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".

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

1 Introduction

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

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

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

On the contrary, direct governance necessitate to contract only for food supply since the municipal employee would cook the ingredients[6]. In that case the municipality tenders for the food and chooses directly the suppliers. It is then stuck with those suppliers for four years unless

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[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 supplier[7]. 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 contract[8]. 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

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[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

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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.

2 Theoretical Framework

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 (IRCEN[9]). 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 Numbers[10]). 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

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[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 Agriculture[11], 2014). The private market is really concentrated with a share of more than 80%

204 for the three biggest companies (Néorestauration, 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 some[12]. 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

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[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.

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

The delegated governance is, then, less transparent than the in-house governance. The municipality may still ask for quality and traceability indicators, the cost of control are high especially as those controls would have to be done for each meal. Moreover, in that case the scrutinizers will have to trust both the municipality and the private firm that relays the information on quality. A documentary on institutional catering has shown that trust is not always conceivable (France 5, 2016[13]), especially when the mayor has been elected on a close race or is highly contested.

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

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

3.1 Model Description

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

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

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

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

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

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

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

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

Several hypotheses come with that model. First, T_0 is known to third parties but unobserved by the mayor prior to the realization of opportunistic behaviors. Second, the gains from an opportunistic challenge for third parties depends on the local political environment. A too fragmented political opposition decrease the potential gains from an opportunistic 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 is the costs related to this challenge are lower than the expected benefits of this challenge:

294   $$\rho \equiv \Pr[\widetilde{T}_0 \varsigma \tau(R)^{\cdot} > c(R)]$$

295   Where $\widetilde{T}_0$ represents the parties' overall benefits from an opportunistic challenge, randomly and

296   normally distributed. ς 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 $(\widetilde{T}_0)$ 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 (ς 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.

4 Data and Empirical Methodology

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 it[14]. 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
$$\begin{cases} \dfrac{Number\ of\ 'Make'\ in\ the\ Arrondissement-1}{Number\ of\ municipalities\ with\ school\ canteens\ in\ the\ Arrondissement} & if\ 'Make' = 1 \\[2ex] \dfrac{Number\ of\ 'Make'\ in\ the\ Arrondissement}{Number\ of\ municipalities\ with\ school\ canteens\ in\ the\ Arrondissement} & if\ 'Make' = 0 \end{cases}$$

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

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[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 superficy,

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 level[15].

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:

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

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     $MarginOver6_{i,t}$

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

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

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[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    $HHI_{i,t} = \begin{cases} A_{i,t}^2 + B_{i,t}^2 + C_{i,t}^2 + D_{i,t}^2 + \cdots & for\ one-vote\ elections\ and\ with\ opposition \\ 0\ else \end{cases}$

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    $ResidualHHI_{i,t}$

419    $= \begin{cases} \dfrac{B_{i,t}^2 + C_{i,t}^2 + D_{i,t}^2 + \cdots}{1 - A_{i,t}^2} & for\ one-vote\ elections\ and\ with\ opposition \\ 0\ else \end{cases}$

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    $Shops_i = \begin{cases} 1\ if\ there\ is\ at\ least\ one\ organic\ or\ alternative\ shops\ in\ the\ municipality \\ 0\ else \end{cases}$

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

434

435 $$3PShops_i$$

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

437

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

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

445   We then get the following results.

5 Results

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
LeftPresidential$_{2012}$	.4147	.1007	.1390	.7211	703
LeftMunicipal$_{2008}$	.3115	.4634	0	1	703
DebtInhabitant$_{2009}$	1.9480	9.6303	-.0424	151.8824	703
NotList$_{2014}$	.4083	.4919	0	1	703
Complexity	1.2402	1.8866	0	12.5418	703
UnemploymentRate$_{2011}$	8.1508	1.6117	4.6	10.8	703
Population$_{2011}$	14,861.46	26,660.81	131	236,715	703
SquarePopulation$_{2011}$	9.31×10^8	4.20×10^9	17161	5.60×10^{10}	703

449

450

451

5.2 Empirical Model

452

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 expertize 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* (Dependent Variable: 'Make'=1 ; 'Buy'=0)						
	(1)	(2)	(3)	(4)	(5)	H
HHI$_{2014}$	-	-.2060 (-1.50)	-	-	-	1-2
Margin Over6$_{2014}$	-	-	-.0916** (-2.01)	-	-	1
Residual HHI$_{2014}$	-	-	-	.1629* (1.88)	.3498** (2.14)	1-2
Number	-	-	-	-	-.0537	2

List$_{2014}$					(-1.32)	
Square Number List$_{2014}$	-	-	-	-	.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 Presidential$_{2012}$	.6254*** (2.70)	.6323*** (2.73)	.6707*** (2.89)	.6128*** (2.65)	.6135*** (2.65)	
Left Municipal$_{2008}$	.1063*** (2.77)	.0995*** (2.57)	.0925** (2.37)	.1130*** (2.93)	.1094*** (2.83)	
Debt Inhabitant$_{2009}$	-.0027 (-1.29)	-.00287 (-1.39)	-.0029 (-1.38)	-.0027 (-1.30)	-0031 (-1.39)	
NotList$_{2014}$	-.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 Rate$_{2011}$	.0098 (1.06)	.0100 (1.07)	.00897 (0.97)	.0096 (1.04)	.0092 (0.99)	
Population$_{2011}$	.0035* (1.79)	.00319 (1.63)	.00332* (1.71)	.00287 (1.46)	.00217 (1.63)	
Square Population$_{2011}$	-.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

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

	(1)	(6)	(7)	(8)	(9)	(10)	(11)	H
Table 3: *Trust, sensitivity to the environment, and influence on the propensity to 'make' the municipal school canteens service* *(Dependent Variable: 'Make'=1 ; 'Buy'=0)*								
Shops$_{2016}$	-	.0580* (1.73)	.0849** (2.33)	-	-	-	-	3
2PShops$_{2016}$	-	-	-.1060**	-	-	-	-	3

			(-2.32)					
3PShops$_{2016}$	-	-.0832 (-1.44)	-	-	-	-	-	3
Agenda21$_{2016}$	-	-	-	-.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 Presidential$_{2012}$	.6254*** (2.70)	.6088*** (2.60)	.5947** (2.56)	.6456*** (2.79)	.6572*** (2.84)	.7123*** (3.04)	.7768*** (3.28)	
Left Municipal$_{2008}$	.1063*** (2.77)	.1034*** (2.69)	.1046*** (2.73)	.1049*** (2.73)	.0999*** (2.59)	.1173*** (3.03)	.1041*** (2.65)	
Debt Inhabitant$_{2009}$	-.0027 (-1.29)	-.0023 (-1.11)	-.0024 (-1.17)	-.0024 (-1.15)	-.0024 (-1.18)	-.0035* (-1.67)	-.0037* (-1.78)	
NotList$_{2014}$	-.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 Rate$_{2011}$	.0098 (1.06)	.0108 (1.17)	.0099 (1.06)	.0105 (1.13)	.0111 (1.20)	.0127 (1.36)	.0118 (1.26)	
Population$_{2011}$	.0035* (1.79)	.00377* (1.80)	.0038* (1.87)	.0038* (1.95)	.00360* (1.85)	.00318 (1.63)	.00304 (1.57)	
Square Population$_{2011}$	-.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	

6 Limitations and Prospective Research

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

7 Concluding Remarks

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

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9. Data Sources

Agenda21: http://www.agenda21france.org/agenda-21-de-territoire/agenda-21-local/communes.html?order=4

Amap: http://www.amap-idf.org/trouver-une-amap_33.php

Biocoop: http://www.biocoop.fr/magasins-bio/Trouver-mon-magasin-Biocoop?postal_code=&region=1047&department=0

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

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

Ventes à la ferme: http://www.acheteralasource.com/vente-directe-producteur/region-ile-de-france-1; http://www.bienvenue-a-la-ferme.com/; http://www.mon-producteur.com/recherche/91-essonne

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
-------------+----------------------------------         F(13, 689)      =     17.55
       Model | 33.7938568         13  2.59952745         Prob > F        =    0.0000
    Residual | 102.046826        689  .148108601         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
-------------+----------------------------------         F(12, 690)      =     18.91
       Model | 33.6127951         12  2.80106626         Prob > F        =    0.0000
    Residual | 102.227888        690  .148156359         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):

30

```
      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
----------------------------------------------------------------------------------------
```

651