Pontifícia Universidade Católica
do Rio de Janeiro

Fernando Martins Secco Luce

Do Neighbors Vote Alike? Evidence from the Brazilian Congress

Dissertação de Mestrado

Dissertation presented to the Programa de Pós–graduação em Economia of PUC-Rio in partial fulfillment of the requirements for the degree of Mestre em Economia .

Advisor: Prof. Claudio Abramovay Ferraz do Amaral

Rio de Janeiro
April 2018

Fernando Martins Secco Luce

Do Neighbors Vote Alike? Evidence from the Brazilian Congress

Dissertation presented to the Programa de Pós–graduação em Economia of PUC-Rio in partial fulfillment of the requirements for the degree of Mestre em Economia . Approved by the undersigned Examination Committee.

Prof. Claudio Abramovay Ferraz do Amaral
Advisor
Departamento de Economia – PUC-Rio

Prof. Fabio Adriano Miessi Sanches
Departamento de Economia – PUC-Rio

Prof. Carlos Eduardo Ferreira Pereira Filho
Escola Brasileira de Administração Pública e de Empresas – FGV/EBAPE

Prof. Augusto Cesar Pinheiro da Silva
Vice Dean of Graduate Studies
Centro de Ciências Sociais – PUC-Rio

Rio de Janeiro, April 4th, 2018

Fernando Martins Secco Luce

B.A., Economics, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), 2014

Bibliographic data

Luce, Fernando Martins Secco

Do Neighbors Vote Alike? Evidence from the Brazilian Congress / Fernando Martins Secco Luce; advisor: Claudio Abramovay Ferraz do Amaral. – Rio de janeiro: PUC-Rio , Departamento de Economia , 2018.

v., 49 f: il. color. ; 30 cm

Dissertação (mestrado) - Pontifícia Universidade Católica do Rio de Janeiro , Departamento de Economia .

Inclui bibliografia

1. Economia – Teses. 2. Efeito dos pares;. 3. Sorteio de gabinetes;. 4. Votos de políticos;. 5. Congresso Brasileiro.. I. Ferraz, Claudio. II. Pontifícia Universidade Católica do Rio de Janeiro . Departamento de Economia . III. Título.

CDD: 620.11

Acknowledgments

I would like to thank my parents and my sister, Fernanda, Claudio and Fabiola, for all their love and help throughout all my life and for showing me that I was able to accomplish all my dreams if I never gave up.

To my advisor Claudio Ferraz, thank you for your guidance and contributions for the past two years.

I also want to thank my colleagues for making my days better than I could have imagined for the past two and a half years. A special thank you to Roberto Hsu, Rodolfo Rigato and Vitor Martello for being almost co-advisers in this project.

To my oldest friends, Rodrigo Abrahão, Breno Gouvea, Lucas Ronchini thank you for everything and for being by my side at every step of the way, alongside with our bell.

Finally, I want to thank my wife, Anna Frangipani, for her unconditional support, love and help. I was only able to overcome all the difficulties of this project because you were by my side giving me the strength to go on.

Abstract

Luce, Fernando Martins Secco; Ferraz, Claudio (Advisor). **Do Neighbors Vote Alike? Evidence from the Brazilian Congress**. Rio de Janeiro, 2018. 49p. Dissertação de mestrado – Departamento de Economia , Pontifícia Universidade Católica do Rio de Janeiro .

This work analyses the presence of peer effects in the Brazilian Congress among federal deputy. I test if a deputy is influenced by its next-door neighbor when casting a vote for a proposition. Since politicians can select colleagues with similar political position to be their neighbors, I use an office lottery that randomly allocates offices for newcomers and test if office proximity increases the likelihood of agreement. I use data for all 1026 Brazilian federal deputies from 54th and 55th legislature elected in 2010 and 2014 and observe their votes in all propositions held between February 2011 and May 2017. I find that being next-door office neighbors does not increase the probability of agreement. Similar findings are obtained when restricting the sample for different types of proposition, for deputies from the same party, as well as for congressmen from the same state.

Keywords

Peer effects; Office Lottery; Politicians' votes; Brazilian Congress.

Resumo

Luce, Fernando Martins Secco; Ferraz, Claudio. **Do Neighbors Vote Alike? Evidence from the Brazilian Congress**. Rio de Janeiro, 2018. 49p. Dissertação de Mestrado – Departamento de Economia , Pontifícia Universidade Católica do Rio de Janeiro .

Este trabalha analisa a presença de *peer effects* no Congresso Brasileiro entre os seus deputados federais. Neste trabalho, eu testo se um deputado é influenciado pelo seu vizinho de porta no momento de votar em uma proposição. Dado que eles podem selecionar colegas com posições políticas semelhantes para serem seus vizinhos, eu utilizo uma loteria de gabinetes que aleatoriamente define os gabinetes dos novos deputados para observar se a proximidade de gabinetes aumenta a probabilidade de concordância. Os dados foram coletados para todos os 1026 deputados federal brasileiros da 54a e 55a legislatura, eleitas em 2010 e 2014, e observa os seus deputados em todas as proposições votadas entre Feveireiro de 2011 e Maio de 2017. Os results indicam que ser "vizinho de porta" nos gabinetes não aumentam a probabilidade de concordância em uma votação. Resultados semelhantes são obtidos quando a amostra foi restrita para diferentes tipos de proposição, para deputados do mesmo partido, assim como para deputados do mesmo estado.

Palavras-chave

Efeito dos pares; Sorteio de gabinetes; Votos de políticos; Congresso Brasileiro.

Table of contents

List of figures

List of tables

1
Introduction

Political polarization appears to be an ongoing event on some countries of the world[1]. (40) present evidence that ideological polarization has been rising in the USA since 1970's among members from different parties. A similar picture can be seen in Brazil using LAPOP (Latin American Public Opinion Project) data. In their questionnaire, interviewees are asked to classify their political ideology in a scale from from 1 (left wing) to 10 (right wing). While in 2006, only 13.52% of interviewees classified themselves as 1 or 10, in 2016, this percentage rose to 23.85%.

Existing literature has attributed this phenomenon to the rise of social media ((36)), while some argue that it cannot be addressed to them ((37)). Regardless of its source, political polarization of the population is expected to have impacts on elections and, as shown by (35), it can lead to severe consequences for a country, such as the rise of xenophobic views among the people . Given that, it is important to understand what can be done to overcome this polarization and increase agreement between politicians. In this work I test if congressman's decision process is affected by his peers. Specifically, I analyze if office neighbors have a higher agreement in a legislative voting.

The analysis uses data from all 513 federal deputies elected in 2010 for the 54th legislature (2011-14) and for those elected in 2014 for the 55th legislature (2015-18) in Brazil for all 26 states and the federal district[2]. The data contains their votes for 1036 roll-call voting that took place in the Brazilian Congress between February 2011 and May 2017. In this paper, I test if office neighbors are more likely to agree on legislative voting. However, this is difficult due to the reflection problem ((14)). That problem arises from the fact deputies can choose their office seeking to be neighbor to politicians with similar preferences. In that case, a possible similarity in voting behavior due to other social links might be mislabeled as a peer effect from spatial proximity.

In order to overcome this problem, I use an office lottery, mandatory only for first term male deputies, that randomly allocate them in vacant offices in

[1] (41), (38) and (39) present evidence and discussions about polarization

[2] Throughout this paper, I'll treat the federal district as another state, since it is a unit of the federation as are all the Brazilian states

Brazil. The sample was restricted for 227 deputies that participated in the lottery (114 in the 54th and 113 in the 55th). The sample restriction allows me to estimate the causal impact of office proximity in the likelihood of agreement between two politicians. Given that the randomized deputies were elected for the first time, it is likely that they do not have yet developed strong ties with other deputies. In this case, the office proximity might help them develop a social relation with their neighbors and, once it is established, it will make both deputies subject to be influenced by each other.

My findings indicate that office neighbors do not have a more similar voting behavior in a legislative voting. Perhaps it is possible that politicians must share other social links, such as being affiliated to the same party or representing the same state, to develop a stronger tie due to office proximity. However, the results were similar for sub samples that belong to the same party, same state, same coalition and similar political ideology. No impacts were found when restricting the sample for different types of proposition and for different measures of importance of the voting.

Those findings might be due to the fact that a federal deputy, in Brazil, can be temporarily away from his position to assume another one. Therefore, another possible exercise is to restrict the sample of deputies based on the proportion of time that they are licensed from their offices, since it is likely that social ties are only built for those that remain most of their term in office. But, even for deputies that were not licensed, spatial proximity does not generate a higher voting agreement.

This paper is closely related with the literature of peer effects among politicians. (15) use an office lottery in the US congress for newly elected members to estimate peer effects on roll call behavior and bill co-sponsorship. However, the US office lottery randomly selects the order in which newly elected deputies choose their office, instead of randomly allocating them. This allows them to choose neighbors with similar political views, which is different from the Brazilian lottery. Apart from that, they can only observe if two congressmen are in the same wing of a building, whereas this paper can observe if two deputies are next door neighbors and if it affects the deputy voting behavior.

(16) study the existence of peer effects on legislative voting on the European Parliament. The authors explore a quasi-random seating assignment determined alphabetically by politician's last name. However, European political groups sits in block in Parliament and the alphabetical assignment only happens within parties. They conclude that seating together decreased the probability of two members of the European Parliament disagreeing in a leg-

islative voting by 13.1 percent.

(4) empirically estimates another possible channel for peer effects: learning on the job. Using an annual lottery that randomly assigned seats to MPs in Iceland, they observe that politicians sitting together have higher language similarity in speeches, but only if they are on the same political group. Since this effect is only observed after seating together for a year, the authors argue that this is an indication of learning on the job.

The present work can be placed in the same literature as the previously cited articles. It differentiates from (4) by looking at peer effects on legislative voting, instead of looking on language similarity and from (16) by looking at office neighbors instead of parliament seating neighbors.

This work also contributes to the literature on sources of influence on congressional voting. Contributions have been provided regarding the impact of family background, parties, composition of supporters and protests on voting behavior ((17), (18), (18), (19) (20) and (21), (5)). Since it focus on the Brazilian congress, it also add to the literature that analyzes aspects of the Brazilian legislative, such as (22), (23), (24) and (9). And also broadly relates with the literature that estimates the presence of peers effects ((25), (26) are examples of peers effects in schools, while (1) and (2) present peer effects on sports and workplaces).

The remainder of this work is organized as follows. Sections 2 and 3 present a brief summary on political networks and on Brazil's federal house of representatives composition and functioning, respectively. Section 4 explains the data and the empirical strategy applied, whereas section 5 presents the results. Section 6 concludes.

2
Political Networks

Any political environment, such as the Congress, is a place of constant interaction between its members. This is even more important in a democracy where congressmen must meet with their peers to listen their suggestions and demands before having a legislation voted if they seek to increase their likelihood of having it approved. Also, as any other workplace, congressmen tend to have more frequently interaction with coworkers that share the most similarities. For example, members with similar political ideology or that represent the same state might develop a stronger relationship. Given their different backgrounds and characteristics, each politician might developed distinct connections with his peers. That is why (10) suggested that the politic context should be understood as a social network.

In that setting, politicians are nodes connected by social links created and developed by reasons such as similar political ideology, similar backgrounds and/or spatial proximity. Once linked, it is expected to see a greater cohesion between those congressmen. The literature presents evidence that having similar features impacts on-the-job features such as their voting behavior ((12), (17), (28), (29), (16)) and their policies' beliefs ((13)), as well as their electoral pretensions, since the more connections a congressman has, the higher his campaign contributions ((27)). Thus, politicians might have incentives to maintain and possibly expand his connections in Congress.

Therefore, the literature indicates that peer effects appear to take place in a Congressional environment. Nevertheless, the mechanism through which they act is sometimes unclear. One possible channel is through social learning among congressmen, as observed in (4) for language similarity in speeches in Parliament. In a context of legislative voting, social learning might occur through information sharing. In a given network, each congressman might be specialized in a different subject. In this scenario, how a politician shares his knowledge about a certain policy might lead the members of his network to vote more like him, generating a higher likelihood of agreement in a voting. This greater cohesion might also appear if congressmen want to learn from his most successful peers, such as those that have received the larger number of votes in the election, and emulate their behavior.

Another possible mechanism is related to social pressure and its strategic behavior. Even in the theoretical field it is hard to disentangle those two effects. As argued before, it is possible that in a situation some congressmen might pressure a minority to follow the desire of a majority. That would be an indication of social pressure. However, if the minority agrees with the condition the majority supports them in the future, that would be characterize as strategic behavior, since they are exchanging favours. Therefore, social pressure and strategic behavior must be understood together, as a single mechanism. (5) modeled this type of interaction and found evidence that there is indeed complementarities between the efforts of congressmen in passing legislation.

Even though social networks in Congress are part of the congressmen voting decision, it is possible that those impacts are not homogeneous. As discussed before, social ties might be stronger when politicians share more than one link. For example, being office neighbors and belonging to the same party or representing the same state and seating next to each other during votes might generate a larger voting cohesion that only sharing one of those links. The size of the influence might also vary depending on the importance of the voting. On one hand, a voting with high absence rate can be considered unimportant, therefore congressmen might more susceptible to be persuaded by politicians that are interested in the outcome of the voting. On the other hand, a more controversial voting (where there is a high percent disagreement) might be seen as important by the politicians and they would use all their connections to influence its outcome. In both cases, we should observe a higher likelihood of agreement.

Since this article intends to observe if office neighbors have a higher probability of agreement on a legislative voting, those impacts rely on one hypothesis: congressmen are present in their office during work days. If politicians prefer to be in the aisles of the Congress instead of being in their offices, the social ties between neighbors will not be created and, therefore, they will not influence themselves.

3
Brazil's Chamber of Deputies

3.1
Background

General elections are held in Brazil every four years. In those, the population chooses its president, state governors, senators, federal and state deputies. The analysis provided here focus only in federal deputies. In each poll, 513 deputies are elected across the 26 states and the federal district (Brasília). They are chosen in a proportional open list system, where the list is formed by all candidates for federal deputy in a coalition[1] and ordered according to number of votes that each one received. In each state, parties in a coalition sum all the votes that their candidates have received and divided that total by the electoral coefficient in that state (defined as the ratio between the total votes received by all candidates for that position and the number of deputies in that state defined by the Brazilian constitution). The integer part of that ratio will be the number of deputies elected in that list. The remaining seats are distributed according to the *Maiores médias* ("higher averages") criteria. An important aspect of the Brazilian elections is that federal deputies can seek reelection for unlimited terms[2].

Another unusual characteristic of Brazil's political system is the number of parties represented in Congress (25 in 2010 and 28 in 2014)[3]. This large number of political parties illustrates how politically fragmented is the Brazilian Congress[4] and highlights the need of the president's party to form a coalition to be able to govern the country, as first explained by (43).

In Brazil, a federal deputy is responsible for inspect the actions of Executive power and propose, discuss and vote on legislative matters. Those activities take place in Brasília, Brazil's federal district. However, they can

[1]Parties' coalition may differ between state and position. The coalition in a given state may differ from the national coalition used in the presidential race

[2](30) and (31) presents discussions about Brazil's elections.

[3]This represents the number of parties represented by federal deputies right after the election. During the term, congressmen can, in specific situations, transfer to a different party. The entire list of parties represented in Congress in each year and the number of deputies elected is in table B.1 in appendix B.

[4](32) discuss some implications of Brazil's multiparty system.

take temporarily licenses from their position to assume another one, such as minister or a state secretary, for example. If that happens, he is replaced by the next non-elected candidate on his list until he returns.

3.2 Congressional Voting

Brazil has a bicameral system, composed by the Senate and the Federal Chamber of Deputies. This article focus on the voting behavior of Chamber's members (federal deputies). There are six main types of legislative proposition: Ordinary law, Complementary law, Provisional Measure, Constitutional Amendment Project (PEC), Legislative Decree and Resolution for Internal Regulation. The last two voting are the only types that are not obliged to be voted in both houses. The remaining four can be voted in only one round (Ordinary Law and Provisional Measure) or in two round system (PEC and Complementary Law). They can also differentiate themselves by the number of deputies required to approve it. Provisional measures and ordinary laws require only a present majority to be approved, whereas complementary law requires an absolute majority (at least half of all deputies, whether they are present or not) and PEC requires a qualified majority (three fifths of of all deputies). Also, federal deputies vote on requirements that, in general, are related to requests to change dates of voting and they vote on whether they accept or not a presidential veto on a matter.

Propositions can only be taken to vote in the Congress if there are at least 257 deputies (half of all deputies) present in the House. If required quorum is presented, the propositions in the agenda, that is defined by the president of the Chamber, are voted. In a voting, a deputy can vote in favor of the proposition, against or he can abstain from the voting. Besides that, he can be absent due to private reasons or due to a political maneuver by his party called obstruction, where the leader of the party asks all its affiliates to withdrawn from the plenary.

3.3 Office Lottery

The Chamber of Deputies is located in the Brazil's federal district, Brasília. Its main complex is composed by National Congress (which is where the Plenary is located) and three buildings, known as *Anexo II ,III and IV*[5]. Federal deputies' offices are divided in two buildings: *Anexo III* and *Anexo IV*. The first one has 81 offices in only one floor and the remaining offices are

[5]An aerial photo of the complex is in figure A.1

located on other building and are divided in 8 floors. Usually, deputies prefer offices on *Anexo IV* since they are bigger than the ones in *Anexo III* and have a private bathroom, whereas the only advantage from *Anexo III*'s is being closer to the congress building[6].

In order to determine offices allocation, the president of Brazil's chamber of federal deputies issued a statement in October 2006 regulating its rules. It was defined that there will be a lottery to determine each deputy office. However, it would not participate in the lottery former elected deputies (that were elected in any previous legislature), deputies that served as replacement in the previous legislature, disabled deputies, congressmen older than 60 years old, women deputies, former Chamber of Deputies' president and first degree relative of non-reelected deputies.

Therefore, the office lottery would randomly allocate first term male deputies that are not related to any non-reelected deputy in the vacant offices. In the 54th legislature (2011-2014), 114 politicians participated in the lottery. As for the 55th legislature (2015-2018), 137 deputies participated in the lottery but only 113 deputies were randomly assigned to an office, where 66 offices were in the *Anexo IV* building and the 47 remaining were in *Anexo III*[7]. The reasons for office changes by the other congressmen are undisclosed. From the group of 113 deputies, 4 were licensed during the whole analyzed period and, therefore, are not part of the study.

[6]Figure A.2 shows the *Anexo III* only floor plan and figure A.3 shows the *Anexo IV* 2nd floor that it is organized in the same way as the other 7 floors in that building.

[7]`https://www.youtube.com/watch?v=tg_wNDU-Frg` : Link for a short video of the lottery

4
Data and Empirical Strategy

The data used in this article was provided by Brazil's Chamber of Deputies. It was collected the votes on legislative voting from all federal deputies that took place between February 2011 and May 2017. In that period, 1036 propositions were put to vote in a plenary session. It was also gathered information regarding the results of the office lottery, the office number of each federal deputy in that period, as well as their party and the state that they represent. The data contains only federal deputies that were elected in 2010 and 2014 for the 54th (2011-2014) and 55th legislature (2015-2018), therefore dismissing information about replacement deputies.

As explained in section 3, each federal deputy have five different options in a voting: he can vote "yes", "no" or abstain himself, he may choose not to attend to the voting and he can be obstructed by his party. Since this paper intends to analyze if office neighbors have a higher voting cohesion, it is important to determine measures of agreement. However, only the first two options (vote yes or no) clearly states their preferences. In a case where both deputies abstain from voting or are absent, it is not clear if they influenced themselves or not. For example, two deputies can choose to be absent in a voting because they do not want to vote against or in favor of a proposition or they can be absent because both have different private reasons to miss the session. This does not happen when a deputy is obstructed given that this is a party maneuver and does not necessarily represent deputy's opinion on that matter. Thus, three different agreement measures are used based on their possible "valid actions", as shown in table 4.1.

Table 4.1: Agreement Measures

Variable	Valid Actions
$Agree1_{ijt}$	Vote yes or no
$Agree2_{ijt}$	Vote yes, no or abstain from voting
$Agree3_{ijt}$	Vote yes, no, abstain or be absent

The variable $Agree_{ijt}$ equals 1 if deputies i and j perform the same "valid action" in the voting t and 0 if they act differently within the set of

"valid actions". If i or j perform an action that is not valid, $Agree_{ijt}$ assumes a missing value.

The agreement measures were only calculated for federal deputies that participated in the lottery in order to observe a causal effect of spatial proximity. Each one of the 227 randomly allocated politicians is analyzed in pairs with all the other 512 deputies in his legislature for each of the proposition that both participated. Table 4.2 presents a summary of the agreement measures used in the analysis. The large number of observations is explained by the use of dyadic data (where each observation is a pair of congressmen).The distinct mean and the difference in the number of observations across the agreement measures arise from the fact that different agreement measures have different set of "valid actions". Therefore, some observations valued as 0 or 1 in $Agree3_{ita}$ are possibly classified as missing in $Agree1_{ijt}$ or $Agree2_{ijt}$.

As previously mentioned, I intend to analyze if office neighbors have a higher likelihood of agreement. Here, office neighbors are defined as the deputies located on the left and on the right of a given office. In the case that a office have a hallway on its left or right, only the neighbors next-door are considered. For example, office 379 have only one neighbor, 380 and the same with office 215 whose only neighbor is 213.[1].

Additional variables were defined for the intended analysis. $SameParty_{ijt}$ and $SameState_{ij}$ are dummy variables that indicate if deputies i and j are affiliated with same party and if they represent the same state, respectively. It is important to emphasize that $SameParty_{ijt}$ is indexed by t because deputies change parties during his term in Congress, under some conditions. Then, it is possible that i and j might belong to the same party in t voting but not in $t+1$.

Table 4.2: Summary of Agreement Measures

Variable	Obs	Mean	Std. Dev.
$Agree1_{ijt}$	21,048,724	0.716	0.451
$Agree2_{ijt}$	21,329,850	0.707	0.455
$Agree3_{ijt}$	40,129,499	0.488	0.500
$Neighbor_{ij}$	53,560,563	0.003	0.052
$SameParty_{ij}$	47,731,154	0.079	0.270
$SameState_{ij}$	53,207,241	0.059	0.236

The ideal setting to estimate spacial proximity effects would consist in all politicians being randomly allocated in different offices at the beginning of their

[1]The floor plans are in figures A.2 and A.3 on appendix A

terms. Even though the Brazilian Congress does an office randomization, as explained in section 3, only for first term male deputies participate. Therefore, using all federal deputies would probably lead to a biased estimated since non-randomized deputies might choose offices near colleagues that behave similarly to him. In this scenario, it is likely that a similar behavior in legislative votes should be observed but it can not be addressed to the office proximity. Therefore, it is necessary to restrict the sample for those that were randomized, observe their agreement with all the other deputies and analyze if they have a higher probability of agreement with their office neighbor. Hence, the intended regression would be:

$$Agree_{ijt} = \alpha + \beta Neighbor_{ijt} + \gamma_1 SameParty_{ijt} + \gamma_2 * SameState_{ij} + \delta_t + \epsilon_{it} \quad (4\text{-}1)$$

Where i is a randomized deputy, j is another deputy (randomized or not) from i's legislature, t is a voting in the Congress. $Neighbor_{ijt}$, $SameParty_{ijt}$ and $SameState_{ijt}$ are constructed as explained before. δ_t are voting fixed effects. Thus, β would estimate the impact of office proximity in the likelihood of agreement between two federal deputies.

The regression is estimated by OLS. Since this is a dyadic data, an observation is a pair of politicians observed in a voting. This implies that there is a mechanical correlation on error terms between pairs that share at least one member. Following (33), I estimate dyadic-cluster robust standard errors to deal with this possible correlation. Nonetheless, this is very demanding computationally due to the fact that there are more than 100,000 pairs (each randomized congressman forms a pair with all the others congressmen). An alternative possibility is to calculate standard errors using robust two-way clustering at each deputy level ((34)).

Using only cluster at each pair level, I would ignore all the other correlation between pairs. If I use two-way clustering (that is computationally feasible) instead, the standard errors would be estimated taking into account the correlation between pairs (i, j) and (i', j') when $i = i$' or $j = j$'. Therefore this method does not estimate the possible correlation between pairs when $i = j$' or $j = i$'. The only problem is that, if those correlations are large, that would generate incorrect estimation of the standard errors. Thus, in order to observe the size of that correlations, I selected two 1% sub samples and estimated the baseline regression using two-way cluster and dyadic-cluster. The results can be seen in appendix C. The tables indicate that both estimate are very close and, therefore, using two-way cluster would not generate a significant bias in the standard errors estimate.

5
Results

The first analysis observes if office proximity generates a higher likelihood of agreement in a voting regardless of sharing other social ties. The estimates for equation (1) are presented in table 5.1. For the first two measures of agreement, the estimate is not statistically significant at 10%, whereas for $Agree3_{ijt}$ it is at 10%. Nevertheless, its point estimates is very small, as are the others. It indicates an increase of 0.2 to 1.1 percentage points on the probability of agreement, which represents less than 1% increase for the first two measures and less than 2.2 % for the third. Therefore, this suggests that neighbors do not tend to agree more in a voting.

Table 5.1: Baseline Results

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree1_{ijt}$	$Agree1_{ijt}$	$Agree2_{ijt}$	$Agree2_{ijt}$	$Agree3_{ijt}$	$Agree3_{ijt}$
$Neighbor_{ijt}$	0.00220	0.00192	0.00221	0.00199	0.0104*	0.0106*
	(0.00816)	(0.00789)	(0.00809)	(0.00786)	(0.00589)	(0.00588)
Observations	20,898,000	20,898,000	21,177,319	21,177,319	39,889,223	39,889,223
R-squared	0.019	0.013	0.019	0.013	0.004	0.004
Voting FE	No	Yes	No	Yes	No	Yes

Notes: Each column represents a distinct specification. Additional controls used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Even though it appears that office proximity per se does not generate a higher voting cohesion, it is possible that it strengthens existing links. For example, two members of the same party might build up a stronger relationship if they are office neighbors. In order to test this possibility, I restricted the sample for pairs that belong to the same party (table 5.2) and for pairs that represent the same state (table 5.3). In both cases the results for the first two measures of agreement are similar to the previous regression. The effect for $Agree1_{ijt}$ and $Agree2_{ijt}$ are not statistically significant and its point estimate is very small, especially when taking into account that the mean of the dependent variable are even larger in these restricted samples.

It is important to make a remark on the estimate of the $Neighbor_{ijt}$ on $Agree3_{ijt}$ for the sub sample of members from the same party. The point estimates presents 3.4 p.p. increase in the likelihood of agreement if the federal deputies are neighbor, which represents a 5.7% increase in the measure of agreement. This estimate is significant at 1%. However, this effect appears to be driven by the deputies' absence on voting. This suggests at least two possibilities. On one possible scenario, a deputy might observe another politician being absent and probably not facing any problems. Therefore, he might learn how to be absent and not face problems with neither the chamber nor their party and starts being absent too. In this case it does not represent an influence in the actual voting behavior. It only relates with learning the procedures of the house. Another possibility is associated with the aim of this article. It is possible that they both are absent because they agreed to be against a certain legislation and do not want to exposed their position in Congress. Nonetheless, I am not able to distinguish which situation is taking place here.

Table 5.2: Sub Sample: Pairs from the Same Party

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree1_{ijt}$	$Agree1_{ijt}$	$Agree2_{ijt}$	$Agree2_{ijt}$	$Agree3_{ijt}$	$Agree3_{ijt}$
$Neighbor_{ijt}$	0.0118	0.00490	0.0111	0.00404	0.0349***	0.0342***
	(0.0121)	(0.0118)	(0.0129)	(0.0124)	(0.0125)	(0.0126)
Observations	1,622,443	1,622,443	1,642,594	1,642,594	3,046,547	3,046,547
R-squared	0.006	0.004	0.005	0.003	0.000	0.001
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.887	0.887	0.877	0.877	0.593	0.593

Notes: Each column represents a distinct specification. Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Table 5.3: Sub Sample: Pairs from the Same State

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Agree1_{ijt}	Agree1_{ijt}	Agree2_{ijt}	Agree2_{ijt}	Agree3_{ijt}	Agree3_{ijt}
Neighbor_{ijt}	0.0178	0.0209	0.0143	0.0174	0.0504	0.0500
	(0.0719)	(0.0700)	(0.0713)	(0.0696)	(0.0433)	(0.0434)
Observations	1,188,045	1,188,045	1,203,205	1,203,205	2,265,347	2,265,347
R-squared	0.027	0.018	0.026	0.017	0.006	0.005
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.721	0.721	0.712	0.712	0.492	0.492

Notes: Each column represents a distinct specification. Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

By definition, congressmen politically aligned with the right-wing or with the left-wing have different features. In that sense, they might also behave differently with their peers depending on their political ideology. Thus, using the data provided by the *Atlas Político*[1], I classified each federal deputy as right-wing, left-wing or center according to his party during the election[2], restricted the sample based on the political ideology and re-estimated equation (1). Tables 5.4 and 5.5 shows the results. For most cases, the effect is not a statistically significant with the exception for when both congressmen are from left-wing parties, where they have a 3.77 to 4.47 percentage point increase in the likelihood of agreeing. However, given that their agreement rate is 74%, this represent a 5 to 6% increase, which is not very large[3].

[1] *Atlas Político* is a brazilian political transparency website (`http://www.atlaspolitico.com.br/`)

[2] Table B.2 presents the distribution of congressmen according to their party's political ideology.

[3] For simplicity, the results for $Agree2_{ijt}$ and $Agree3_{ijt}$ are presented in tables B.4 to B.7 in the appendix B

Table 5.4: Sub Sample based on Political Ideology. Dependent variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Both Left		Both Center		Both Right	
$Neighbor_{itj}$	0.0447**	0.0377*	-0.0159	-0.00562	0.0188*	0.0135
	(0.0224)	(0.0217)	(0.0193)	(0.0175)	(0.0101)	(0.00973)
Observations	2,522,679	2,522,679	981,872	981,872	5,424,775	5,424,775
R-squared	0.074	0.054	0.060	0.064	0.006	0.004
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.744	0.744	0.757	0.757	0.802	0.802

Notes: Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. Standard errors are clustered at each deputy level. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Table 5.5: Sub Sample based on Political Ideology. Dependent variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Left and Center		Left and Right		Center and Right	
$Neighbor_{itj}$	0.0386	0.0377	-0.0117	-0.0103	-0.00867	-0.0102
	(0.0253)	(0.0237)	(0.0105)	(0.00995)	(0.0135)	(0.0130)
Observations	2,927,533	2,927,533	7,184,929	7,184,929	4,532,898	4,532,898
R-squared	0.004	0.002	0.027	0.003	0.000	0.004
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.606	0.606	0.680	0.680	0.716	0.716

Notes: Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. Standard errors are clustered at each deputy level. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

The literature on political science for the Brazilian case argues that political ideology might not be the most important aspect in Brazil's politics. Given its multiparty system, the president usually relies on the formation of a party coalition to able to govern ((43), (44) and (45)). Therefore, it is also important to analyze if being members of the governing coalition or the opposition strengthen social ties between deputies and, consequently, their voting cohesion. Based on the presidential election in 2010 and 2014, I considered a deputy to be a part of the governing coalition if his party

supported the winning candidate in the presidential election, otherwise he was considered to be a part of the opposition[4]. As seen in table 5.6, the estimates are not statistically significant regardless if the politicians are politically aligned or not[5].

Table 5.6: Sub Sample based on Political Alignment. Dependent variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Both Gov. Coalition		Both Opposition		Gov. Coalition and Opposition	
$Neighbor_{itj}$	0.00532	0.00439	-0.00718	0.00468	0.00254	0.00229
	(0.0101)	(0.00895)	(0.0141)	(0.0143)	(0.0102)	(0.00976)
Observations	8,507,021	8,507,021	3,848,609	3,848,609	11,219,056	11,219,056
R-squared	0.032	0.016	0.020	0.018	0.004	0.000
Voting FE	No	Yes	No	Yes	No	Yes
Mean Dep. Var.	0.766	0.766	0.740	0.740	0.670	0.670

Notes: Both Gov. Coalition: Sub sample where both deputies i and j belongs to parties that supported the winning presidential candidate in the election. Both Opposition: Sub sample where both deputies i and j belongs to parties that supported a presidential candidate that lost in the election. Gov. Coalition and Opposition: Sub sample where one of the deputies supported the winning candidate and the other supported a losing candidate in the presidential election. Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. Standard errors are clustered at each deputy level. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

As explained in section 3, the sample used in this article consists of first term male deputies (those that were part of the office lottery) paired with all the other deputies in that legislature. Since they probably have limited experience of the political environment, they might use their time in Congress to learn from more successful peers, possibly trying to emulate their behavior. If they are office neighbors, they might be more likely create a social relationship with those deputies and, consequently develop a more similar voting behavior. Since only the highest rank candidates in each list are elected based on the electoral coefficient criterion, I used a dummy variable (*Elect by Electoral Coefficient*) that indicates if the deputy was elected by that criterion to see if being neighbor to them generates a different relationship between the congressmen. However, table 5.7 (and table B.10 on appendix B) shows that the estimates are very low and not statistically significant at 10%.

[4]The distribution of deputies by political coalition is presented in table B.3 in appendix B.

[5]The results for the other agreement measures are on tables B.8 and B.9.

Table 5.7: Heterogeneous effect based on election criterion

	(1)	(2)
VARIABLES	$Agree1_{ijt}$	$Agree1_{ijt}$
$Neighbor_{itj}$	-0.0111	0.00411
	(0.0173)	(0.00639)
$Neighbor_{itj}$*1{Elect by Electoral Coefficient}	0.0181	0.0194
	(0.0188)	(0.0186)
Observations	23,574,686	23,574,686
R-squared	0.019	0.013
Voting FE	No	Yes
Mean Dep. Var.	0.716	0.716

Notes: Elect by Electoral Coefficient is a dummy that indicates if a deputy was elected by the electoral coefficient. Additional controls are used such as: same state, same party, same floor and legislature dummies. Standard errors are clustered at each deputy level. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Given the previous results, it is important to understand why no effects on voting behavior were found in the previous analysis. One possibility relies on the fact that the impact might not be homogeneous across voting. As shown in (29), politicians might influence themselves differently depending on the importance of the voting. It is possible that in less important voting, the politicians are more subject to the influence of their peers that are interested in that matter. Nonetheless, using the same argument, in a very important matter, where the majority of deputies are interested, it is likely that they will use all their influence to get votes for their sides.

Thus, in order to study this possibility, I made three analysis. In the first one, I restricted the voting sample based on their absence rate as a proxy for the importance of the proposition. The results for $Agree1_{ijt}$ are on table 5.8. In the second, following (42), I restricted the samples based on the percentage of agreement on that proposition and present the results on table 5.9. In the last one I observe if the impacts of neighbors in the agreement rate are different across the different types of proposition existent in the Brazilian context (explained in section 3.2). The results are in tables 5.10 and 5.11. [6]

[6]The same results for $Agree2_{ijt}$ and $Agree3_{ijt}$ are on presented from table B.11 to B.18 in appendix B.

Table 5.8: Analysis by Absence Rate. Dependent Variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	1st Quartile		2nd Quartile		3rd Quartile		4th Quartile	
Neighbor$_{ijt}$	0.00670	0.00779	0.000638	0.00131	-0.00177	-0.00284	-0.00253	-0.00537
	(0.01000)	(0.00986)	(0.00808)	(0.00781)	(0.00845)	(0.00818)	(0.00976)	(0.00917)
Observations	8,146,280	8,146,280	6,031,552	6,031,552	4,285,262	4,285,262	2,572,406	2,572,406
R-squared	0.015	0.014	0.017	0.014	0.010	0.011	0.016	0.012
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.662	0.662	0.716	0.716	0.768	0.768	0.797	0.797

Notes: Each column represents a distinct specification. In the first quartile are all the proposition with less than 20.1% of deputies absent. In second, all the propositions had between 20.1% and 29.3% of deputies absent, whereas the in third it was between 29.3% and 37.4%. The remaining propositions are in the fourth quartile. Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

The analysis on voting sub samples based on the absence rate and agreement rate are on tables 5.8 and 5.9. All the estimates are not statistically significant and have very small point estimate. Those results can have two possible explanations. On one hand, it is possible that deputies are not voting more alike regardless of the importance of the voting. On the other hand, they might not be a good proxy for the importance of the voting.

Table 5.9: Analysis by Agreement Rate. Dependent Variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	$Agg.Rate < 0.80$		$Agg.Rate > 0.80$		$Agg.Rate < 0.90$		$Agg.Rate > 0.90$	
$Neighbor_{itj}$	0.0144	0.0150	-0.00549	-0.00616	0.00918	0.00976	-0.00438	-0.00470
	(0.00951)	(0.00947)	(0.00493)	(0.00489)	(0.00882)	(0.00872)	(0.00372)	(0.00371)
Observations	12,322,724	12,322,724	11,251,962	11,251,962	15,598,487	15,598,487	7,976,199	7,976,199
R-squared	0.024	0.024	0.003	0.003	0.021	0.020	0.003	0.001
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.559	0.559	0.887	0.887	0.601	0.601	0.940	0.940
Number of Propositions	445	445	591	591	622	622	414	414

Notes: A proposition has an agreement rate over 0.8 if 80% of the deputies presented abstained from voting, voted yes or voted no. Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. Standard errors are clustered at each deputy level. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Thus, as explained before, I also performed the analysis restricting the sample for different types of proposition. For every type of proposition, the estimate is not statistically significant. Nonetheless, it is important to comment the point estimate for Project of Resolution (PRC). It is a little larger than the others, since it represents a 4.1% increase in the probability the two federal deputies will agree in that type of legislation if they are office neighbors. Since projects of resolution are less important than, for example, a constitutional amendment project, the social tie due to office proximity might only be strong enough to swing votes for less important propositions.

Table 5.10: Analysis by Type of Proposition. Dependent Variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	PEC		PDC		PL		PLP	
Neighbor$_{ijt}$	-0.00570	-0.00507	0.0153	0.0157	0.00122	0.00158	-0.0119	-0.0141
	(0.00976)	(0.00940)	(0.0153)	(0.0139)	(0.00941)	(0.00911)	(0.0109)	(0.0109)
Observations	5,292,476	5,292,476	276,658	276,658	3,502,819	3,502,819	2,182,151	2,182,151
R-squared	0.037	0.007	0.013	0.012	0.019	0.018	0.006	0.007
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.791	0.791	0.785	0.785	0.616	0.616	0.773	0.773

Notes: Each column represents a distinct specification. PEC, PDC, PL and PLP stands for Constitutional Amendment Project, Legislative Decree Project, Ordinary law and Complementary law Projects, respectively. Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Table 5.11: Analysis by Type of Proposition. Dependent Variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	REQ		VETO		PRC		MPV	
Neighbor$_{ijt}$	-0.00388	-0.00474	0.00924	0.00734	0.0250	0.0273	0.0162	0.0147
	(0.00777)	(0.00748)	(0.0236)	(0.0231)	(0.0296)	(0.0285)	(0.0121)	(0.0119)
Observations	2,538,349	2,538,349	239,954	239,954	486,847	486,847	6,036,983	6,036,983
R-squared	0.008	0.008	0.050	0.020	0.028	0.011	0.028	0.020
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.782	0.782	0.584	0.584	0.664	0.664	0.655	0.655

Notes: Each column represents a distinct specification. REQ, VETO, PRC and MPV stands for Requirements Voting, Analysis of Presidential Veto, Resolution Project and Provisional Measure, respectively. Standard errors are two way clustered at each federal deputy level.Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

It appears that office neighbors do not have a higher likelihood of agreement in a legislative voting. The results hold even when samples are restricted to having previous social links (belonging to the same party or representing the same state) or to different kinds of proposition. The question now is: why office neighbors do not have a higher agreement rate?

There are at least two potential answers for this question. First, federal deputies might not be in their offices during the day because they prefer to be in the Congress building, leaving their advisers in the office. In that case, they do not develop a link with their neighbor because, in practice, the spatial proximity do not exist. But I can not test this scenario because there are no records of when they are on their office or not. The other possibility relies on the fact that federal deputies can be licensed temporarily from their position. A politician might be away from its position unlimited times for any period of time. In that case they do not create social ties with their office neighbors.

Since there is available data on each deputy's time away from the position, I used sub samples of deputies that in no period were licensed and for deputies that were licensed at most 10%, 25% and 50% of their term. However, all estimates were not statistically significant. This might be an indication that office neighbors do not create a social tie strong enough to generate an influence on each other.

Table 5.12: Analysis by proportion of time away from position. Dependent Variable: $Agree1_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Prop. Away = 0		Prop. Away < 0.1		Prop. Away < 0.25		Prop. Away < 0.5	
Neighbor$_{ijt}$	0.00670	0.00594	0.000613	0.000228	0.00549	0.00527	0.00351	0.00339
	(0.00821)	(0.00796)	(0.00832)	(0.00803)	(0.00830)	(0.00803)	(0.00834)	(0.00807)
Observations	18,024,114	18,024,114	18,985,854	18,985,854	20,031,454	20,031,454	20,353,143	20,353,143
R-squared	0.019	0.013	0.019	0.013	0.019	0.013	0.019	0.013
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.715	0.715	0.716	0.716	0.714	0.714	0.714	0.714

Notes: Each column represents a distinct specification. Standard errors are two way clustered at each federal deputy level.Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

6
Conclusion

The rise of political polarization in recent years might have some severe consequence as shown by (35). Thus, understand what increases cohesion between politicians might help to diminish this movement. In this paper, I test if office neighbors have a higher likelihood of agreement in a legislative voting. Since individuals can select their neighbors according to similar preferences, I used a lottery conducted by the Brazilian Congress that randomized first term male federal deputies in vacant offices to deal with the reflection problem.

The analysis was made using data from the Brazilian Congress. It was collected the votes from 1036 voting that took place between February 2011 and May 2017 for all the 1036 federal deputies elected in 2010 and 2014 for the 54th (2011-2014) and 55th legislature (2015-2018). The results indicates that congressmen do not have a higher probability of agreement with a office neighbor. The results stand when restricting the sample for pairs of the same party and for pairs that represents the same state, which indicates that, even when sharing previous links do not, neighbors do not have a larger probability of agreement. The conclusion was the same when estimated for different sub samples of voting, divided by level of importance and by type of proposition. Since the Brazilian government allows federal deputies to temporarily be licensed from their position, I ran the same analysis restricting the sample for federal deputies with different proportions of time away from its office, but not impact was found despite it.

There are some possibles explanations for the absence of effect. The first one relies on the definition of a politician. If he is a representative of his supporters, perhaps he should not be influenced by his peers, only by the opinion and desire of his voters. However, this is not necessarily true given that electors do not have always an opinion on a certain matter.

Another possibility for these results relies on the fact that the offices are located in a different building from the plenary. It can be possible that the deputies actually spend their work hours gathered on the aisles of the Congress, while their advisers remain in office. In that case, neighbors do not create social links and, therefore, do not impact themselves. Nonetheless, there are no data available to test this hypothesis.

Bibliography

[1] GARICANO, L.; PALACIOS-HUERTA, I. ; PRENDERGAST, C.. **Favoritism under social pressure**. The Review of Economics and Statistics, 87(2):208–216, 2005.

[2] MAS, A.; MORETTI, E.. **Peers at work**. The American economic review, 99(1):112–145, 2009.

[4] JO, D.; LOWE, M.. **Social learning of political elites**. Working Paper, 2017.

[5] CANEN, N.; TREBBI, F.. **Endogenous network formation in congress**. Technical report, National Bureau of Economic Research, 2017.

[9] BUTTÒ, M.; PEREIRA, C. ; TAYLOR, M.. **Sunshine or shield? secret voting procedures and legislative accountability**. Journal of Artificial Societies and Social Simulation, 17(4):10, 2014.

[10] LAZER, D.. **Networks in political science: Back to the future**. PS: Political Science & Politics, 44(1):61–68, 2011.

[12] ARNOLD, L. W.; DEEN, R. E. ; PATTERSON, S. C.. **Friendship and votes: The impact of interpersonal ties on legislative decision making**. State and Local Government Review, 32(2):142–147, 2000.

[13] RINGE, N.; VICTOR, J. N. ; GROSS, J. H.. **Keeping your friends close and your enemies closer? information networks in legislative politics**. British Journal of Political Science, 43(3):601–628, 2013.

[14] MANSKI, C. F.. **Identification of endogenous social effects: The reflection problem**. The review of economic studies, 60(3):531–542, 1993.

[15] ROGOWSKI, J. C.; SINCLAIR, B.. **Estimating the causal effects of social interaction with endogenous networks**. Political Analysis, 20(3):316–328, 2012.

[16] HARMON, N.; FISMAN, R. ; KAMENICA, E.. **Peer effects in legislative voting**. Working Paper, 2017.

[17] SNYDER JR, J. M.; GROSECLOSE, T.. **Estimating party influence in congressional roll-call voting**. American Journal of Political Science, p. 193–211, 2000.

[18] CAREY, J. M.. **Competing principals, political institutions, and party unity in legislative voting**. American Journal of Political Science, 51(1):92–107, 2007.

[18] FUJIWARA, T.. **Voting technology, political responsiveness, and infant health: Evidence from brazil**. Econometrica, 83(2):423–464, 2015.

[19] CASCIO, E. U.; WASHINGTON, E.. **Valuing the vote: The redistribution of voting rights and state funds following the voting rights act of 1965**. The Quarterly Journal of Economics, 129(1):379–433, 2013.

[20] MADESTAM, A.; SHOAG, D.; VEUGER, S. ; YANAGIZAWA-DROTT, D.. **Do political protests matter? evidence from the tea party movement**. The Quarterly Journal of Economics, 128(4):1633–1685, 2013.

[21] MCGUIRK, E.; HILGER, N. ; MILLER, N.. **No kin in the game: Moral hazard and war in the us congress**. Technical report, National Bureau of Economic Research, 2017.

[22] ALSTON, L. J.; MUELLER, B.. **Pork for policy: executive and legislative exchange in brazil**. Journal of Law, Economics, and Organization, 22(1):87–114, 2005.

[23] FIGUEIREDO, A. C.; LIMONGI, F.. **Presidential power, legislative organization, and party behavior in brazil**. Comparative Politics, p. 151–170, 2000.

[24] RAILE, E. D.; PEREIRA, C. ; POWER, T. J.. **The executive toolbox: Building legislative support in a multiparty presidential regime**. Political Research Quarterly, 64(2):323–334, 2011.

[25] SACERDOTE, B.. **Peer effects with random assignment: Results for dartmouth roommates**. The Quarterly journal of economics, 116(2):681–704, 2001.

[26] CALVÓ-ARMENGOL, A.; PATACCHINI, E. ; ZENOU, Y.. **Peer effects and social networks in education**. The Review of Economic Studies, 76(4):1239–1267, 2009.

[27] BATTAGLINI, M.; PATACCHINI, E.. **Influencing connected legislators**. Technical report, National Bureau of Economic Research, 2016.

[28] MASKET, S.. **Where you sit is where you stand: The impact of seating proximity on legislative cue-taking**. 2008.

[29] COHEN, L.; MALLOY, C. J.. **Friends in high places**. American Economic Journal: Economic Policy, 6(3):63–91, 2014.

[30] AMES, B.. **The deadlock of democracy in Brazil**. University of Michigan Press, 2002.

[31] NICOLAU, J.. **Representantes de quem?: Os (des) caminhos do seu voto da urna à Câmara dos Deputados**. Zahar, 2017.

[32] MELO, M.; PEREIRA, C.. **Making Brazil work: checking the president in a multiparty system**. Springer, 2013.

[33] CAMERON, A. C.; MILLER, D. L.. **Robust inference for dyadic data**. Unpublished manuscript, University of California-Davis, 2014.

[34] CAMERON, A. C.; GELBACH, J. B. ; MILLER, D. L.. **Robust inference with multiway clustering**. Journal of Business & Economic Statistics, 29(2):238–249, 2011.

[35] BURSZTYN, L.; EGOROV, G. ; FIORIN, S.. **From extreme to mainstream: How social norms unravel**. Technical report, National Bureau of Economic Research, 2017.

[36] HONG, S.; KIM, S. H.. **Political polarization on twitter: Implications for the use of social media in digital governments**. Government Information Quarterly, 33(4):777–782, 2016.

[37] BOXELL, L.; GENTZKOW, M. ; SHAPIRO, J. M.. **Is the internet causing political polarization? evidence from demographics**. Technical report, National Bureau of Economic Research, 2017.

[38] IYENGAR, S.; WESTWOOD, S. J.. **Fear and loathing across party lines: New evidence on group polarization**. American Journal of Political Science, 59(3):690–707, 2015.

[39] GENTZKOW, M.. **Polarization in 2016**. Toulouse Network of Information Technology white paper, 2016.

[40] ABRAMOWITZ, A. I.; SAUNDERS, K. L.. **Is polarization a myth?** The Journal of Politics, 70(2):542–555, 2008.

[41] LAYMAN, G. C.; CARSEY, T. M. ; HOROWITZ, J. M.. **Party polarization in american politics: Characteristics, causes, and consequences**. Annual Review of Political Science, 9:83–110, 2006.

[42] FIGUEIREDO, A.; LIMONGI, F.. **Partidos políticos na câmara dos deputados: 1989-1994**. Dados, 38(3):497–524, 1995.

[43] ABRANCHES, S.. **Presidencialismo de coalizão: o dilema institucional brasileiro**. Dados, 31(1):5–38, 1988.

[44] LIMONGI, F.. **A democracia no brasil: presidencialismo, coalizão partidária e processo decisório**. Novos estudos-CEBRAP, (76):17–41, 2006.

[45] ABRANCHES, S.. **Os ciclos do presidencialismo de coalizão**. Ecopolítica Ensaios, 2014.

A
Figures

Figure A.1: Aerial photo of the Chamber's Main Complex

Figure A.2: Plan for *Anexo III* only floor

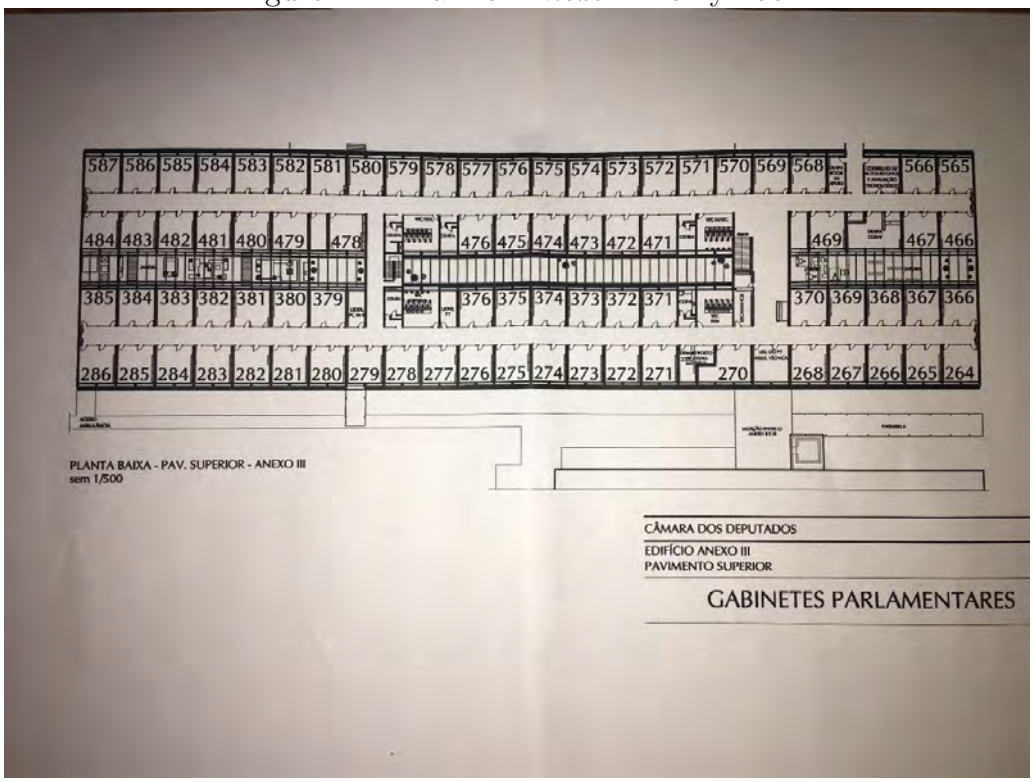
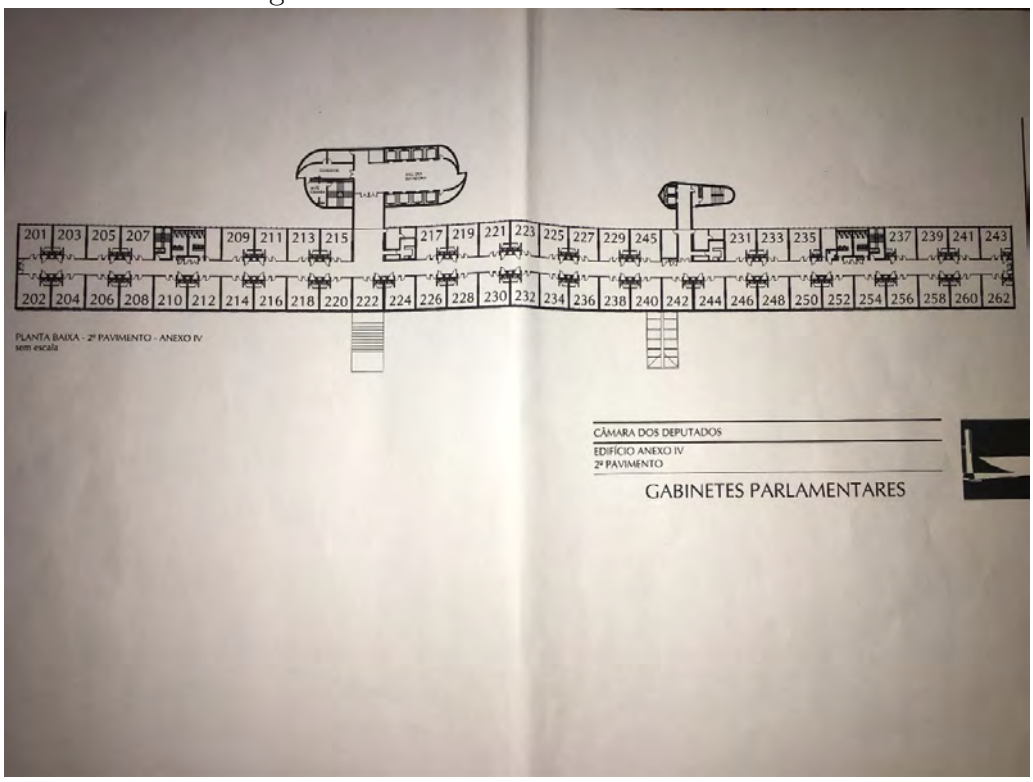


Figure A.3: Plan for *Anexo IV* 2nd floor



B
Additional Tables

Table B.1: Number of Federal Deputies elected by Political Party

Party	2010 (% of total)	2014 (% of total)
PCdoB	15 (2.9%)	10 (1.9%)
PTdoB	4 (0.8%)	1 (0.2%)
PMDB	78 (15.2%)	66 (12.9%)
PSDC	0 (0.0%)	2 (0.4%)
PRTB	2 (0.4%)	1 (0.2%)
PSDB	53 (10.3%)	54 (10.5%)
PSOL	3 (0.6%)	5 (1.0%)
PROS	*	11 (2.1%)
PRB	8 (1.6%)	21 (4.1%)
PDT	26 (5.1%)	19 (3.7%)
PTB	22 (4.3%)	25 (4.9%)
PSL	1 (0.2%)	1 (0.2%)
PTN	0 (0.0%)	4 (0.4%)
PSC	17 (3.3%)	13 (2.5%)
PPS	11 (2.1%)	10 (1.9%)
DEM	42 (8.2%)	21 (4.1%)
PHS	2 (0.4%)	5 (1.0%)
PMN	4 (0.8%)	3 (0.6%)
PTC	1 (0.2%)	2 (0.4%)
PSB	34 (6.6%)	34 (6.6%)
PRP	2 (0.4%)	3 (0.6%)
PEN	*	2 (0.4%)
PSD	3 (0.6%)	36 (7.0%)
PP	43 (8.4%)	38 (7.4%)
PT	88 (17.2%)	69 (13.5%)
PR	40 (7.8%)	34 (6.6%)
PV	14 (2.7%)	8 (1.6%)
SDD	*	15 (2.9%)

Notes: * Party was founded after 2010 elections.

Table B.2: Number of Federal Deputies elected by Political Ideology

Ideology	2010 (% of total)	2014 (% of total)
Left	200 (39.0%)	162 (31.6%)
Center	75 (14.6%)	103 (20.1%)
Right	238 (46.4%)	248 (48.3%)

Notes: Party ideology is classified according to Atlas Político – Mapa do Congresso.

Table B.3: Number of Federal Deputies elected by Political Coalition

Political Alignment	2010 (% of total)	2014 (% of total)
Government Coalition	349 (68.0%)	309 (60.2%)
Opposition	164 (32.0%)	204 (39.8%)

Notes: Deputy is considered to be a part of the government coalition if his party supported the winning candidate in the presidential election. If his party supported no candidates or the losing candidate, he is considered to be part of the opposition.

Table B.4: Sub Sample based on Political Ideology. Dependent variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Both Left		Both Center		Both Right	
$Neighbor_{itj}$	0.0429*	0.0354	-0.0169	-0.00629	0.0184*	0.0135
	(0.0228)	(0.0223)	(0.0201)	(0.0181)	(0.00994)	(0.00963)
Observations	2,551,578	2,551,578	996,490	996,490	5,492,243	5,492,243
R-squared	0.072	0.052	0.057	0.060	0.006	0.004
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.736	0.736	0.746	0.746	0.793	0.793

Notes: Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.5: Sub Sample based on Political Ideology. Dependent variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Left and Center		Left and Right		Center and Right	
$Neighbor_{itj}$	0.0378	0.0371	-0.0105	-0.00916	-0.00810	-0.00972
	(0.0251)	(0.0235)	(0.0105)	(0.00995)	(0.0132)	(0.0127)
Observations	2,973,078	2,973,078	7,277,557	7,277,557	4,597,216	4,597,216
R-squared	0.004	0.002	0.027	0.003	0.000	0.004
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.597	0.597	0.672	0.672	0.706	0.706

Notes: Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.6: Sub Sample based on Political Ideology. Dependent variable: $Agree3_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Both Left		Both Center		Both Right	
Neighbor_itj	0.0407**	0.0392**	0.00575	0.0101	0.0294***	0.0286***
	(0.0160)	(0.0160)	(0.0175)	(0.0173)	(0.00771)	(0.00766)
Observations	4,527,045	4,527,045	1,743,364	1,743,364	10,737,589	10,737,589
R-squared	0.019	0.018	0.022	0.022	0.001	0.001
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.521	0.521	0.527	0.527	0.528	0.528

Notes: Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.7: Sub Sample based on Political Ideology. Dependent variable: $Agree3_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Left and Center		Left and Right		Center and Right	
$Neighbor_{itj}$	0.0236	0.0237	0.00507	0.00495	-0.00890	-0.00894
	(0.0160)	(0.0157)	(0.00729)	(0.00728)	(0.0102)	(0.0102)
Observations	5,361,394	5,361,394	13,736,064	13,736,064	8,566,275	8,566,275
R-squared	0.000	0.000	0.004	0.001	0.000	0.001
Voting FE	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.432	0.432	0.468	0.468	0.487	0.487

Notes: Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.8: Sub Sample based on Political Alignment. Dependent variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Both Gov. Coalition		Both Opposition		Gov. Coalition and Opposition	
$Neighbor_{itj}$	0.00591	0.00504	-0.00680	-0.00462	0.00207	0.00188
	(0.00992)	(0.00882)	(0.0143)	(0.0144)	(0.0102)	(0.00970)
Observations	8,615,788	8,615,788	3,899,101	3,899,101	11,373,273	11,373,273
R-squared	0.031	0.015	0.019	0.018	0.004	0.000
Voting FE	No	Yes	No	Yes	No	Yes
Mean Dep. Var.	0.756	0.756	0.731	0.731	0.661	0.661

Notes: Both Gov. Coalition: Sub sample where both deputies i and j belongs to parties that supported the winning presidential candidate in the election. Both Opposition: Sub sample where both deputies i and j belongs to parties that supported a presidential candidate that lost in the election. Gov. Coalition and Opposition: Sub sample where one of the deputies supported the winning candidate and the other supported a losing candidate in the presidential election. Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.9: Sub Sample based on Political Alignment. Dependent variable: $Agree3_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Both Gov. Coalition		Both Opposition		Gov. Coalition and Opposition	
$Neighbor_{itj}$	0.0158**	0.0156**	0.0116	0.0132	0.00581	0.00585
	(0.00715)	(0.00712)	(0.0103)	(0.0104)	(0.00694)	(0.00691)
Observations	16,046,921	16,046,921	7,209,289	7,209,289	21,415,521	21,415,521
R-squared	0.006	0.004	0.006	0.006	0.000	0.000
Voting FE	No	Yes	No	Yes	No	Yes
Mean Dep. Var.	0.517	0.517	0.510	0.510	0.462	0.462

Notes: Both Gov. Coalition: Sub sample where both deputies i and j belongs to parties that supported the winning presidential candidate in the election. Both Opposition: Sub sample where both deputies i and j belongs to parties that supported a presidential candidate that lost in the election. Gov. Coalition and Opposition: Sub sample where one of the deputies supported the winning candidate and the other supported a losing candidate in the presidential election. Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.10: Heterogeneous effect based on election criterion

	(1)	(2)	(3)	(4)
VARIABLES	$Agree2_{ijt}$	$Agree2_{ijt}$	$Agree3_{ijt}$	$Agree3_{ijt}$
$Neighbor_{itj}$	-0.00906	0.00424	-0.0112	0.0118**
	(0.0173)	(0.00637)	(0.0111)	(0.00481)
$Neighbor_{itj}$*1{Elect by Electoral Coefficient}	0.0158	0.0169	0.0268**	0.0288**
	(0.0188)	(0.0186)	(0.0126)	(0.0130)
Observations	23,888,162	23,888,162	44,671,731	44,671,731
R-squared	0.019	0.013	0.004	0.004
Voting FE	No	Yes	No	Yes
Mean Dep. Var.	0.707	0.707	0.488	0.488

Notes: Elect by Electoral Coefficient is a dummy that indicates if a deputy was elected by the electoral coefficient. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.11: Neighbor's Impact for Different absence rates. Dependent Variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	1st Quartile		2nd Quartile		3rd Quartile		4th Quartile	
Neighbor$_{ijt}$	0.00637	0.00754	0.000926	0.00164	-0.00178	-0.00272	-0.00240	-0.00532
	(0.00990)	(0.00980)	(0.00807)	(0.00783)	(0.00843)	(0.00819)	(0.00975)	(0.00919)
Observations	8,282,143	8,282,143	6,108,299	6,108,299	4,322,819	4,322,819	2,604,196	2,604,196
R-squared	0.015	0.013	0.016	0.013	0.010	0.011	0.015	0.012
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.651	0.651	0.707	0.707	0.761	0.761	0.788	0.788

Notes: Each column represents a distinct specification. In the first quartile are all the proposition with less than 20.1% of deputies absent. In second, all the propositions had between 20.1% and 29.3% of deputies absent, whereas the in third it was between 29.3% and 37.4%. The remaining propositions are in the fourth quartile. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.12: Neighbor's Impact for Different absence rates. Dependent Variable: $Agree3_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	1st Quartile		2nd Quartile		3rd Quartile		4th Quartile	
Neighbor$_{ijt}$	0.0142	0.0146	0.0124*	0.0123*	0.00819	0.00808	0.00647	0.00690
	(0.00918)	(0.00920)	(0.00731)	(0.00731)	(0.00575)	(0.00571)	(0.00592)	(0.00588)
Observations	10,827,848	10,827,848	10,274,789	10,274,789	9,622,187	9,622,187	9,410,154	9,410,154
R-squared	0.008	0.007	0.005	0.005	0.002	0.002	0.006	0.002
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.515	0.515	0.472	0.472	0.451	0.451	0.507	0.507

Notes: Each column represents a distinct specification. In the first quartile are all the proposition with less than 20.1% of deputies absent. In second, all the propositions had between 20.1% and 29.3% of deputies absent, whereas the in third it was between 29.3% and 37.4%. The remaining propositions are in the fourth quartile. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.13: Analysis by Agreement Rate. Dependent Variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	$Agg.Rate < 0.80$		$Agg.Rate > 0.80$		$Agg.Rate < 0.90$		$Agg.Rate > 0.90$	
$Neighbor_{itj}$	0.0141	0.0146	-0.00502	-0.00570	0.00913	0.00978	-0.00431	-0.00460
	(0.00940)	(0.00937)	(0.00498)	(0.00495)	(0.00873)	(0.00865)	(0.00383)	(0.00382)
Observations	12,504,321	12,504,321	11,383,841	11,383,841	15,835,250	15,835,250	8,052,912	8,052,912
R-squared	0.024	0.024	0.003	0.003	0.020	0.020	0.002	0.001
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.552	0.552	0.877	0.877	0.592	0.592	0.932	0.932
Number of Propositions	445	445	591	591	622	622	414	414

Notes: A proposition has an agreement rate over 0.8 if 80% of the deputies presented abstained from voting, voted yes or voted no. Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.14: Analysis by Agreement Rate. Dependent Variable: $Agree3_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	$Agg.Rate < 0.80$		$Agg.Rate > 0.80$		$Agg.Rate < 0.90$		$Agg.Rate > 0.90$	
$Neighbor_{itj}$	0.0152**	0.0152**	0.0104**	0.0102**	0.0118*	0.0119*	0.0139***	0.0136***
	(0.00697)	(0.00696)	(0.00429)	(0.00425)	(0.00627)	(0.00626)	(0.00428)	(0.00421)
Observations	20,965,536	20,965,536	23,302,226	23,302,226	27,350,441	27,350,441	16,962,670	16,962,670
R-squared	0.009	0.010	0.001	0.001	0.007	0.007	0.002	0.001
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var	0.411	0.411	0.551	0.551	0.433	0.433	0.569	0.569
Number of Propositions	445	445	591	591	622	622	414	414

Notes: A proposition has an agreement rate over 0.8 if 80% of the deputies presented abstained from voting, voted yes or voted no. Each column represents a distinct specification. Additional controls are used such as: same state, same party, same floor and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.15: Analysis by Type of Proposition. Dependent Variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	PEC		PDC		PL		PLP	
Neighbor$_{ijt}$	-0.00606	-0.00521	0.0220	0.0218	0.00113	0.00146	-0.0124	-0.0143
	(0.00981)	(0.00947)	(0.0160)	(0.0149)	(0.00933)	(0.00908)	(0.0113)	(0.0112)
Observations	5,380,150	5,380,150	282,413	282,413	3,553,812	3,553,812	2,199,268	2,199,268
R-squared	0.038	0.007	0.012	0.012	0.018	0.018	0.006	0.007
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.778	0.778	0.768	0.768	0.608	0.608	0.767	0.767

Notes: Each column represents a distinct specification. PEC, PDC, PL and PLP stands for Constitutional Amendment Project, Legislative Decree Project, Ordinary law and Complementary law Projects, respectively. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.16: Analysis by Type of Proposition. Dependent Variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	REQ		VETO		PRC		MPV	
Neighbor$_{ijt}$	-0.00388	-0.00485	0.00751	0.00643	0.0240	0.0263	0.0166	0.0152
	(0.00789)	(0.00768)	(0.0233)	(0.0229)	(0.0295)	(0.0285)	(0.0119)	(0.0118)
Observations	2,570,405	2,570,405	242,963	242,963	493,905	493,905	6,109,149	6,109,149
R-squared	0.007	0.007	0.045	0.020	0.025	0.011	0.027	0.020
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.772	0.772	0.577	0.577	0.655	0.655	0.647	0.647

Notes: Each column represents a distinct specification. REQ, VETO, PRC and MPV stands for Requirements Voting, Analysis of Presidential Veto, Resolution Project and Provisional Measure, respectively. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.17: Analysis by Type of Proposition. Dependent Variable: $Agree3_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	PEC		PDC		PL		PLP	
Neighbor$_{ijt}$	0.00941	0.00947	0.00699	0.00879	0.00868	0.00891	-0.00139	-0.00108
	(0.00792)	(0.00794)	(0.00953)	(0.00951)	(0.00714)	(0.00712)	(0.00854)	(0.00853)
Observations	8,195,269	8,195,269	1,021,922	1,021,922	6,479,673	6,479,673	4,253,560	4,253,560
R-squared	0.003	0.003	0.016	0.003	0.008	0.006	0.003	0.002
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.560	0.560	0.656	0.656	0.435	0.435	0.489	0.489

Notes: Each column represents a distinct specification. PEC, PDC, PL and PLP stands for Constitutional Amendment Project, Legislative Decree Project, Ordinary law and Complementary law Projects, respectively. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.18: Analysis by Type of Proposition. Dependent Variable: $Agree3_{ijt}$

VARIABLES	REQ		VETO		PRC		MPV	
Neighbor$_{ijt}$	0.00398	0.00412	-0.00880	-0.00881	0.00156	0.00176	0.0216***	0.0213***
	(0.00767)	(0.00765)	(0.0186)	(0.0186)	(0.0194)	(0.0193)	(0.00759)	(0.00759)
Observations	4,997,898	4,997,898	438,658	438,658	1,062,483	1,062,483	12,430,368	12,430,368
R-squared	0.002	0.002	0.010	0.008	0.045	0.003	0.006	0.006
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.500	0.500	0.405	0.405	0.477	0.477	0.433	0.433

Notes: Each column represents a distinct specification. REQ, VETO, PRC and MPV stands for Requirements Voting, Analysis of Presidential Veto, Resolution Project and Provisional Measure, respectively. Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.19: Analysis by proportion of time away from position. Dependent Variable: $Agree2_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Prop. Away = 0		Prop. Away < 0.1		Prop. Away < 0.25		Prop. Away < 0.5	
Neighbor$_{ijt}$	0.00695	0.00632	0.00103	0.000719	0.00555	0.00540	0.00350	0.00344
	(0.00813)	(0.00791)	(0.00824)	(0.00799)	(0.00824)	(0.00800)	(0.00828)	(0.00804)
Observations	18,263,312	18,263,312	19,237,079	19,237,079	20,300,515	20,300,515	20,627,687	20,627,687
R-squared	0.019	0.013	0.018	0.012	0.018	0.012	0.018	0.012
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.706	0.706	0.707	0.707	0.705	0.705	0.705	0.705

Notes: Each column represents a distinct specification. Standard errors are two way clustered at each federal deputy level. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

Table B.20: Analysis by proportion of time away from position. Dependent Variable: $Agree3_{ijt}$

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Prop. Away = 0		Prop. Away < 0.1		Prop. Away < 0.25		Prop. Away < 0.5	
Neighbor$_{ijt}$	0.0129**	0.0131**	0.00777	0.00797	0.0121**	0.0123**	0.0108*	0.0110*
	(0.00593)	(0.00592)	(0.00600)	(0.00599)	(0.00603)	(0.00602)	(0.00602)	(0.00601)
Observations	34,443,950	34,443,950	36,275,548	36,275,548	38,126,863	38,126,863	38,734,101	38,734,101
R-squared	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Voting FE	No	Yes	No	Yes	No	Yes	No	Yes
Mean of Dep. Var.	0.486	0.486	0.487	0.487	0.486	0.486	0.486	0.486

Notes: Each column represents a distinct specification. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors.Standard errors are clustered at each deputy level. When *** p<0.01, ** p<0.05, * p<0.1.

C
Different Clustering Specifications: Dyadic and Two-Way

C.1
Sub sample 1

Table C.1: Agree1 - Sample 1

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$
$Neighbor_{itj}$	-0.0384*	-0.0384	-0.0384	-0.0420**	-0.0420	-0.0420
	(0.0201)	(0.0475)	(0.0478)	(0.0174)	(0.0323)	(0.0327)
Observations	208,029	208,029	208,029	208,029	208,029	208,029
R-squared	0.020	0.020	0.020	0.012	0.012	0.012
Two Way Cluster	No	Yes	No	No	Yes	No
Dyadic Cluster	No	No	Yes	No	No	Yes
Voting FE	No	No	No	Yes	Yes	Yes

Notes: Each column represents a distinct specification. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

[h]

Table C.2: Agree2 - Sample 1

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$
$Neighbor_{itj}$	-0.0329	-0.0329	-0.0329	-0.0372**	-0.0372	-0.0372
	(0.0201)	(0.0454)	(0.0457)	(0.0175)	(0.0305)	(0.0308)
Observations	210,775	210,775	210,775	210,775	210,775	210,775
R-squared	0.019	0.019	0.019	0.012	0.012	0.012
Two Way Cluster	No	Yes	No	No	Yes	No
Dyadic Cluster	No	No	Yes	No	No	Yes
Voting FE	No	No	No	Yes	Yes	Yes

Notes: Each column represents a distinct specification. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Table C.3: Agree3 - Sample 1

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$
Neighbor_itj	0.00780	0.00780	0.00780	0.00830	0.00830	0.00830
	(0.0168)	(0.00940)	(0.00957)	(0.0159)	(0.00781)	(0.00798)
Observations	399,226	399,226	399,226	399,226	399,226	399,226
R-squared	0.004	0.004	0.004	0.003	0.003	0.003
Two Way Cluster	No	Yes	No	No	Yes	No
Dyadic Cluster	No	No	Yes	No	No	Yes
Voting FE	No	No	No	Yes	Yes	Yes

Notes: Each column represents a distinct specification. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

C.2
Sub sample 2

Table C.4: Agree1 - Sample 2

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$	$Agree1_{itj}$
$Neighbor_{itj}$	0.0140	0.0140	0.0140	0.00915	0.00915	0.00915
	(0.0210)	(0.0677)	(0.0679)	(0.0198)	(0.0653)	(0.0655)
Observations	202,510	202,510	202,510	202,510	202,510	202,510
R-squared	0.020	0.020	0.020	0.012	0.012	0.012
Two Way Cluster	No	Yes	No	No	Yes	No
Dyadic Cluster	No	No	Yes	No	No	Yes
Voting FE	No	No	No	Yes	Yes	Yes

Notes: Each column represents a distinct specification. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Table C.5: Agree2 - Sample 2

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$	$Agree2_{itj}$
$Neighbor_{itj}$	-0.0139	-0.0139	-0.0139	-0.0127	-0.0127	-0.0127
	(0.0211)	(0.0804)	(0.0806)	(0.0196)	(0.0754)	(0.0756)
Observations	205,171	205,171	205,171	205,171	205,171	205,171
R-squared	0.019	0.019	0.019	0.011	0.011	0.011
Two Way Cluster	No	Yes	No	No	Yes	No
Dyadic Cluster	No	No	Yes	No	No	Yes
Voting FE	No	No	No	Yes	Yes	Yes

Notes: Each column represents a distinct specification. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.

Table C.6: Agree3 - Sample 2

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$	$Agree3_{itj}$
$Neighbor_{itj}$	-0.000497	-0.000497	-0.000497	-0.00122	-0.00122	-0.00122
	(0.0161)	(0.0416)	(0.0416)	(0.0156)	(0.0430)	(0.0431)
Observations	388,124	388,124	388,124	388,124	388,124	388,124
R-squared	0.003	0.003	0.003	0.003	0.003	0.003
Two Way Cluster	No	Yes	No	No	Yes	No
Dyadic Cluster	No	No	Yes	No	No	Yes
Voting FE	No	No	No	Yes	Yes	Yes

Notes: Each column represents a distinct specification. Additional controls are used: same state, same party and legislature dummies. $Agree_{ijt}$ and $Neighbor_{ijt}$ are dummy variables respectively indicating if deputies i and j voted in the same way in proposition t and if i and j are next-dorr office neighbors. When *** p<0.01, ** p<0.05, * p<0.1.