	N	Y	N	Y
Individual fixed effects	n/a	n/a	n/a	N
Panel (c): Seasoned				
Salary <sup>(-)</sup>	-0.011 (0.009)	-0.026*** (0.006)	-0.009 (0.009)	-0.027*** (0.006)
Salary <sup>(+)</sup>	-0.011 (0.009)	-0.026*** (0.005)	-0.010 (0.009)	-0.026*** (0.006)
H <sub>0</sub> : Equality (p-value)	0.882	0.977	0.968	0.840
N	4,638	4,638	3,219	3,219
Country fixed effects	Y	Y	Y	Y
Individual fixed effects	N	Y	N	Y

Notes. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1% respectively. Standard errors clustered at the individual level are reported in parentheses. The dependent variable is the number of meeting days a parliamentarian attended in a period. Panels (a), (b) and (c) present the results for Re-elected parliamentarians, freshmen and seasoned members respectively. All regressions employ OLS on the sample indicated at the top of the column. All regressions include the control variables reported in the previous regressions, indicators for periods, an overall time trend, country fixed effects and the tenure of the parliamentarian in the sixth or the seventh parliament.

## Appendix B

### B.1. National Holidays

To systematically obtain the holidays observed in each country, we used the holiday schedule announced by the US embassy in each of the European Union country. Holidays for the US Embassy include American holidays as well as the holidays of the host European country. The following Table presents domestic holidays in each country. In addition to the country-specific holidays in the Table, the following days are public holidays in the European Union.<sup>43</sup> New Year's Day (1 January), Easter

<sup>43</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:243:0004:0004:EN:PDF>.

weekend (Maundy Thursday-Easter Monday), Labour Day (1 May), Europe Day (9 May), Ascension Thursday, Pentecost Monday, Assumption Day (15 August), All Saint's Day (1 November), Christmas.

Country	Holidays
Austria	Epiphany (6 January), Corpus Christi*, National Day (26 October), Immaculate Conception (8 December)
Belgium	National Day (23 July), Veteran's Day (11 November)
Bulgaria	Orthodox Easter*, Cyril and Methodius Day (24 May), Unification Day (6 September)
Cyprus	Epiphany (6 January), Orthodox Easter*, Kathari Deftera*, Holy Spirit*, Independence Day (1 October)
Czech Republic	Liberation Day (8 May), Cyril and Methodius Day (5 July), Jan Hus Day (6 July), Statehood Day (28 September), Czech Founding Day (28 October), Struggle for Freedom Day (17 October)
Denmark	Great Prayer Day*, Constitution Day (5 June)
Estonia	Independence Day (24 February), Victory Day (23 June), Midsummer*, Day of Restoration of Independence (20 August)
Finland	Epiphany (6 January), Midsummer*, Finnish Independence Day (6 December)
France	WWII Veteran's Day (8 May), National Day (14 July), WWI Veteran's Day (11 November)
Germany	Epiphany (6 January), Corpus Christi*, Day of German Unity (3 October), Reformation Day (31 October), Repentance Day (21 November)
Greece	Epiphany (6 January), Kathari Deftera*, Independence Day (25 March), Orthodox Easter*, Holy Spirit*, St. Dimitrios Day (26 October), Oxi Day (28 October)
Hungary	1848 Revolution Day (15 March), National Day (20 August), Republic Day (23 October)
Ireland	St. Patrick's Day (17 April), May Bank Holiday*, June Bank Holiday*, August Bank Holiday*, October Bank Holiday*
Italy	Epiphany (6 January), Anniversary of Liberation (25 April), Foundation of the Italian Republic (2 June), St. John's Day (24 June), St. Peter and St. Paul's Day (29 June), St. Gennaro's Day (19 September), St. Ambrogio's Day (7 December), Immaculate Conception (8 December)
Latvia	Proclamation of Independence Day (4 May), Latvian National Day (19 November)
Lithuania	Lithuanian Statehood Day (16 February), Coronation of King Mindaugas Day (19 November)
Luxembourg	Grand Duke's Birthday (23 June)
Malta	St. Paul's Shipwreck Day (10 February), St. Joseph's Day (19 March), Freedom Day (31 March), Sette Giugno (7 June), St. Peter and St. Paul's Day (29 June), Victory Day (8 September), Immaculate Conception (8 December), Republic Day (14 December)
Netherlands	Queen's Day (30 April), Liberation Day (5 May)
Poland	Epiphany (6 January), Constitution Day (3 May)
Portugal	Carnival*, Liberty Day (25 April), Holly Spirit Day*, Corpus Christi*, Portugal Day (10 June), St. Anthony's Day (13 June), Day of the Region (1 July), Proclamation of the Portuguese Republic (5 October), Restoration of Portuguese Independence (1 December), Immaculate Conception (8 December)
Romania	Orthodox Easter*, Orthodox Pentecost*, Romanian National Day (1 December)
Slovakia	Epiphany (6 January), End of WWII (8 May), St. Cyril & St. Methodius Day (5 July), Slovak National Uprising Day (29 August), Slovak Constitution Day (1 September), The Day of the Virgin Mary of the Seven Sorrows (15 September), Day of the Fight for Freedom and Democracy (17 November)
Slovenia	Slovenian Culture Day (1 February), Resistance Day (27 April), Proclamation Day (25 June), Reformation Day (31 October)
Spain	Epiphany (6 January), San Jose (19 March), D. Comunidad de Madrid (2 May), San Isidro (15 May), Fiesta Nacional (12 October), Ntra. Sra. de la Almudena (9 November), Constitution Day (6 December), Inmaculada Concepción (8 December)
Sweden	Epiphany (6 January), National Day (6 June), Midsummer*
United Kingdom	Spring Bank Holiday*, Summer Bank Holiday*

\* Date varies.

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