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Make or Buy: Political hazards and the choice of governance of municipal services

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8

Abstract

9 We study the link between the choice of governance and political hazards using
10 municipal school canteens. We provide evidence that in politically contested cities, mayors are
11 more likely to choose to “make” rather than “buy” to avoid challenge of the contract with a
12 private partner. A higher probability of losing office – proxied by close victory margins and
13 political concentration – increases the probability to “make”. We also provide evidence that in
14 cities where the potential challenge on sustainable supply is high, mayors tend to “make” also
15 to signal trustworthiness to the voter. A higher presence of ecologist’s citizens and alternative
16 supply organizations – proxied by the presence of Agenda 21 and the presence of alternative
17 and organic food shops – increases the probability to “make”.

18

19 *Keywords:* Political Oversight, Make or Buy, School Canteens

20 1 Introduction

21 Is that apple organic? Where does this meat come from? Am I eating fresh or frozen
22 vegetables? These are some of the questions people may ask themselves when they eat out in
23 an institutional catering facility. As they do not buy the food themselves, they must trust the
24 provider of the meal as to the unobservable characteristics of the ingredients. The
25 trustworthiness towards the provider of a public service is an important matter that impacts the
26 governance of public services when unobservable quality is important, as we will show.

27 Cities, departments, regions, and states provides canteens services for children, the
28 elderlies, the sick, the army, and a lot of other publics. Institutional catering to social purpose
29 in France is much democratized and consequently represent a large part of the eating out. In
30 2004, institutional catering was of 10 billion euros, representing 300 000 jobs with an average
31 annual growth of 4%. School canteens also concern directly 60% of children⁴ and indirectly
32 their parents, for about one billion meals served each year in France. Municipal school canteens
33 expenses represent half of institutional catering, being about 5 billion euros and 2.3% of the
34 annual expenses of French municipalities.⁵

35 At the risk of oversimplification, municipal school canteens can be categorized in two
36 main types: direct and delegated governance. These two types of governance imply different
37 contractual characteristics toward the food supply and the choice is eventually at the discretion
38 of the elected official. Delegated governance necessitate to contract both preparation of the food
39 and food supply to the same private partner. The sustainability of the supply depends then on
40 the private contractor. It is her task to furnish the quality of the food asked in the contract by
41 the municipality. However she is not attached to suppliers and can switch from a supplier to
42 another without the approval of the municipality supposedly as long as the quality remains the
43 same.

44 On the contrary, direct governance necessitate to contract only for food supply since the
45 municipal employee would cook the ingredients⁶. In that case the municipality tenders for the
46 food and chooses directly the suppliers. It is then stuck with those suppliers for four years unless

⁴ La restauration des usagers du service public scolaire ou à caractère social en Alsace », Rapport Public de la Cour des Comptes, 2005, pp. 653-672.

⁵ With 180 days of school a year (<http://eduscol.education.fr>), 60% of the 6 760 600 pupils (<http://www.education.gouv.fr>), for a cost per meal between 6 and 8 €, municipal school canteens for the 5 to 10 years old accounts for 2 to 2.6% of the 220 billion spent each year by municipalities (<http://www.collectivites-locales.gouv.fr>).

⁶ We let apart the case of the municipality Mouans-Sartoux that grows its own fruits and vegetables.

47 there is an important breach in the contract from the supplier⁷. Direct governance prevent the
48 municipality from choosing ingredients to cook from another supplier that has not been selected
49 in the auction, and thus cannot integrate new types of products during the operation of the
50 contract⁸. The power of decision of the ingredients and their type is stronger for direct
51 governance at the condition that it has been anticipated in the supply food contracts.

52 Therefore, tradeoffs emerge between adaptability to the demand and political oversight.
53 A public body might choose to produce a service in-house in presence of skeptic citizens when
54 it rigidifies the provision of this service and diminish his discretionary power of decision. This
55 aims at preventing challenge on his governance of the service that could endanger his re-
56 election or the re-election of his majority. For instance, a municipality may choose the delegated
57 governance and be able to ask for local food through unformal renegotiation when the pressure
58 for such ingredients becomes louder. It may, however, lead to suspicion from the population
59 toward his choices since they are off the record. A direct governance is, on the contrary, not as
60 flexible. This type of governance prevent from introducing local food if there is no local
61 supplier in the bunch of suppliers, unless there is a new tender. On the other side, direct
62 governance implies to always buy the food to the same suppliers which increases the traceability
63 of the food for the citizens, and thus, mitigates the risks of suspicion toward the public body.
64 As a consequence, we consider delegated governance to be a flexible-type contract, potentially
65 leading to suspicion, and direct governance as a specific-type contract that mitigates challenges
66 on the mayor's choices.

67 A significant body of previous work on make-or-buy focuses on concerns related to
68 efficiency, such as the choice to integrate or not an activity when faced with over specification
69 costs of contractual rights. From an incomplete contract theory's perspective, Grossman and
70 Hart (1986) argue that "firm 1 purchases firm 2 when firm 1's control increases the productivity
71 of its management more than the loss of control decreases the productivity of firm 2's
72 management". Within this framework Hart, Shleifer and Vishny (1997) show that a private
73 partner engages in both cost reduction and quality improvement, but when it comes to
74 noncontractible quality the private partner tends to mitigate the adverse effect of cost reduction.
75 Recent works highlight other determinants of make-or-buy choice and their impact on
76 efficiency, such as the ability to discipline franchisees. Chong et al. (2012) show that as the size

⁷ Texte de loi

⁸ Municipalities can integrate new products that do not come from the suppliers selected by the auction at the condition that it is for a thematic meal or special event, such as "Chinese new year", it is less than 15 000€.

77 of a city increases, so increases its ability to prevent the private partner from extracting quasi-
78 rents. Using data on the make-or-buy decision for municipal school canteens in France, we
79 explore whether political considerations can play a role in governance decisions. If today's
80 politicians have the desire to demonstrate probity to the voting public, we would expect mayors
81 in more contested municipalities to use more transparent and specific-type of governance for
82 public services such as direct governance. Under this type of governance, food suppliers are
83 selected through competitive auctions and will supply the municipality for a type of ingredient
84 until the next tender. Direct governance is a more rigid way to get the food supply than
85 delegated governance. On the contrary, for delegated governance it is up to the private partner
86 to choose and change the suppliers.

87 Another prominent strand of literature related to governance of public services centers
88 on how political considerations may influence the choice of elected managers. Lopez-de-
89 Silanes et al. (1997) show with U.S. municipalities that laws to enforce public denies restriction
90 favor privatization, whereas strong public unions discourage it. According to them, this points
91 to the important roles played by political patronage and taxpayer resistance to government
92 spending in the privatization decision. Similarly, Picazo-Tadeo et al. (2010) show for the
93 provision of water in Spain that ideology matters, as for Bel and Fageda (2007) and Dubin and
94 Navarro (1988) before them.

95 We offer empirical evidence for a complementary explanation and empirically test for
96 the importance of electoral considerations in public contracting, specifically in the make-or-
97 buy decision. We draw on recent theoretical work about the threats imposed by third parties
98 and political opponents on public officials (Spiller, 2009; Moszoro and Spiller, 2014), and
99 conjecture on several reasons why elected officials select direct governance when elections are
100 close. First, by choosing direct governance, city officials signal "probity" (i.e., transparency
101 and trustworthiness to supply food for school canteens), limit speculation on the discretionary
102 use of public monies to enrich themselves and buy political favors from private enterprises.
103 Second, earmarked suppliers limit the discretion of a successful political challenger in the event
104 that the incumbent loses the next election. For example, consider a city where the incumbent's
105 constituents care about organic food while the challenger's constituents care about local food.
106 If the incumbent's winning margin is close (so the mayor's seat is more contestable), she will
107 choose direct governance to lower the challenger's discretion to favor local food instead of
108 organic food *ex post*. In the case of a delegated governance, the challenger may directly ask the
109 private partner to redirect her supply from organic to local food as it is the case for Saint-Etienne

110 (France Bleu, 2015). Third, when suppliers are known and traceable, it increases the confidence
111 in the political manager who has less *ex post* impact on the supply.

112 This article proceeds as follows. We begin this topic with a discussion of the theoretical
113 literature. We then describe the model as well as the institutional setting in which we will test
114 it. A description of the data and proposed empirical test follows, and then the results of this
115 estimation exercise. Finally we provide some concluding remarks.

116 2 Theoretical Framework

117 2.1 Relevant Literature and Proposed Contribution

118 This study relates to two streams of research on governance. One common view in
119 economic literature is that the size of the firm is economically determined to exploit gain of
120 productivity. Economies of scales have been at the center of this analysis, and have been shown
121 along with transaction costs to influence the choice of governance of public services by local
122 governments (Bel and Fageda, 2007; Bel and Fageda, 2009). When a service is to be procured
123 in a suboptimal jurisdiction, which is often the case with small municipalities, the exploitation
124 of economies of scale requires the aggregation of the service (Donahue, 1989). This goal can
125 be attained by either privatizing public services to a larger private firm that would attain the
126 optimal size, or by aggregating the public demand of several local governments through larger
127 public entities. However, this is true only when the gain of economies of scale are shared with
128 the municipality. Chong et al.'s results (2012) on the provision of water service in France show
129 that large municipalities are better equipped to exploit competition between firms, whereas
130 small municipalities pay a quasi-rent to private partners. Lack of competition on the market and
131 difficulties to control the private partner can lead to a lesser use of privatization if the quasi-
132 rent is above the in-house price. Moreover, the choice to delegate a public service depends on
133 the complexity of the transaction (Crocker and Masten, 1996 pp. 6): "As the exchange setting
134 becomes increasingly complex or the negotiation of future duties more costly and problematic,
135 the parties may elect to bear the organizational costs of effecting exchange through internal
136 administration." This reinforces the problems for small municipalities to delegate public
137 services as they have less capacities and competencies to control and specify the service.

138 Another substantial body of literature on governance of public services has focused on
139 political choices made by public authorities and ideology (Bel and Fageda, 2007; Bel and
140 Fageda, 2009). Ideology considerations are important for the choice of governance of public
141 services. Political color of the mayors influences statistically the choice made by public bodies

142 as to public services (Levin and Tadelis, 2010; Gonzalez Gomez et al., 2011). This also holds
143 true for political choices. Political choices are made to please a pressure group important to be
144 elected. Studies on that matter have shown a positive influence of unemployment, poverty,
145 strength of public unions on the propensity of municipalities to procure internally public
146 services (Dubin and Navarro, 1988; Chandler and Feuille, 1994; Lopez-de-Silanes et al., 1997).
147 However those results tend to be less significant. One explanation could be that economic
148 rationality is now preferred by politicians.

149 These studies are part of the literature exploring the determinants of the governance of
150 public services on the basis of economic and political considerations. There has, however, been
151 less focus on the tools to measure political considerations and pressure groups. Those are almost
152 always proxied by the political color of the mayor, the size of public bodies, unemployment
153 and inequalities.

154 Spiller (2009) and Moszoro and Spiller (2012, 2014) have recently proposed a theory of
155 feature of public contracts in the presence of competitive political market. According to their
156 theory, the feature of a public contract is also determined by the political hazards perceived by
157 the official. Political hazards may come from two different players involved indirectly in a
158 public contract between the public authorities and a private firm: political opponents and the
159 voting public. The voting public and political opponents are implicated in any transactions made
160 by the public authorities as it affects public monies and social welfare. Political opponents are
161 also interested in discrediting the public authority so as to retrieve votes for the next election.
162 Political opponents participate in the public auditing of political incumbent. They scrutinize
163 transactions made by the political incumbent to discredit her results, on true or false basis. This
164 may politically cost to the official in power either because she losses some votes, or because
165 she has to defend herself and her choices. In some cases, incumbents may be vulnerable to
166 losing office so it is in their interest to mitigate *ex ante* the possible attacks on their results.

167 This “third-party opportunism” framework developed by Spiller and Moszoro implies
168 that the more contested the political environment is, the more the political incumbent will try
169 to prevent their mandates from being attacked and gossiped on governance choices and misuse
170 of public funds. This theory has been confirmed on the choice of political bond in the U.S.
171 (Aneja et al., 2015) and on the specificity of French procurement contracts (Beuve et al., 2015).
172 We contribute to the literature on make-or-buy of public services by empirically examining
173 how the choice of governance of public services correlates to political competition or pressure
174 groups’ size. We also contribute to the literature on rigidity features of governance by

175 empirically measuring how citizen pressure groups may influence the mode of governance of a
176 public service.

177 We use municipal school canteens to test this hypothesis as this service is relatively
178 highly subject to scrutiny from third parties. For instance, according to a study from the French
179 *Agence Bio*, the school canteens are the place where people would like to see the largest
180 introduction of organic products to 87% of them (Agence Bio, 2016), way ahead from work
181 (73%), fast food (63%) or vending machines (56%). It is a particularly high number of people
182 interested in the introduction of organic products at school given that interviewed people are
183 not all parents.

184 2.2 Institutional Settings: French Governance of School Canteens

185 School canteens are both young and old. It begins in 1844 with the creation of the first
186 canteen for the young (IRCEN⁹). The necessity of school canteens becomes higher with Jules
187 Ferry's laws that make instruction mandatory in France in 1880. However, no law leads the
188 lunch time and its supervision is let to associations. At the end of the World War II, French
189 children are among the worst fed and suffer from several vitamin deficiencies. The urge to feed
190 correctly the children increases the local initiative towards school canteens. The baby boom
191 consecutive to the end of the war accelerates school canteens policies. In 1970 and until the
192 early 80's the local initiatives are progressively integrated to municipal competencies. The
193 market gets bigger and viable, so private firms structured themselves to compete for the market.
194 In the early 2000's, nutrition comes back in the debate to fight against obesity with several
195 nutritional recommendations from the government. In 2007, the *Grenelle de l'Environnement*
196 adds new objectives for school canteens. They now have to provide organic and seasonal food
197 for 20% of the components of a meal each before 2012. Those objectives are far from being
198 reached but contribute to the generalization of organic food since the part of institutional
199 catering restaurants proposing organic food moved from 4% in 2006 to 58% in 2016 (Agence
200 Bio, Key Numbers¹⁰). In 2012, institutional catering in France is 3 billion meals, 73 000
201 restaurants, a revenue of 17 billion, an average of 4% of annual growth for the private firms of
202 institutional catering since 2000, and a total annual revenue growth of 0,4% (Ministry of

⁹ Historique de la restauration scolaire, www.ircen.com/_media/historique.pdf

¹⁰ <http://www.agencebio.org/la-bio-en-restauration-collective-les-chiffres>

203 Agriculture¹¹, 2014). The private market is really concentrated with a share of more than 80%
204 for the three biggest companies (Néorestaurantion, April 2013).

205 There are two ways for French municipalities to provide school canteens services: in-
206 house provision with private suppliers for the ingredients, and delegated provision and supply
207 to a unique private firm. Those two alternatives differ in the control and flexibility of the
208 ingredients supply. Delegated provision of the meals implies also to delegate the supply chain.
209 The private partner handles the supply as it pleases her. The relationships with wholesalers or
210 producers is of her concern and can evolve during the implementation of the contract. She can
211 choose to switch from one supplier to a new one if she is not satisfied with the first one. The
212 supply is then very flexible as she can change her address book according to the will of the
213 municipality. If the municipality desires more organic food, she can satisfy this will quickly
214 without costly renegotiations.

215 In-house provision does not allow the municipality to do without auction since the
216 municipality still has to buy the ingredients to cook. The auction is divided into several lots,
217 generally to match the demand for local and organic food, or to attract some specialized
218 suppliers such as frozen food suppliers. Once the market is awarded to different suppliers, the
219 municipality has to deal with those suppliers and only with them. The municipality has the
220 obligation to buy a given ingredient from the supplier that has won the market for this
221 ingredient. The catalog cannot evolve with the demand of the municipality. For instance if the
222 municipality has not anticipated its demand for fresh seasonal local strawberries, it will not be
223 able to get some¹². As a consequence, adaptation costs to the demand are high since adaptation
224 necessitate to go through formal new auctions.

225 Those differences on the way to control and act on the supply chain have other
226 consequences on the scrutiny of the supply process. Since suppliers may change over the
227 implementation of the contract, the traceability of the ingredients is less easy in the delegated
228 case. The quality demanded for the food might be altered or diminished compared with the
229 objectives given by the municipality. On the contrary, the municipality that controls the supply
230 chain, that is the in-house governance, may not be able to switch dramatically its supply policy

¹¹ <http://agriculture.gouv.fr/guide-de-la-restauration-collective-favoriser-proximite-et-qualite>

¹² There are some exceptions to that rule. A municipality can buy food for special events (picnic, Taste week, etc.) to certain conditions, but it can affect the supply only temporarily and with no significant extent.

231 but its suppliers are known and identified over time. The supplier that delivers strawberries will
232 always be the same. So the quality of the product is known as long as the market lasts.

233 The delegated governance is, then, less transparent than the in-house governance. The
234 municipality may still ask for quality and traceability indicators, the cost of control are high
235 especially as those controls would have to be done for each meal. Moreover, in that case the
236 scrutinizers will have to trust both the municipality and the private firm that relays the
237 information on quality. A documentary on institutional catering has shown that trust is not
238 always conceivable (France 5, 2016¹³), especially when the mayor has been elected on a close
239 race or is highly contested.

240 In sum, in-house governance rigidifies the supply chain for school canteens to the
241 detriment of adaptability to the demand. This type of governance also imposes extra
242 transactions costs as there are many partners and many contracts, and that those contracts must
243 be much specified and should anticipate any variation in the demand. Thus, we propose that in-
244 house governance for school canteens can be conceptualized as a rigid supply contract.

245 3 A Model of Contractual Rigidity Applied to Make-or-Buy

246 3.1 Model Description

247 Spiller (2009) identified the risk of third party opportunism as the key difference
248 between public and purely private contracts. Third parties make the public authority cautious
249 to mitigate political hazards when faced with potential contestation. This takes the form of more
250 specified and rigid public contracts compared with a situation with no political hazards for the
251 public authority. Following this intuition, Moszoro and Spiller (2012) modeled politicians'
252 contractual choices in presence of political risks. Politicians adapt their contractual choices to
253 mitigate hazards from opportunistic political opponents or pressure groups. We present their
254 model adapted to the make-or-buy choice.

255 Moszoro and Spiller open the path to an application of their theory to Public Private
256 Partnerships (2014, pp.17): "In the presence of TPO, public agents would pursue private
257 provision of public goods mostly in projects where — assuming internalization of contract
258 expenses by the public agent — expected political benefits gains from lower contract
259 specification and better private management offset increased *ex ante* contracting costs related

¹³ Les casseroles de la Restauration Collective, 3 May 2016, France 5.

260 to compliancy with cost-benefit assessment and higher *ex post* rigidity related to Key
 261 Performance Indicators.” Internal provision thus serves to protect public officials from
 262 allegation of misuse of public denies in heavily contested political markets. This is supported
 263 by numerous reports on the inefficiency of privatization of public services in general (Economic
 264 Planning Advisory Commission 1995; Harris 1996; House of Representatives’ Standing
 265 Committee on Communications Transport and Microeconomic Reform 1997; Industry
 266 Commission 1996; Quiggin 1996), and for French institutional catering as well (Report of the
 267 *Cour des Comptes*, 1998, 2004, 2005; Arte, 2015; France 5, 2016). In that context, an in-house
 268 school canteens service is considered as more specific and rigid than externalization to a private
 269 firm.

270 As contract specifity and rigidity increase, the cost of the contract increase through
 271 contracting and implementation costs. Schwartz and Watson (2012) highlight the trade-off
 272 made by mayors between the gains for compliant performances and the costs of writing
 273 contracts. In Moszoro and Spiller’s model, public officials know the risk of opportunism and
 274 the expected cost linked to it, and thus adapt the rigidity of the contract to minimize total costs
 275 that encompass writing costs and political costs:

$$276 \quad R^* = \arg \min_R [T_0 \rho(R) \tau(R) + K(P, R)]$$

$$277 \quad P \in [P^{min}; P^{bud}] = K_{pr} | R^*$$

278 Where R is the rigidity of the governance mode. T_0 is third parties’ benefits from an
 279 opportunistic challenge, corresponding to the political cost for the mayor. ρ is the likelihood of
 280 opportunistic challenge that decreases in governance rigidity. τ represents the likelihood of
 281 success of an opportunistic challenge and also decreases in governance rigidity. K is third
 282 parties’ adaptation costs that increase expenses associated with the contract. It represents the
 283 cost to a public official of internalizing the school canteens service and is composed with public
 284 adaptation costs K_{pu} and adaptation costs bore by the private firm K_{pr} . P is the price of the
 285 service, which is between the minimum price economically sustainable for the private firm and
 286 the price budgeted for this service by the municipality.

287 Several hypotheses come with that model. First, T_0 is known to third parties but
 288 unobserved by the mayor prior to the realization of opportunistic behaviors. Second, the gains
 289 from an opportunistic challenge for third parties depends on the local political environment. A
 290 too fragmented political opposition decrease the potential gains from an opportunistic
 291 challenge. Similarly, there has to be a political opposition to have third parties opportunism.

292 This second hypothesis implies that third parties challenge the governance of the service
293 only if the costs related to this challenge are lower than the expected benefits of this challenge:

$$294 \quad \rho \equiv \Pr[\tilde{T}_0 \zeta \tau(R) > c(R)]$$

295 Where \tilde{T}_0 represents the parties' overall benefits from an opportunistic challenge, randomly and
296 normally distributed. ζ is the concentration parameter of third parties competitive environment,
297 comprised between 0 (infinity of political opponents) and 1 (bipartisan political market).
298 Finally, c are the costs related to a challenge and increase with the rigidity R . These costs
299 include funds mobilized for a campaign against the choice of governance, lobbying,
300 reputational costs and time borne by the challengers.

301 Increasing the rigidity, thus, increases the costs of a challenge at the same time that it
302 decreases the likelihood of a success of this challenge, making a challenge less profitable and
303 consequently less likely.

304 3.2 Hypotheses: Governance Features under Political Contestability and Political 305 Groups' Pressure

306 We argue that the choice of governance of public services impacts the flexibility and
307 adaptation of the service to citizen's demands along with the discretionary power of the elected
308 official, and thus, the challenges she may face. As a consequence whether a service should be
309 procured in-house or externalized depends not only on the characteristics of the assets, public
310 finances, or ideology, but also on the potential local contestation. As the risk of challenge and
311 critics of the mayor's choices increase, the propensity of the mayor to internalize a public
312 service also does in order to protect herself and her majority from harmful contestations.

313 In the model presented in section 3.1 the likelihood for a political opponent to challenge
314 the mayor's choices will decrease with the level of rigidity of the feature of the public service.
315 When the potential gains (\tilde{T}_0) from a challenger are high, the mayor should then choose a more
316 rigid way to supply the service. These gains are potentially higher for politically contested cities
317 that is to say in cities where the mayor has been elected on the edge, or where change in power
318 are frequent. Indeed, for that case the local majority may switch during the next election if the
319 mayor loses only few of her political supporters. She, then, will be more watchful as the risk to
320 lose essential support become more serious leading to the following hypothesis:

321 **Hypothesis 1** *Elected officials are more likely to provide the school canteens service*
322 *in-house in politically contested municipalities.*

323 Moreover, the gains of a challenge have to be higher than the costs, but as the political
324 opposition is atomized (ζ decreases) the potential gains from a challenge become less likely.
325 Indeed, a challenge on a mayor's choice from a party might benefit to another one. Thus, we
326 test the following hypothesis:

327 **Hypothesis 2** *Elected officials are more likely to provide the school canteens service*
328 *in-house in an aggregated political opposition environment.*

329 Furthermore, groups of organized citizens besides political parties are also able to
330 challenge efficiently a mayor. Citizens do not have the same political sensitivity to every
331 subjects, but most of them have only few programmatic points of the mayor's program that are
332 able to make them shift their vote to another candidate or party. As one of the school canteens'
333 main issues are about quality of the food, regarded as sustainable supply or sanitarian issues,
334 we test the following hypothesis:

335 **Hypothesis 3** *Elected officials are more likely to provide the school canteens service*
336 *in-house where citizen's sensitivity to quality is high.*

337 Those groups have a higher influence in politically contested municipalities as their vote might
338 have a higher effect on the incumbent's score, leading to test the following corollary:

339 **Corollary** *Elected officials are more likely to provide the school canteens service*
340 *in-house where citizens sensitive to quality represent a relatively large group in politically*
341 *contested municipalities.*

342 We now discuss our empirical methodology and the data used to test these hypotheses.

343 4 Data and Empirical Methodology

344 4.1 Data Description

345 To carry out this study, we built a dataset of municipal school canteens, local and
346 national elections, as well as economic and demographic characteristics for the French region
347 *Île-de-France*. We choose this region as it concerns 12 million inhabitants, being almost 20%
348 of the French population, it is a very diverse geographic area with small (121 inhabitants) and
349 large (2 million inhabitants for Paris) cities, rich and poor, from the left and the right, etc.
350 Municipalities' characteristics are very heterogeneous in every aspect we are interested in. In
351 this section we describe the dataset used in our empirical analysis.

352 In this article, we aim at analyzing the effects of political hazard on the choice of
353 governance of local public services using the case of French school canteens, by considering
354 an in-house service to be of the rigid type. To do so, we first had to collect the mode of
355 governance of municipal school canteens as there are no aggregated data about it¹⁴. We used
356 the municipalities' website to find the information between in-house and externalization for the
357 920 municipalities of *Île-de-France* that have a school, which we know thanks to the database
358 *Base Permanente des Equipements 2012 de l'INSEE* that informs us about the number of school
359 canteens in a municipality, if any. We managed to collect 703 mode of governance with that
360 method, giving us 184 school canteens in-house and 519 externalized. The missing observations
361 are mainly very small municipalities that do not have a proper internet website to exploit. We
362 gathered under the 'in-house' label the municipalities that produce their own meals with
363 municipal or intercommunal employees. We also gathered under 'externalization' the cities that
364 buy their food or do a public private partnership, meaning that the private partner exploit the
365 city's facilities to cook the meals, as we cannot distinguish between those two cases. It is not
366 an important matter to us as a PPP is used when the mayor wants to externalize the service but
367 still has facilities to be exploited. Moreover, we used those data to construct a Local Preferences
368 variable to account for the influence of the neighboring municipalities on the choice of a mayor
369 to 'make' or 'buy' the school canteen service:

370
$$Preferences_i =$$

371
$$\begin{cases} \frac{Number\ of\ 'Make'\ in\ the\ Arrondissement-1}{Number\ of\ municipalities\ with\ school\ canteens\ in\ the\ Arrondissement} & if\ 'Make' = 1 \\ \frac{Number\ of\ 'Make'\ in\ the\ Arrondissement}{Number\ of\ municipalities\ with\ school\ canteens\ in\ the\ Arrondissement} & if\ 'Make' = 0 \end{cases}$$

372 The electoral base used in this paper come from the French Home Office. We have the
373 votes share per candidate and political label for the first and second rounds of 2014 and 2008
374 municipal election. For this latest, we only have the results for the municipalities with more
375 than 3,500 inhabitants. We aggregate the left labels to obtain the ideological share of the left at
376 the municipal election. We also generated a dummy for the municipalities with a voting system
377 by elimination, which are the municipalities with less than 3,500 inhabitants in 2008 and 1,000
378 inhabitants in 2014. We also have the results for every municipality at the 2014 presidential
379 election. Those databases help us to take into account the ideological drivers in the choice of

¹⁴ We would like to thank Catherine Pasquier (INRA) who has helped us to collect the data on the mode of governance. She made us win months of work.

380 the mode of governance for school canteens. We used this dataset to build our contestability
381 variables.

382 We also use the database *Population et Aire* of the INSEE so we could build the variable
383 *Complexity_i* that is the number of school canteens in the municipality divided by its superfcy,
384 and have the population. We get unemployment data through the dataset *Chômage 2011* from
385 the INSEE, and financial data thanks to Buso, Marty, and Tra (2014).

386 Finally, we got the third-parties dataset through *Familles* from the INSEE. We also
387 collected data for the number of shops directly on the brand's website. Idem with the presence
388 of an Agenda 21 at the municipal level¹⁵.

389 We now can test the link between mode of governance of school canteens service and
390 political hazards faced by local political majority.

391 4.2 Empirical Strategy

392 Our goal in this article is to highlight the impact of political contestability and pressure
393 groups on the mayor's choices regarding the governance of public services, particularly for
394 school canteens governance. To test this idea, we use a logit model:

$$395 \quad P('Make_i') = \alpha + \beta PC_i + \gamma X_i + \varepsilon_i$$

396 Where i represents a municipality, β a set of variables that measure the exposition of the elected
397 mayor to political contestability, X is a set of control variables, and $P('Make_i')$ is the probability
398 for a municipality to choose the 'make' mode of governance instead of the 'buy' one.

399 To estimate the coefficient on PC , we use a set of variables that captures the different
400 hypothesis of 3.2. We define *MarginOver6* as follows:

$$401 \quad MarginOver6_{i,t} \\ 402 \quad = \begin{cases} 1 & \text{if } W_{i,t} - RU_{i,t} > 0.06 \text{ for one - vote elections and with opposition} \\ 0 & \text{else} \end{cases}$$

403 Where $W_{i,t}$ is the winner's vote share of the first round for the municipal election t of
404 municipality i , and $RU_{i,t}$ is the runner-up parties' vote share at the same election. As a large
405 margin of victory means more flexibility in the choice of governance, then *MarginOver6* shall
406 decrease the propensity of the municipality to procure the school service in-house, *i.e.* to

¹⁵ Agenda21, Amap, Biocoop, Naturalia, La Ruche qui dit Oui !, Ventes à la ferme

407 ‘make’. We put the value 0 to elections where the voter vote for several persons. That is to say
 408 for municipalities with less than 1,000 inhabitants in 2014 and less than 3,500 inhabitants in
 409 2008. We have to do so because for those elections the first and second may have the same
 410 votes as they compete to be at the municipal council and not to be mayor.

411 We then define the Herfindahl-Hirschman Index *HHI* as follows:

$$412 \quad HHI_{i,t} = \begin{cases} A_{i,t}^2 + B_{i,t}^2 + C_{i,t}^2 + D_{i,t}^2 + \dots & \text{for one – vote elections and with opposition} \\ 0 & \text{else} \end{cases}$$

413 Where $A_{i,t}$ is the vote share of the first candidate at the municipal election i at time t , $B_{i,t}$ is the
 414 vote share of the second candidate, etc. The Herfindahl-Hirschman Index accounts for the
 415 concentration of the political offer. The larger it is, the more the political power is concentrated.
 416 We should then observe a negative sign of its coefficient.

417 With the same variables, we also define the Residual Herfindahl-Hirschman Index:

$$418 \quad \text{ResidualHHI}_{i,t} \\ 419 \quad = \begin{cases} \frac{B_{i,t}^2 + C_{i,t}^2 + D_{i,t}^2 + \dots}{1 - A_{i,t}^2} & \text{for one – vote elections and with opposition} \\ 0 & \text{else} \end{cases}$$

420 Unlike the HHI, ResidualHHI is larger when the political market is not concentrated. We shall
 421 then observe a positive impact on the propensity to ‘make’ as the less concentrated a political
 422 market, the more rigid the mode of governance to prevent from opportunistic behaviors from
 423 the political opposition. We finally add the variables *NumberList_{i,t}* and *SquareNumberList_{i,t}* to
 424 take into account the number of lists in competition. They take the value 0 when they are not
 425 for one-vote elections.

426 Concerning the citizen potential contestations, we created a dummy of the presence of
 427 at list one organic shop or alternative distribution point:

$$428 \quad \text{Shops}_i = \begin{cases} 1 & \text{if there is at least one organic or alternative shops in the municipality} \\ 0 & \text{else} \end{cases}$$

429 We also created a dummy for the case there are at least 2 organic shops or alternative
 430 distribution point, one dummy in case there is at least three of them, one dummy for the presence
 431 of a municipal Agenda21:

432 $2PShops_i$
 433 $= \begin{cases} 1 & \text{if there is at least two organic or alternative shops in the municipality} \\ 0 & \text{else} \end{cases}$

434

435 $3PShops_i$
 436 $= \begin{cases} 1 & \text{if there is at least three organic or alternative shops in the municipality} \\ 0 & \text{else} \end{cases}$

437

438 $Agenda21_i = \begin{cases} 1 & \text{if there is a municipal Agenda21} \\ 0 & \text{else} \end{cases}$

439 We also crossed this last dummy with *MarginOver6* to test the corollary:

440 $Agenda21xMarginUnder6_i = Agenda21_i * (1 - MarginOver6_i)$

441 Finally, we measured the percentage of families in the municipality *i* that have at least one
 442 children, *Families_i* that we also crossed with *MarginUnder6* to see if the importance of this
 443 pressure group is the same in contested and uncontested municipalities:

444 $FamiliesxMarginUnder6_i = \begin{cases} Families_i & \text{if } MarginOver6 = 0 \\ 0 & \text{else} \end{cases}$

445 We then get the following results.

446 5 Results

447 5.1 Descriptive Statistics

448 **Table 1:** Descriptive Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
HHI ₂₀₁₄	.2356	.2245	0	.7592	703
MarginOver6 ₂₀₁₄	.4552	.4983	0	1	703
ResidualHHI ₂₀₁₄	.1870	.2332	0	.8565	703
NumberList ₂₀₁₄	2.2034	2.2883	0	11	703
SquareNumberList ₂₀₁₄	10.0839	15.7381	0	121	703
Shops ₂₀₁₆	.4822	.5000	0	1	703
2PShops ₂₀₁₆	.2319	.4223	0	1	703
3PShops ₂₀₁₆	.1280	.3344	0	1	703
Agenda21 ₂₀₁₆	.1906	.3931	0	1	703
Agenda21xMarginUnder6	.0541	.2263	0	1	703

Families	43.4069	6.9843	18.6504	66.6414	703
FamiliesxMarginUnder6	24.2067	22.6912	0	66.6414	703
Service Firm (x1000)	1312.66	4190.933	7	58063	703
Preferences	.2491	.1941	0	.8889	703
LeftPresidential2012	.4147	.1007	.1390	.7211	703
LeftMunicipal2008	.3115	.4634	0	1	703
DebtInhabitant2009	1.9480	9.6303	-.0424	151.8824	703
NotList2014	.4083	.4919	0	1	703
Complexity	1.2402	1.8866	0	12.5418	703
UnemploymentRate2011	8.1508	1.6117	4.6	10.8	703
Population2011	14,861.46	26,660.81	131	236,715	703
SquarePopulation2011	9.31×10^8	4.20×10^9	17161	5.60×10^{10}	703

449

450

451

452 5.2 Empirical Model

453 Every regression we made takes the control variables of the regression (1). Political
454 variables are of the right sign and statistically significant. A left mayor in 2008 and the score
455 for a left candidate at the last presidential election increase the propensity of the mayors to
456 internalize the school canteen service.

457 Municipalities where voters elect the municipal council rather than the mayor, however, have
458 a lesser propensity to internalize the service. This might be due to the fact that this variable also
459 captures a population effect since those municipalities have less than 1000 inhabitants. We saw
460 by adding this variable that the effect of the population is smaller than without. Still, the larger
461 the population, the higher the propensity to internalize thanks to the exploitation of economies
462 of scale. Yet, after a certain level this effect does not seem to work anymore and we see a non-
463 linear effect of the population. It seems then that there is a minimum level of population needed
464 to be able to exploit economies of scale. If we change the variable Population by the number of
465 canteens in the city we obtain very similar results.

466 Another cause of modification of the choice of governance of the service highlighted by our
467 model is the local preferences of privatization. That is to say that the propensity of a
468 municipality to internalize the service is led by other municipalities' choices. Municipalities
469 tend to imitate the behavior of the neighbors.

470 Moreover, as the complexity of the service increases, measured as the density of school
 471 canteens in the municipality, the propensity to externalize this service increases as well. More
 472 surprising, the propensity to internalize the service increases with the number of services
 473 companies. This might be explained by the fact that mayors enjoy a local expertise that enables
 474 them to internalize the service instead of exploiting the local firm competition. The
 475 municipalities then exploit the competition on the labor market rather than the competition on
 476 the firm market.

477 The amount of debt by inhabitants and the unemployment rate are of the expected sign but not
 478 enough significant. A larger debt at the beginning of the mandate implies a smaller propensity
 479 to internalize during the mandate, while higher unemployment rate increases the propensity to
 480 internalize so that the mayor have a higher control on local employment. We get similar results
 481 with the deficit. The sign of the coefficient tend to change and be less significant as long as we
 482 take the data closer to the next municipal election.

483 When testing the hypothesis 1 and 2 (Table 2), we find coefficients of the right sign, but
 484 not always significant. We correctly find that a higher concentration of the political market
 485 leads to less internalization of the service. HHI is close to being significant but it is not.
 486 However, a large margin implies less internalization as expected, and the propensity to
 487 externalize increases with the atomization of the political opposition. We then might say,
 488 accordingly with our hypothesis 1 and 2, that political contestation increases rigidity and
 489 consequently the propensity of mayors to internalize the school canteen public service. We
 490 obtain similar results with other measures of margins.

Table 2: Political contestation and influence on the propensity to ‘make’ the municipal school canteens service						
<i>(Dependent Variable: ‘Make’=1 ; ‘Buy’=0)</i>						
	(1)	(2)	(3)	(4)	(5)	H
HHI₂₀₁₄	-	-.2060 (-1.50)	-	-	-	1-2
Margin Over6₂₀₁₄	-	-	-.0916** (-2.01)	-	-	1
Residual HHI₂₀₁₄	-	-	-	.1629* (1.88)	.3498** (2.14)	1-2
Number	-	-	-	-	-.0537	2

List₂₀₁₄					(-1.32)	
Square Number List₂₀₁₄	-	-	-	-	.0061 (1.14)	2
Service Firm (x1000)	.012* (1.72)	.0121* (1.74)	.0125* (1.79)	.0127* (1.81)	.0125* (1.79)	
Preferences	.5396*** (4.84)	.5371*** (4.82)	.5468*** (4.91)	.5375*** (4.83)	.5477*** (4.91)	
Left Presidential₂₀₁₂	.6254*** (2.70)	.6323*** (2.73)	.6707*** (2.89)	.6128*** (2.65)	.6135*** (2.65)	
Left Municipal₂₀₀₈	.1063*** (2.77)	.0995*** (2.57)	.0925** (2.37)	.1130*** (2.93)	.1094*** (2.83)	
Debt Inhabitant₂₀₀₉	-.0027 (-1.29)	-.00287 (-1.39)	-.0029 (-1.38)	-.0027 (-1.30)	-.0031 (-1.39)	
NotList₂₀₁₄	-.0745** (-1.96)	-.1638** (-2.32)	-.1445*** (-2.80)	-.0331 (-0.75)	-.0442 (-0.99)	
Complexity	-.0270* (-1.83)	-.0269* (-1.82)	-.0261* (-1.77)	-.0284* (-1.92)	-.0298** (-1.99)	
Unemployment Rate₂₀₁₁	.0098 (1.06)	.0100 (1.07)	.00897 (0.97)	.0096 (1.04)	.0092 (0.99)	
Population₂₀₁₁	.0035* (1.79)	.00319 (1.63)	.00332* (1.71)	.00287 (1.46)	.00217 (1.63)	
Square Population₂₀₁₁	-.137 (-1.45)	-.129 (-1.37)	-.132 (-1.41)	-.106 (-1.12)	-.154 (-1.51)	
Observations	703	703	703	703	703	
Adjusted R ²	.2320	.2334	.2353	.2348	.2346	

491

492 In Table 3, we want to test the Hypothesis 3 and its corollary. First, we see that the
493 number of organic shops and alternative way of distribution has an impact on the choice of
494 governance of the school canteen service. Having at least one of such a shop on its territory
495 increases the propensity to internalize the service. This is normal as there are such shops where
496 the citizens are willing to buy in it. They are then more sensitive to the quality of the food and
497 more willing to vote for an internalization of the school canteen service. However, once there

498 are more than one shop in the municipality, the propensity to internalize diminishes. This might
 499 be explained by two ways. First, when there is an important local offer of good quality of the
 500 food, then the citizens are less preoccupied with food at school since they still can have a good
 501 quality meal at home. Second, when those shops are well developed in a municipality, the trust
 502 toward the mayor and its relation to food might increase as she is considered to have attracted
 503 those shops. According to Spiller and Moszoro (2012), when trust toward public power
 504 increase, then rigidity decreases, and in our case it is the propensity to internalize that decreases.

505 Similarly, with equations (8) and (9), we see that an Agenda 21 seems to decrease the propensity
 506 to internalize. This might be because Agenda 21 is already a source of rigidity that do not need
 507 to be added in the mode of governance. Furthermore, we see that when the margin is low the
 508 Agenda 21 increases the propensity to ‘make’. This seems coherent since in that latter case,
 509 citizens sensitive to environmental issues are a swing electorate that could make the election.
 510 The mayor thus rigidifies the service to prevent those citizens to vote against her.

511 Equations (10) and (11) give another interesting result. Surprisingly, as the part of families with
 512 children increases in the population, the propensity to ‘make’ decreases when we would expect
 513 it to increase. In fact, we have to remember that the school canteen service is paid by every
 514 citizens through taxes. When the children are not a large part of the population then the mayor
 515 may reject the presumed over cost of internalization on the citizens with a limited impact on
 516 taxes. In the case where families with children are a large part of the population, the mayor
 517 should increase taxes by a lot since there are less people who contributes without benefitting of
 518 the service. Then, it is normal that the propensity to ‘make’ decreases with the increase in the
 519 part of families with children in the population. Nevertheless, when the margin is too low, the
 520 mayor cannot alienate the families with children, consequently the propensity to internalize
 521 increases with the part of families with children in the population in the case where there is a
 522 relatively high political contestability.

Table 3: Trust, sensitivity to the environment, and influence on the propensity to ‘make’ the municipal school canteens service								
<i>(Dependent Variable: ‘Make’=1 ; ‘Buy’=0)</i>								
	(1)	(6)	(7)	(8)	(9)	(10)	(11)	H
Shops₂₀₁₆	-	.0580* (1.73)	.0849** (2.33)	-	-	-	-	3
2PShops₂₀₁₆	-	-	-.1060**	-	-	-	-	3

			(-2.32)					
3PShops2016	-	-.0832 (-1.44)	-	-	-	-	-	3
Agenda212016	-	-	-	-.0610 (-1.41)	-	-	-	3
Agenda21x Margin Under6	-	-	-	-	.0898* (1.86)	-	-	Cor.
Families	-	-	-	-	-	-.0053** (-2.05)	-.0064** (-2.45)	3
Familiesx Margin Under6	-	-	-	-	-	-	.0020* (1.95)	Cor.
Service Firm (x1000)	.012* (1.72)	.0125* (1.79)	.0123* (1.76)	.0126* (1.80)	.0129* (1.85)	.0113 (1.62)	.0116* (1.66)	
Preferences	.5396*** (4.84)	.5490*** (4.92)	.5579*** (5.01)	.5366*** (4.81)	.5419*** (4.87)	.5334*** (4.79)	.5404*** (4.86)	
Left Presidential2012	.6254*** (2.70)	.6088*** (2.60)	.5947** (2.56)	.6456*** (2.79)	.6572*** (2.84)	.7123*** (3.04)	.7768*** (3.28)	
Left Municipal2008	.1063*** (2.77)	.1034*** (2.69)	.1046*** (2.73)	.1049*** (2.73)	.0999*** (2.59)	.1173*** (3.03)	.1041*** (2.65)	
Debt Inhabitant2009	-.0027 (-1.29)	-.0023 (-1.11)	-.0024 (-1.17)	-.0024 (-1.15)	-.0024 (-1.18)	-.0035* (-1.67)	-.0037* (-1.78)	
NotList2014	-.0745** (-1.96)	-.0613 (-1.59)	-.0686* (-1.79)	-.0790** (-2.07)	-.0846** (-2.20)	-.0676* (-1.77)	-.1365*** (-2.63)	
Complexity	-.0270* (-1.83)	-.0275* (-1.86)	-.0277* (-1.88)	-.0255* (-1.72)	-.0251* (-1.70)	-.0325** (-2.17)	-.0327** (-2.19)	
Unemployment Rate2011	.0098 (1.06)	.0108 (1.17)	.0099 (1.06)	.0105 (1.13)	.0111 (1.20)	.0127 (1.36)	.0118 (1.26)	
Population2011	.0035* (1.79)	.00377* (1.80)	.0038* (1.87)	.0038* (1.95)	.00360* (1.85)	.00318 (1.63)	.00304 (1.57)	
Square Population2011	-.137 (-1.45)	-.140 (-1.43)	-.142 (-1.48)	-.147 (-1.56)	-.137 (-1.46)	-.130 (-1.38)	-.128 (-1.36)	

Observations	703	703	703	703	703	703	703	
Adjusted R ²	.2320	.2344	.2380	.2331	.2347	.2355	.2386	

523

524 6 Limitations and Prospective Research

- 525 - We noticed that ResidualHHI seems to ‘eat’ the effect of Population and the voting
526 mode on the choice of governance. This might be due to the fact that it takes the value
527 0 for small municipalities.
- 528 - Dig into the differences of voting mode.
- 529 - Do the regressions with election 2008.

530 7 Concluding Remarks

- 531 - Results coherent with ‘make’ being more rigid than ‘buy’ in the case of municipal
532 school canteens.
- 533 - Larger political contestability increases rigidity of the mode of governance of public
534 school canteens, whether it is because of close race or a large number of political
535 opponent.
- 536 - There are other ways of measuring political contestability than voting results.
- 537 - Political officials are more prone to do electoral gifts when they are in a close race and
538 that they cannot alienate some voters groups.
- 539 - Corruption might not be corruption but only protections against political hazard. A
540 mayor might favor a local supplier only because if he does not the contract would be
541 challenged.
- 542 - It can be extended to private firms. Indeed, a private firm needs to protect its image
543 against rumors or issues with a subcontractor. After the Bangladesh’s earthquake that
544 stroke the clothing manufacturing sector, some enterprises signed the constraining
545 Accord on Fire and Building Safety to show the efforts they are doing to the public.
- 546 - Make may not be always the specific-type contract, so this make-or-buy analysis should
547 be adapted to each case of make-or-buy rigidity.

548

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614

615

616 9. Data Sources

617

618 Agenda21: <http://www.agenda21france.org/agenda-21-de-territoire/agenda-21->
619 [local/communes.html?order=4](http://www.agenda21france.org/agenda-21-de-territoire/agenda-21-local/communes.html?order=4)

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623 Naturalia: http://www.naturalia.fr/entreprise/nos_magasins.asp

624 La Ruche qui dit Oui!: <https://laruchequiditoui.fr/fr/assemblies#10/48.4875/2.3305>

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626 [france-1](http://www.acheteralasource.com/vente-directe-producteur/region-ile-de-france-1); <http://www.bienvenue-a-la-ferme.com/>; <http://www.mon->
627 [producteur.com/recherche/91-essonne](http://www.mon-producteur.com/recherche/91-essonne)

628

629 10. Annex

630 Equation (1):

Source	SS	df	MS	Number of obs	=	703
				F(10, 692)	=	22.20
Model	32.9985945	10	3.29985945	Prob > F	=	0.0000
Residual	102.842088	692	.148615734	R-squared	=	0.2429
				Adj R-squared	=	0.2320
Total	135.840683	702	.193505246	Root MSE	=	.38551

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
EtabService	.000012	6.99e-06	1.72	0.086	-1.70e-06	.0000258
RegieARR	.5395695	.1115198	4.84	0.000	.3206118	.7585273
GaucheT12012	.6254174	.2313881	2.70	0.007	.1711104	1.079724
Left2008	.1062942	.0384192	2.77	0.006	.030862	.1817265
DPop2009	-.0026768	.0020684	-1.29	0.196	-.0067379	.0013844
DummyScrutinList2014	-.0744917	.0380585	-1.96	0.051	-.1492158	.0002324
ComplexitySuperficie	-.0270267	.0147888	-1.83	0.068	-.056063	.0020095
TCHOMB1T12	.0098273	.0092867	1.06	0.290	-.0084063	.0280608
Pop	3.48e-06	1.94e-06	1.79	0.073	-3.30e-07	7.29e-06
Pop2	-1.37e-11	9.42e-12	-1.45	0.147	-3.22e-11	4.81e-12
_cons	-.2308958	.1108363	-2.08	0.038	-.4485115	-.0132801

631

632 Equation (2):

Source	SS	df	MS	Number of obs	=	703
				F(11, 691)	=	20.43
Model	33.3341642	11	3.03037857	Prob > F	=	0.0000
Residual	102.506519	691	.148345179	R-squared	=	0.2454
				Adj R-squared	=	0.2334
Total	135.840683	702	.193505246	Root MSE	=	.38516

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
HHI	-.2060359	.1369898	-1.50	0.133	-.475002	.0629303
EtabService	.0000121	6.99e-06	1.74	0.083	-1.59e-06	.0000258
RegieARR	.5370629	.1114307	4.82	0.000	.3182795	.7558462
GaucheT12012	.6322848	.2312225	2.73	0.006	.1783018	1.086268
Left2008	.0995177	.0386478	2.57	0.010	.0236366	.1753989
DPop2009	-.0028763	.0020708	-1.39	0.165	-.0069421	.0011895
DummyScrutinList2014	-.1638307	.0705278	-2.32	0.020	-.3023053	-.0253561
ComplexitySuperficie	-.0268688	.0147757	-1.82	0.069	-.0558795	.0021418
TCHOMB1T12	.0099636	.0092787	1.07	0.283	-.0082542	.0281815
Pop	3.19e-06	1.95e-06	1.63	0.103	-6.42e-07	7.02e-06
Pop2	-1.29e-11	9.42e-12	-1.37	0.172	-3.14e-11	5.62e-12
_cons	-.1433819	.1250919	-1.15	0.252	-.3889877	.1022239

633

634 Equation (3):

Source	SS	df	MS	Number of obs	=	703
				F(11, 691)	=	20.64
Model	33.5934697	11	3.05395179	Prob > F	=	0.0000
Residual	102.247213	691	.147969918	R-squared	=	0.2473
				Adj R-squared	=	0.2353
Total	135.840683	702	.193505246	Root MSE	=	.38467

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Marginp6	-.0916286	.0456988	-2.01	0.045	-.1813537	-.0019034
EtabService	.0000125	6.98e-06	1.79	0.074	-1.21e-06	.0000262
RegieARR	.5467833	.1113354	4.91	0.000	.3281871	.7653795
GaucheT12012	.6707177	.2319876	2.89	0.004	.2152326	1.126203
Left2008	.0924939	.0389486	2.37	0.018	.0160221	.1689658
DPop2009	-.0028503	.0020657	-1.38	0.168	-.0069061	.0012056
DummyScrutinList2014	-.1445398	.051601	-2.80	0.005	-.2458533	-.0432262
ComplexitySuperficie	-.0261233	.0147635	-1.77	0.077	-.05511	.0028634
TCHOMB1T12	.0089704	.0092764	0.97	0.334	-.0092428	.0271837
Pop	3.32e-06	1.94e-06	1.71	0.088	-4.91e-07	7.12e-06
Pop2	-1.32e-11	9.40e-12	-1.41	0.160	-3.17e-11	5.24e-12
_cons	-.1692419	.1147903	-1.47	0.141	-.3946215	.0561378

635

636 Equation (4):

Source	SS	df	MS	Number of obs	=	703
				F(11, 691)	=	20.58
Model	33.5210288	11	3.04736625	Prob > F	=	0.0000
Residual	102.319654	691	.148074753	R-squared	=	0.2468
				Adj R-squared	=	0.2348
Total	135.840683	702	.193505246	Root MSE	=	.3848

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ResidualHHI	.1628528	.0867001	1.88	0.061	-.0073746	.3330801
EtabService	.0000127	6.99e-06	1.81	0.070	-1.05e-06	.0000264
RegieARR	.5374595	.1113223	4.83	0.000	.318889	.7560301
GaucheT12012	.6128296	.2310638	2.65	0.008	.1591583	1.066501
Left2008	.112987	.0385144	2.93	0.003	.0373677	.1886063
DPop2009	-.002674	.0020647	-1.30	0.196	-.0067277	.0013798
DummyScrutinList2014	-.0330853	.0439218	-0.75	0.452	-.1193214	.0531509
ComplexitySuperficie	-.0284039	.01478	-1.92	0.055	-.057423	.0006153
TCHOMB1T12	.0096327	.0092704	1.04	0.299	-.0085688	.0278342
Pop	2.87e-06	1.97e-06	1.46	0.145	-9.89e-07	6.73e-06
Pop2	-1.06e-11	9.54e-12	-1.12	0.265	-2.94e-11	8.08e-12
_cons	-.2658717	.1121904	-2.37	0.018	-.4861467	-.0455967

637

638 Equation (5):

Source	SS	df	MS	Number of obs	=	703
Model	33.7938568	13	2.59952745	F(13, 689)	=	17.55
Residual	102.046826	689	.148108601	Prob > F	=	0.0000
				R-squared	=	0.2488
				Adj R-squared	=	0.2346
Total	135.840683	702	.193505246	Root MSE	=	.38485

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ResidualHHI	.3497753	.1636921	2.14	0.033	.02838	.6711705
NumberList	-.0536579	.0404994	-1.32	0.186	-.1331749	.0258591
NL2	.0060801	.00533	1.14	0.254	-.0043848	.0165451
EtabService	.0000125	7.00e-06	1.79	0.074	-1.21e-06	.0000263
RegieARR	.5476708	.1115916	4.91	0.000	.3285705	.7667711
GaucheT12012	.6134779	.231188	2.65	0.008	.1595605	1.067395
Left2008	.1093901	.038642	2.83	0.005	.0335199	.1852603
DPop2009	-.0030625	.0022053	-1.39	0.165	-.0073924	.0012674
DummyScrutinList2014	-.0442034	.0446841	-0.99	0.323	-.1319367	.04353
ComplexitySuperficie	-.0298134	.0149476	-1.99	0.046	-.0591617	-.0004652
TCHOMB1T12	.0092201	.009277	0.99	0.321	-.0089945	.0274347
Pop	3.54e-06	2.17e-06	1.63	0.103	-7.19e-07	7.79e-06
Pop2	-1.54e-11	1.02e-11	-1.51	0.131	-3.55e-11	4.63e-12
_cons	-.2532737	.1126414	-2.25	0.025	-.4744353	-.0321121

639

640 Equation (6):

Source	SS	df	MS	Number of obs	=	703
Model	33.6127951	12	2.80106626	F(12, 690)	=	18.91
Residual	102.227888	690	.148156359	Prob > F	=	0.0000
				R-squared	=	0.2474
				Adj R-squared	=	0.2344
Total	135.840683	702	.193505246	Root MSE	=	.38491

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
PVzero	-.0579694	.0335557	-1.73	0.085	-.1238528	.0079141
PVptrois	-.0831986	.0579173	-1.44	0.151	-.196914	.0305167
EtabService	.0000125	6.99e-06	1.79	0.074	-1.23e-06	.0000262
RegieARR	.5490221	.1116351	4.92	0.000	.3298369	.7682074
GaucheT12012	.608833	.2338598	2.60	0.009	.1496707	1.067995
Left2008	.1033756	.0384299	2.69	0.007	.0279219	.1788292
DPop2009	-.0023227	.0020974	-1.11	0.269	-.0064408	.0017954
DummyScrutinList2014	-.0612705	.0385574	-1.59	0.113	-.1369744	.0144335
ComplexitySuperficie	-.0275224	.0147824	-1.86	0.063	-.0565463	.0015016
TCHOMB1T12	.0108432	.0092922	1.17	0.244	-.0074012	.0290876
Pop	3.77e-06	2.10e-06	1.80	0.072	-3.42e-07	7.89e-06
Pop2	-1.40e-11	9.79e-12	-1.43	0.153	-3.32e-11	5.21e-12
_cons	-.203196	.111574	-1.82	0.069	-.4222612	.0158693

641

642 Equation (7):

Source	SS	df	MS	Number of obs	=	703
				F(12, 690)	=	19.27
Model	34.103686	12	2.84197383	Prob > F	=	0.0000
Residual	101.736997	690	.147444923	R-squared	=	0.2511
				Adj R-squared	=	0.2380
Total	135.840683	702	.193505246	Root MSE	=	.38399

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
PVzero	-.0849326	.0364443	-2.33	0.020	-.1564876	-.0133776
PVun	0	(omitted)				
PVpdeux	-.1059593	.0455857	-2.32	0.020	-.1954627	-.016456
EtabService	.0000123	6.96e-06	1.76	0.078	-1.39e-06	.000026
RegieARR	.5578582	.1113981	5.01	0.000	.3391383	.7765781
GaucheT12012	.5947039	.2326254	2.56	0.011	.1379653	1.051443
Left2008	.1045849	.0383428	2.73	0.007	.0293023	.1798675
DPop2009	-.0024197	.0020703	-1.17	0.243	-.0064845	.0016452
DummyScrutinList2014	-.0686475	.0382563	-1.79	0.073	-.1437603	.0064653
ComplexitySuperficie	-.0276547	.0147445	-1.88	0.061	-.0566042	.0012949
TCHOMB1T12	.0098569	.0092762	1.06	0.288	-.0083561	.0280698
Pop	3.79e-06	2.03e-06	1.87	0.062	-1.92e-07	7.77e-06
Pop2	-1.42e-11	9.65e-12	-1.48	0.140	-3.32e-11	4.69e-12
_cons	-.1603825	.1136535	-1.41	0.159	-.3835308	.0627658

643

644 Equation (8):

Source	SS	df	MS	Number of obs	=	703
				F(11, 691)	=	20.39
Model	33.292836	11	3.02662146	Prob > F	=	0.0000
Residual	102.547847	691	.148404988	R-squared	=	0.2451
				Adj R-squared	=	0.2331
Total	135.840683	702	.193505246	Root MSE	=	.38523

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Agenda21	-.0609848	.0433106	-1.41	0.160	-.1460208	.0240513
EtabService	.0000126	7.00e-06	1.80	0.073	-1.16e-06	.0000263
RegieARR	.5365676	.1114611	4.81	0.000	.3177246	.7554106
GaucheT12012	.6455536	.2316658	2.79	0.005	.1907003	1.100407
Left2008	.1048864	.038405	2.73	0.006	.0294819	.1802909
DPop2009	-.0023903	.0020769	-1.15	0.250	-.0064682	.0016876
DummyScrutinList2014	-.0789766	.0381647	-2.07	0.039	-.1539093	-.0040439
ComplexitySuperficie	-.0255373	.0148161	-1.72	0.085	-.0546273	.0035527
TCHOMB1T12	.0105347	.0092937	1.13	0.257	-.0077127	.028782
Pop	3.80e-06	1.95e-06	1.95	0.052	-3.55e-08	7.64e-06
Pop2	-1.47e-11	9.44e-12	-1.56	0.120	-3.32e-11	3.83e-12
_cons	-.2372686	.1108501	-2.14	0.033	-.454912	-.0196252

645

646 Equation (9):

Source	SS	df	MS	Number of obs	=	703
				F(11, 691)	=	20.57
Model	33.5086991	11	3.04624538	Prob > F	=	0.0000
Residual	102.331984	691	.148092596	R-squared	=	0.2467
				Adj R-squared	=	0.2347
Total	135.840683	702	.193505246	Root MSE	=	.38483

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
Agenda21xMarginp6	-.0897554	.0483612	-1.86	0.064	-.184708 .0051972
EtabService	.0000129	7.00e-06	1.85	0.065	-7.90e-07 .0000267
RegieARR	.5419433	.1113307	4.87	0.000	.3233562 .7605303
GaucheT12012	.6571848	.2316138	2.84	0.005	.2024335 1.111936
Left2008	.0998584	.038508	2.59	0.010	.0242517 .1754651
DPop2009	-.0024489	.0020684	-1.18	0.237	-.0065101 .0016122
DummyScrutinList2014	-.0845785	.0383783	-2.20	0.028	-.1599306 -.0092265
ComplexitySuperficie	-.0250957	.0147993	-1.70	0.090	-.0541527 .0039614
TCHOMB1T12	.0111221	.0092966	1.20	0.232	-.0071308 .029375
Pop	3.60e-06	1.94e-06	1.85	0.064	-2.11e-07 7.40e-06
Pop2	-1.37e-11	9.40e-12	-1.46	0.146	-3.22e-11 4.76e-12
_cons	-.2425617	.1108194	-2.19	0.029	-.4601449 -.0249784

647

648 Equation (10):

Source	SS	df	MS	Number of obs	=	703
				F(11, 691)	=	20.66
Model	33.6231475	11	3.05664977	Prob > F	=	0.0000
Residual	102.217535	691	.147926969	R-squared	=	0.2475
				Adj R-squared	=	0.2355
Total	135.840683	702	.193505246	Root MSE	=	.38461

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
Penfants	-.0052579	.0025589	-2.05	0.040	-.0102819 -.0002338
EtabService	.0000113	6.98e-06	1.62	0.106	-2.39e-06 .000025
RegieARR	.5334289	.1113012	4.79	0.000	.3148998 .751958
GaucheT12012	.7123448	.2346957	3.04	0.002	.2515426 1.173147
Left2008	.1173278	.0387044	3.03	0.003	.0413355 .1933202
DPop2009	-.0035069	.0021028	-1.67	0.096	-.0076355 .0006218
DummyScrutinList2014	-.0675993	.0381181	-1.77	0.077	-.1424405 .007242
ComplexitySuperficie	-.0325097	.0149938	-2.17	0.030	-.0619486 -.0030708
TCHOMB1T12	.0127151	.0093712	1.36	0.175	-.0056843 .0311144
Pop	3.18e-06	1.94e-06	1.63	0.103	-6.39e-07 6.99e-06
Pop2	-1.30e-11	9.40e-12	-1.38	0.167	-3.15e-11 5.46e-12
_cons	-.053701	.14023	-0.38	0.702	-.3290289 .2216269

649

650 Equation (11):

Source	SS	df	MS	Number of obs	=	703
				F(12, 690)	=	19.34
Model	34.1848954	12	2.84874128	Prob > F	=	0.0000
Residual	101.655787	690	.147327228	R-squared	=	0.2517
				Adj R-squared	=	0.2386
Total	135.840683	702	.193505246	Root MSE	=	.38383

Regie	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Penfants	-.0064223	.0026224	-2.45	0.015	-.011571	-.0012735
PenfantsxMarginm6	.0020474	.0010485	1.95	0.051	-.0000113	.004106
EtabService	.0000116	6.97e-06	1.66	0.097	-2.10e-06	.0000253
RegieARR	.5403596	.111132	4.86	0.000	.3221621	.7585572
GaucheT12012	.7767712	.2365319	3.28	0.001	.3123625	1.24118
Left2008	.104077	.0392174	2.65	0.008	.0270772	.1810768
DPop2009	-.0037423	.002102	-1.78	0.075	-.0078694	.0003847
DummyScrutinList2014	-.1365487	.051903	-2.63	0.009	-.2384554	-.034642
ComplexitySuperficie	-.032749	.0149639	-2.19	0.029	-.0621293	-.0033688
TCHOMB1T12	.011816	.0093635	1.26	0.207	-.0065683	.0302003
Pop	3.04e-06	1.94e-06	1.57	0.118	-7.72e-07	6.85e-06
Pop2	-1.28e-11	9.38e-12	-1.36	0.174	-3.12e-11	5.65e-12
_cons	-.0393071	.1401394	-0.28	0.779	-.3144579	.2358437