Public or Private?
Cultural versus Economic Factors*

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Abstract

Public or private? The debate surrounding the mode of provision of public services is intense and passionate in most developed and developing countries. While the empirical and theoretical literature on this issue has mostly considered technical dimensions (contractual and public choice aspects), this paper emphasizes the cultural dimension related to public authorities' make-or-buy decisions by documenting the causal effect of culture on the choice of how public services are provided. We build a representative database for contracting choices of municipalities in Switzerland and exploit the discontinuity at the Swiss language border to identify the causal effect of culture. We find that French-speaking border municipalities are 50% less likely to contract with the private sector than their German-speaking adjacent municipalities and that the cultural factor is highly more important than economic factors in municipalities' make-or-buy decisions. We show that systematic differences in confidence in the public administration and private companies contribute to this difference.

Keywords: Contracting-out, Make-or-buy decision, Local public services, Culture and identity, Languages, Regression discontinuity

JEL codes: D23, D73, H11, L33, Z10

1 Introduction

Public or Private? The last twenty-five years have seen intense debate about whether the private sector can provide a variety of public services more effectively than public authorities. This debate has concerned services ranging from education, healthcare and transportation to trash collection and street repair. This debate is still going on, as highlighted by the recent US experience with the crossing of the Ohio river[1]. Since 1969, the Indiana and Kentucky States decided to build a new crossing over the Ohio river, so as to have a better connection between southern Indiana and the city of Louisville in Kentucky. It took them more than four decades to reach the actual plan, known as the *Ohio River Bridges* project, which calls for two new bridges. One crossing will be in downtown Louisville and is being built by Kentucky, and the other will be slightly out

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[1] *The Economist*, "Building infrastructure: A river runs through it" March 2nd, 2013

of town, and is being built by Indiana. But while Indiana has legislation that allows for public-private partnerships (PPP), Kentucky does not. So the downtown bridge will be procured the traditional way (no contracting out of the operating of the bridge), whereas the out-of-town crossing will use a public private partnership (a global contract between a public authority and a private provider in which the same private provider is associated in the building phase of the project but also in the operating phase)[2]. These states have then unwittingly created one of the world's best natural experiments for testing two methods of procuring infrastructure.

This debate, beyond the normative question of the proper scope of government, has also raised the positive question of what determines public authorities make-or-buy decisions in practice. The literature so far has highlighted two accounts. One relies on transaction costs and is similar to private sector make or buy decisions, that is, decisions are guided by efficiency considerations. A central prediction of these efficiency-based theories is that services that are asset specific or difficult to measure are less likely to be contracted with a private operator (Williamson, 1985; Hart, Shleifer and Vishny, 1997). This is a pure economic trade-off, taking as given the preferences of the city administrator. But these preferences may be subject to political considerations, which are at the heart of the other account: The private benefits to politicians of keeping service provision inside the government. This view holds that factors (e.g., citizen discontent, tight budgets) that reduce the political benefits from in-house provision make private provision more likely. A mixture of both views is given by Levin and Tadelis (2010): Services that are characterized by high transaction costs of contracting and services that are ranked high by city managers in terms of resident sensitivity to quality are less likely to be privately provided.

Thus, the economic literature has mostly considered technical dimensions related to the choice of the mode of public services provision. However, we could also expect a more cultural dimension involved in theses choices. Guiso, Sapienza and Zingales (2006) define culture as: *"customary beliefs and values that ethnic, religious and social groups transmit fairly unchanged from generation to generation"*. These customary beliefs and values affect individual as well as group behaviours. Therefore, institutional arrangements, such as contractual choices for public-services provision, reflect cultural values: *"Cultural value emphases shape and justify individual and group beliefs, actions, and goals. Institutional arrangements and policies, norms, and everyday practices express underlying cultural value emphases in societies."* (Schwartz, 2004). Among others, Algan and Cahuc (2010) establish a link between cultural differences and the fact that countries adopt different policies related to employment protection and unemployment insurance. Eugster, Lalive, Steinhauer and Zweimüller (2011) show in turn that culture has a causal effect on the preferences for redistributive policies and hence on implemented redistributive policies.

Our goal in this paper is threefold. First, we ask whether cultural differences may help to explain the differences in the actual make-or-buy decisions of public authorities, *ceteris paribus*. Second, and more importantly, we investigate the relative importance of economic versus cultural factors in these decisions. Third and finally, we investigate the channels possible to explain the impact of culture.

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[2]Maskin and Tirole (2008) define a public private partnership as following : "A long-term development and service contract between government and private partner. The government typically engages its partner both to develop the project and to operate and service it. The partner may bear substantial risk and even raise private finance. Its revenue derives from some combination of government payments and user fees."

To this aim, we run a thorough analysis of the determinants of the make-or-buy decision for the provision of public services at the level of Swiss municipalities. The municipal level is an interesting case to deal with contracting choices as many municipalities make decisions about service provision in parallel while they provide a wide range of services, from very simple to very complex ones. Switzerland, with its four languages that are geographically clearly delimited, is a great case to study the impact of culture on economic decisions, in particular related to the mode of provision of public services. The explanations of the links between culture and language are manifold. The so-called *Sapir–Whorf hypothesis* (Sapir (1921), Whorf (1940)) focuses on intrinsic characteristics of the languages. Grammatical structures as well as the vocabulary are supposed to affect the perception of concepts (e.g. time and space, colors, past, present and future) and the worldview. Recent contributions in this field include Boroditsky, Fuhrman and McCormick (2011), who show that language patterns provide Mandarin speakers and English speakers with a very different perception of the concept of time. Language also captures the vertical and horizontal transmission of values (Bisin and Verdier, 2001). The vertical channel to the extent that the native language to which we are exposed during childhood and adolescence is likely to be an important predictor of our values during adulthood. The horizontal channel in the sense that language is central to any type of social interaction. People sharing a common language are more likely to form a social network, and then, to share common values and common cultural traits. Finally, amongst the channels of transmission of cultural traits, language is the mostly inherited factor, which allows avoiding any problem of reverse causality.

In addition, a particular feature of Switzerland is the *Roestigraben*, the so-called language border between French and German areas. Within a distance of 5 km, the fraction of French-administratively speaking Swiss municipalities falls from 100 % to 0% (and vice versa for German-administratively speaking Swiss municipalities), so that we have a sharp cut off between French and German areas. However, there is no associated change in geography at this language border, and large parts of the language border run *within* Swiss states (cantons). This is important since most policies in Switzerland are set at the cantonal (rather than the federal) level. Thus, within these bilingual states, municipalities of different sides of the language border face the same regional set of policies and institutions. Within-canton contrasts on either side of the border measure therefore to what extent public authorities make different make-or-buy decisions for public-services delivery even if they face identical levels of policy guidelines. In addition, as language membership of municipalities is not randomly assigned, it is not possible to identify the average effect of being French or German. From an econometric point of view, these features call for a spatial regression discontinuity design (RDD), *i.e.* we contrast *border* municipalities on either side of the *Roestigraben*. The assumption is that municipalities just above and just below the cut off — or more precisely, of either side of the border — are very similar to the extent that firms and individuals' location decisions are likely to be balanced on either side of the language border [3].

The results show a very large impact of the language border on the modes of provision of public services in Swiss municipalities. We find that French-speaking border municipalities are 50% less likely to contract with the private sector than their German-speaking adjacent municipalities. In addition, we show that the cultural factor is highly

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[3]This *Roestigraben* identification strategy is followed by some studies to investigate the effects of culture on political or economic outcomes, e.g. Brügger, Lalive and Zweimüller (2009), Eugster et al. (2011), Eugster and Parchet (2011).

more important than economic factors in municipalities' make-or-buy decisions.

The next section of this paper provides an abbreviated overview of the institutional background. Section 3 provides a literature review on the determinants of contracting choices for the provision of public services. Section 4 provides a detailed description of the data we use. Section 5 presents our estimated equation and contains our estimation results. Section 6 discusses the transmission channels and Section 7 concludes.

2   Institutional Background

2.1   Languages in Switzerland

Switzerland was founded in 1291 by the alliance of the three States of Uri, Schwyz and Nidwalden, the so-called *Waldstätten* (literally *forest States*)[4]. Swiss territory expended through successive enlargements but remains confined to the German-speaking area until several campaigns in the first decade of the 15th century leading to the annexation of some Italian-speaking territories in the actual state of Ticino as well in the Lombardy and the Piedmont; however, these regions had a status of subject territories. The first territorial expansions in the French-speaking occurred as a result of Burgundian Wars (1474-1477) and the entry of Fribourg in the Confederation (1481). At the federal level, the Constitution of 1848 recognized German, French and Italian as the official national languages of the Swiss Confederation. Romansh is also considered as a national language (since 1938) but it is subject to a special status[5]. Note that the term *Romansh* encompasses five languages plus a standard language (*Dachsprache*) called *Rumantsch Grischun* created in 1982. In year 2000, 72.5 percent of Swiss citizens were German-speaking, 21.0 percent French, 4.3 percent Italian and 0.6 percent Romansh. Amongst the 26 Cantons, 4 are French-speaking[6], one is Italian-speaking and 17 are German-speaking. Three states are officially bilingual French-German (Bern, Fribourg and Valais) and one is trilingual (the Graubünden state: Romansh, German and Italian). If the French-German border does not correspond, in general, to important topological barriers, the Italian-speaking area for its part is clearly separated from the other language areas by mountain chains. Finally, in the trilingual Graubünden state, the language areas correspond mainly to valls.

The Figure 1 displays a map of Switzerland shaded according to the administrative language of each municipality. We can observe in particular a sharp cut off between French and German areas. Within a distance of 5 km, the fraction of French-administratively speaking Swiss municipalities falls from 100 % to 0% (and vice versa for German-administratively speaking Swiss municipalities)[7]. However, there is no associated change in geography at this language border, and large parts of the language border run *within* Swiss states (cantons). Note also that the administrative language of municipalities have not changed over time.

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[4]The informations provided in this historical part are taken from Büchi (2001) as well as Ducrey, ed (1983).

[5]*"The official languages of the Confederation shall be German, French and Italian. Romansh shall also be an official language of the Confederation when communicating with persons who speak Romansh."* (Art. 70§1 of the Federal Constitution)

[6]The Jura state is officially a French-speaking canton, even if one of its municipalities is German-speaking.

[7]To be completely precise, we are aware of one municipality in the French part, called Mont Tramelan, which administrative language is German since 1952.
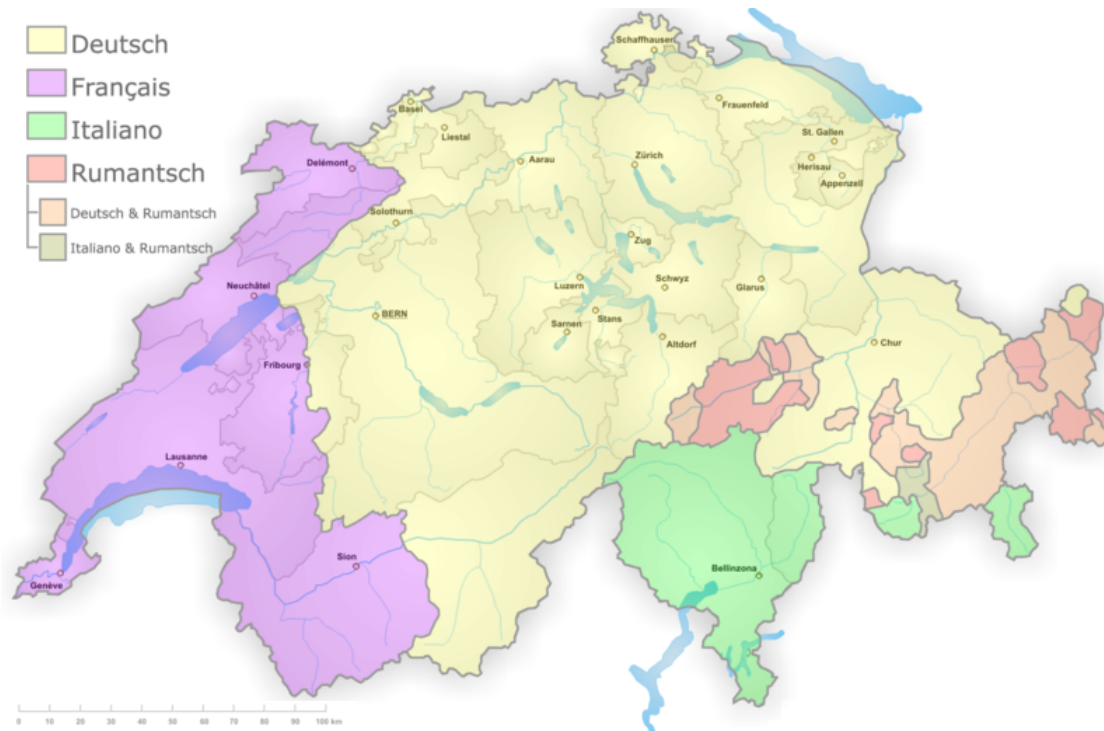
Figure 1: Administrative Language, by Municipality
Source: http://claudine-schmid.ch/presentation-2

2.2   Municipalities in Switzerland

Switzerland is composed of 26 Cantons, divided in 184 districts that are further divided in 2584 communes (in 2010). Compared to other European countries, Switzerland is one of the countries where the municipalities are amongst the smallest, with a median size of 1'152 inhabitants and 26.7 percent of municipalities having less than 500 inhabitants. The smallest municipality (Corippo TI) has only 15 inhabitants, whereas the biggest, Zurich, has about 370'000 inhabitants.

The territorial structures have remained essentially unchanged since the creation of the Federal State in 1848, with the exception of the creation of the Canton of Jura in 1979. The number of municipalities has only slightly decreased since 1848, decreasing from 3'203 to 2'584, which means a reduction of less than 20 percent. Furthermore, the main part of this reduction is accounted by a couple of Cantons, especially Thurgau, Fribourg and Tessin, who have pursued incentive policies to foster voluntary merger of municipalities. This volontary policy contrasts with some countries who achieved ambitious reforms of the territorial structures, leading to a drastic reduction of the number of municipalities. This was the case for example in Belgium who virtually divided the number of its municipalities by four in 1977, as well as Denmark who divided this number by 2.7 in 2007.

The executive power is exerted by an elected government which is headed by a mayor. As it is the case in the Federal government, the mayor has not extended decision power than his colleagues, but acts as a *primus inter pares*. An important feature of Swiss municipalities is that in most municipalities — especially the small and medium ones — local executive members are not elected as representatives of political parties. This mitigates the impact of ideological choices, but more importantly this gives them a bigger independence and thus greatly reduces the risk of conflicts between the general interest

Table 1: Size of Swiss municipalities

Population	Municipalities				Inhabitants			
	Number	Cum. Number	Percentage	Cum. Percentage	Number	Cum. Number	Percentage	Cum. Percentage
0-100	82	82	3.17%	3.17%	5'163	5'163	0.07%	0.07%
101-200	143	225	5.53%	8.71%	21'305	26'468	0.27%	0.34%
201-500	466	691	18.03%	26.74%	160'631	187'099	2.04%	2.38%
501-1'000	504	1'195	19.50%	46.25%	374'739	561'838	4.77%	7.14%
1'001-5'000	1'057	2'252	40.91%	87.15%	2'468'734	3'030'572	31.39%	38.54%
5'001-10'000	194	2'446	7.51%	94.66%	1'344'092	4'374'664	17.09%	55.63%
10-50'000	128	2'574	4.95%	99.61%	2'154'508	6'529'172	27.40%	83.03%
50-100'000	4	2'578	0.15%	99.77%	256'668	6'785'840	3.26%	86.29%
> 100'000	6	2'584	0.23%	100.00%	1'078'172	7'864'012	13.71%	100.00%

and partisan interests.

On the other hand, there exist different modes of legislative power. In some municipalities, the legislative power is exerted by an elected parliament whereas in other ones this power is exerted by a general meeting of all citizens. Depending from the canton, the choice of a legislative mode may be left to the municipalities or it may be imposed by the canton. In general, elected parliaments tend to exist in cities and in larger municipalities whereas general meetings are more common in small to medium municipalities. Finally, even in municipalities with elected parliaments, citizens may vote on some issues, through popular initiatives and referenda. The scope of these political rights are decided at the cantonal level.

3 Literature Review on the Determinants of Government Contracting Choices

Both the theoretical and empirical literature related to the *make-or-buy* decision of public authorities services divide in two streams, namely an efficiency-based approach and a public choice approach.

3.1 Efficiency-based determinants

The transaction-cost approach of the *make-or-buy* decision may be represented as the result of two opposing kinds of forces: centrifugal forces (economies of scale, costs of internal organization) fostering the market (*buy*) solution, and centripetal forces (transaction costs) fostering the internal production (*make*). Factors that increase the transaction costs are expected to increase the propensity of public authorities to keep the provision in-house, or possibly to contract with other public jurisdictions. By contrast, factors that diminishes the transaction costs foster the contracting out with the private sector.

Contractual difficulty Knowing that opportunistic behaviour increases transaction costs, an important issue is to know which parameters foster such behaviour. The first relevant element is the difficulty of specifying and measuring the outcome. The more difficult it is for the public authority to specify precisely *ex ante* in the contract relevant and measurable properties of the quality of the service considered, the more likely the

private provider will reduce its costs at the expense of the service quality (Hart, 2003). Moreover, a weak measurability also means that *ex post* control mechanisms are to be costly, while at the same time being necessary because of opportunism. As a consequence, measuring difficulty is a parameter which facilitates opportunistic behaviour, and thus increases transaction costs. This question has been addressed by Hart et al. (1997) who showed that, whereas the cost of an inmate is about 10 percent smaller in private prisons than in public ones, the reason to these economies is to be found essentially in a reduction in labour costs. Private prisons use to have a smaller staff and to hire less qualified workers. The consequence of this is that the reported number of injuries to staff and prisoners as well as the number of incidents of the use of force are significantly higher in private correctional institutions that in public.

The contracting difficulty is empirically captured through survey data. The results of the empirical studies are overall in line with the theoretical prediction (Brown and Potoski (2003), Levin and Tadelis (2010), except for Pouder (1996))[8], and the effect can be substantial: Levin and Tadelis (2010) find that a one standard deviation increase in contracting difficulty is associated with about forty per cent less private contracting. In addition, Brown and Potoski (2003) andLevin and Tadelis (2010) show that higher difficulties in measuring the quality of a service fosters a production by the public sector through an increase in the propensity to stipulate contracts with other governments. In other words, measuring difficulty fosters neither the *make* (in the sense of an internal production), nor the *buy* (in the sense of contracting out with the private sector), but an intermediary solution allowing to take profit from the advantages of contracting out while at the same time fending off the risks associated with such difficulty.

Uncertainty   Renegotiation may have to occur because unforeseen circumstances emerge over the duration of the contract. This requires an efficient adaptation mechanism for contractual terms to the extent that opportunistic agents may try to take profit from the result of changing circumstances. As the adaptation of the contract is costly, the theoretical prediction is that uncertainty fosters the *make* decision, *ceteris paribus*. Athias and Saussier (2010) show in particular that high degree of uncertainty anticipated by the contracting parties (survey-based measured) leads to more flexible price provisions.

Asset specificity   Whatever the ease or difficulty of measurement, another essential factor which fosters opportunism is the so-called *hold up problem* (Klein, Crawford and Alchian, 1978; Williamson, 1979; Williamson, 1985). This problem occurs when a party would incur a significant loss if the other party withdrew from the contract. In that case, the latter would be able to behave opportunistically, putting pressure on the former to obtain some advantages and threatening it to terminate the contract if it does not accept to renegotiate the conditions. This *ex post* asymmetry in bargaining power can occur when one party has done an important investment in specific assets, e.g. human or physical assets whose productivity would be significantly lower when used for purposes other than those initially intended. This investment is then a sunk cost for the firm which has made it. As a result, higher degree of asset specificity is less likely to be associated with *buy* decision, *ceteris paribus*. Empirical studies most often do not find a clear relationship between contracting choices and their survey measure of asset specificity. This is mainly

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[8]These empirical studies analyse the make-or-buy choices based on samples of services in U.S. cities (10 services in 88 cities in Pouder (1996), 64 services in 1449 cities in Brown and Potoski (2003) and 64 services in 1043 cities in Levin and Tadelis (2010)).

due to issues with their specificity measure. For instance, Brown and Potoski (2003) define a service as specific if it uses assets that are service-specific, not relationship-specific.

Competition   In addition to the transaction costs related issues presented above, another source of inefficiency may come from the lack of competition of the private market. A large empirical literature supports the intuitive fact that the degree of competition of the private market is a key issue affecting the relative cost-efficiency of public and private procurement. Numerous studies show that in the best case, a non-competitive market, even if it is regulated, does not provide the service at a lower cost than a public provider (Färe, Grosskopf and Logan, 1985; Atkinson and Halvorsen, 1986; Kay and Thompson, 1986; Parker, 1995; Wallsten, 2001; Zhang, Parker and Kirkpatrick, 2008). In the worst case, the private mono- or oligopolist is clearly less cost-efficient than the public provider. As sketched out by Werkman and Westerling (2000): *"The most important influence on the performance of an enterprise from the standpoint of efficiency is competition – not public or private ownership"*. Brown and Potoski (2003) included this factor in their analysis of the size of the cities and their urban status, regardless of the service. However, the degree of competition might also depend on service characteristics: even small rural municipalities may have access to a very competitive market for certain services, whereas some other services face a monopolistic market even for large cities.

3.2   Public Choice determinants

When translating the make-or-buy framework from the industry to the public sector, the personality of the deciders becomes a critically important issue. In the case of the make-or-buy decision for a firm, it is reasonable to assume that there is a convergence of goals between the decider and the firm. When the decider is a political authority, this assumption becomes very strong. For Stigler (1971, p.3): *"[P]olitics is an imponderable, a constantly and unpredictably shifting mixture of forces of the most diverse nature, comprending acts of great moral virtue [...] and the most vulgar venality."*

Political ideology   The first source of deviation between the social optimum and the decisions taken by the authority comes from the fact that elected politicians may base their decisions not only on pragmatic efficiency considerations, but also on their ideological point of view. This can lead them to contract out public services despite significant risks and drawbacks, or on contrary to refuse to contract out a service while this would increase the efficiency and the social welfare. Consequently, the ideological bias may act towards public provision (make) as well as towards contracting out (buy). López-de-Silanes, Shleifer and Vishny (1997) find that the voting results obtained in a county by the Republican candidate at the last gubernatorial election is significantly correlated with the propensity of this county to contract out services. Levin and Tadelis (2010) for their part find no significant relationship between the make-or-buy decision in a city and the voting results in its county. Picazo-Tadeo, González-Gómez, Wanden-Berghe and Ruiz-Villaverde (2012) refine the analysis of ideological motivations firstly in taking into account the political variables when the decision of contracting out was taken instead of when the study was run, secondly in taking into account not only the party which was in power in Andalusian municipalities, but also the fact that this party was in majority or in minority. In addition, they observe the effects of a discrepancy between the ideology in the municipality and in its provincial government (that is to say if the right was in power

in the municipality while the left was in power in the province, or vice-versa), as well as variables related to political cycles and to recently elected governments. This study confirms that municipalities governed by center-right or center-left parties are significantly more prone to contracting out than those governed by left-wing parties, regardless of the fact that the leading party has the majority or not. It also shows that political cycles matter.

Rent and re-election seeking   The cornerstone of rent seeking theories rely on relaxing the assumption that civil servants and policy makers are benevolent agents who seek selflessly to serve the interests of the citizens. On the contrary, Public Choice advocates (Buchanan and Tullock, 1962; Niskanen, 1971) assume that elected politicians are selfish profit maximisers whose goal is to capture a rent while ensuring their re-election. From that perspective, policy makers' contracting choices may either favour the private sector or not. Municipalities who face strong unions are however assumed to have a higher propensity to keep the services in the hands of public authorities, *ceteris paribus*. In addition, policy makers are less likely to contract with the private sector particularly salient services, for which resident sensitivity to quality is high.

In a study based on 12 services in U.S. counties, López-de-Silanes et al. (1997) focused on the so-called *Clean Government Laws* (purchasing standards, merit system, prohibition of political activities for civil servants). They find that clean government laws foster the private provision of public services. However, the positive correlation between clean government laws and the propensity to privatize may also be explained by the fact that these laws in fact increase the cost of the public procurement, making it less competitive against private procurement. Levin and Tadelis (2010) for their part found different effects depending on which law is observed. Whereas the prohibition of political activity by city employees shows the same effect as in López-de-Silanes et al.'s (1997) study, they observe a totally opposite effect, albeit weakly significant, for the existence of a merit system. For her part, Kodrzycki (1998) found no significant impact of clean government laws on the decision to contract with the private sector. Finally, Brown and Potoski (2003) as well as Levin and Tadelis (2010) found that municipalities governed by appointed managers were significantly more prone to contract with the private sector than those governed by elected mayors, who are subject to reelection. They also show a significant connection between the make-or-buy decision and the sensitivity of the citizens to the quality of the service. These results are in line with previous results from Warner and Hebdon (2001) who also showed that sensitivity is a relevant element to retain municipalities to contract services with the private sector.

City Finances   The relationship between contracting decisions and efficiency-based considerations might also be dulled by the city's financial condition. It is often argued that contracting with the private sector is a good way to alleviate the budget of public authorities because a part more or less important of founds comes from the private sector. But this argument is doubtful due to the Ricardian Equivalence: The resources saved by the government by not paying the investment should be equal, in present value, to the revenue foregone to the private provider. Thus, the political view would suggest that if cities have an important debt, they may be more likely to contract the service provision with the private sector.

Table 2: The 22 services	
Office cleaning	Sewage treatment
Snow-cleaning	Child day-care centres
Road-clearing	School canteen
Road maintenance	Specialized services in school
Parking control	Maintenance of school buildings
Refuse collection	Security in public spaces
Solid waste disposal	Local parks and gardens
Animal carcases removal	Cemeteries
Street lights	Trimming of trees
Drinking water distribution	Forests
Maintenance of water facilities	Public transport

4 Data

4.1 Contracting Choices of Swiss Municipalities

We collected data on the contracting choices of Swiss municipalities by survey. The survey asks city administrators to identify the mode of provision their municipality had chosen to provide each of the 22 services we were interested in (reported in Table 2). We selected the most important services at the local level, ranging from very simple ones (public works and office cleaning) to more complex ones (safety, education). The various modes of provision are: in-house provision (either by city employees or by a public company), contracting with another public agency (which also includes local government associations), contracting with a private sector firm, and other forms (the services is provided by another level of government, by non-for-profit organizations, or the service is not provided). We view public contracts as a substitute for in-house provision for a city that is too small to provide a certain service effectively but which wants to retain more control over provision than may be the case with a private provider. We obtained responses from 383 municipalities among which 54% are German-speaking and 46% are French-speaking.

Table 3 reports the descriptive statistics four our dependant variable. In our whole sample, 51% of the services provided are provided in house, 23% through contracts with the private sector and 22% through contracts with other public entities. The distribution within French-speaking municipalities is quite similar (49% in-house, 22% public contracting, 25.5% private contracting) although the share of services privately provided is a little bit higher. By contrast, we can observe that, within German-speaking municipalities, less services are provided by the private sector (21% of the services provided) and more services are provided in-house (54%).

The repartition of the modes of provision for each service is provided in Fig.2. We can observe that there is an important variation of contracting choices across services, even though the three procuring methods are used in all services. Some services such as maintenance of school buildings are provided by municipal employees in 88% of the municipalities of our sample. Other services such as refuse collection are privately contracted over 60% of the time. Specialized services in school, sewage treatments, forests maintenance and animal carcases removal services are in a majority of municipalities publicly contracted. The service with the lowest share of municipalities resorting to the private provision is specialized services in school (e.g. school psychologists, logopedics).

Table 3: Descriptive statistics of the modes of provision

|	All Mean (Std dev.)	Min Max	French Mean (Std dev.)	Min Max	German Mean (Std dev.)	Min Max
Services provided	19.261 (2.171)	10 22	19.609 (2.073)	13 22	18.941 (2.212)	0 22
– In House	9.942 (3.631)	0 22	9.649 (4.207)	0 22	10.202 (3.205)	2 18
– Public contract	4.246 (2.360)	0 13	4.362 (2.412)	0 13	4.118 (2.219)	1 13
– Private contract	4.366 (2.875)	0 22	4.977 (3.189)	0 22	3.887 (2.500)	1 11
– Other	0.707 (1.173)	0 6	0.621 (1.132)	0 6	0.734 (1.131)	0 5
Observations	8977		3823		4934	
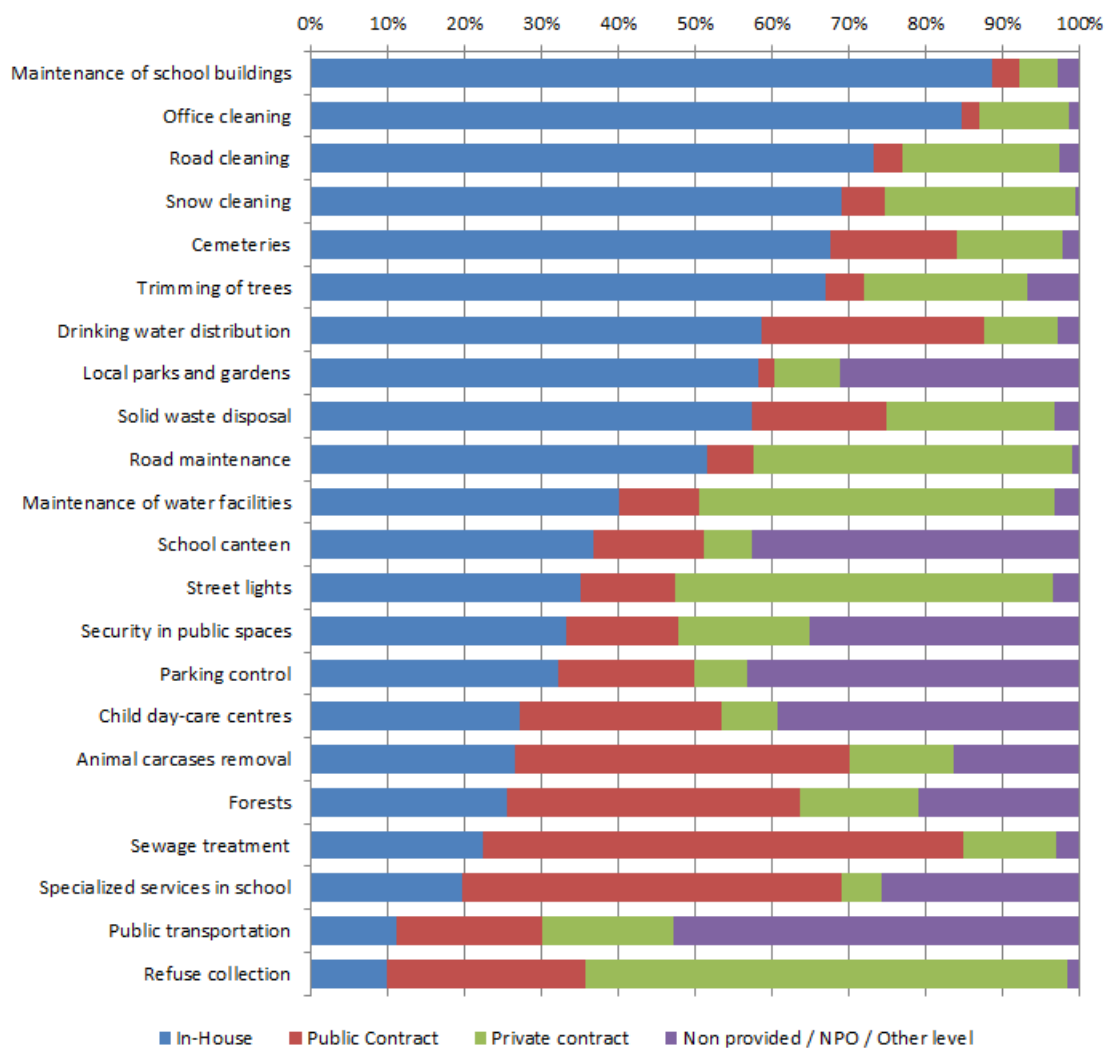
Figure 2: Modes of provision by services

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4.2 Service and Municipality Characteristics

A central prediction of efficiency-based theories is that difficulties in specifying and monitoring performance requirements are likely to reduce private provision. To quantify these difficulties, we surveyed ten city administrators as well as MBA students (to provide some external validity) asking them to assess the 22 services along four contracting dimensions: (1) the difficulty of specifying in the contract the expected service and the quality requirements (*ex-ante* contracting difficulty); (2) the difficulty of observing and measuring the quality of the service once provided (*ex-post* contracting difficulty); (3) the difficulty in replacing contractors due to knowledge or physical specificity; (4) the burden laid by the service on the municipal budget (to capture economies of scale when contracting the service provision). For each question we standardized the answers of each respondent to have zero mean and unit variance. We then averaged the standardized responses to construct an average response to each question for each service. There was a tight correlation between the survey responses of different city administrators and MBA students, which corroborates our implicit assumption that dimensions of contracting difficulty are largely related to service characteristics rather than being idiosyncratic to a given municipality-service pair. However, the first three contracting dimensions turn out to be so highly correlated across services as to be nearly collinear in multivariate regression analysis. Therefore for the regression analysis we use a principal components approach to identify a single contracting difficulty variable. The principal components explains 74% of the variation in our four survey variables.

In addition to asking the set of ten city administrators about these four dimensions, we included three questions in the survey sent to every city administrator to know the provision mode of services, asking them to assess (1) the sensitivity of residents to the quality of each service; (2)the uncertainty surrounding the future requirements of each service; (3) the level of competition if they were considering contracting with a private sector firm the service provision. We assume hence that these three dimensions are idiosyncratic to individual municipality-service pairs. Indeed, the citizens of a large urban municipality have different needs for some services than the citizens of a mountain village or of a small municipality in the countryside. Hence, it is highly likely that their sensitivity is quite different. In the same way, uncertainty also changes from one municipality to another, due to, for instance, the fact that a municipality is experiencing strong demographic growth or increasing urbanization or not. Finally, municipalities of different sizes or in different regions face different transportation infrastructures and different markets, and hence face different degrees of competition. Again, we standardized the answers of each response.

Table 4 reports service characteristics. The first columns report overall contracting difficulty and its four components. The fifth column reports the budget weight of each service. The three last columns report the means at the service level of uncertainty, quality sensitivity and private sector competition. The relative difficulties of contracting for some services are in line with our intuition. For instance, office cleaning and buildings maintenance are two of the easiest services to contract. These services are routine, easy to measure and monitor and do not involve a great deal of specialized equipment or knowledge. Child day care centres and specialized services in school are two of the most difficult services to contract. For both services, performance is difficult to assess accurately and specialized knowledge can play an important role. We also observe that services provided directly to citizens are, as expected, subject to a bigger sensitivity than internal services (e.g. office cleaning). This is particularly true for services that directly affect the everyday life (refuse collection, drinking water distribution, snow cleaning).

For each municipality, we also collected information from official sources on population[9] (as municipalities may need to be a certain size to produce a given service in-house with any sort of efficiency), area, municipal unemployment rate, the local per capita yield of the Federal Direct Tax (FDT, as a proxy for income), the municipal dependency ratio (as a proxy for investment needs), the municipality passive interests per capita (as a measure of indebtedness). Table 5 presents a summary of municipality characteristics.

5 Estimation and Results

5.1 Estimation

We want to quantify the relationship between the alternative forms of service provision and efficiency-based factors, public choice factors, and cultural factors. In order to describe the choice between the three alternatives *In-House*, *Private contract* and *Public contract*, we use a standard multinomial logit approach combined with a spatial regression discontinuity design[10]. In the following model, we compare the probability that municipality i provides service j using the provision mode m against the base category *In-House*:

$$\ln \left[\frac{Pr(Y_{ij} = m)}{Pr(Y_{ij} = InHouse)} \right] = \alpha_l + \delta F_{ij} + \sum_{k=1}^{2} \beta_{lk} D_{ij}^k + \sum_{k=1}^{2} \beta_{rk} D_{ij}^k \cdot F_{ij} +$$
$$\mathbf{Econ'}_{ij}\gamma + \mathbf{Polit'}_{ij}\zeta + \mathbf{X'}_{ij}\eta + \epsilon_{ij}, \forall m \quad (1)$$

with F, for *French*, being a dummy taking the value 1 for French-speaking municipalities. The running variable D, for *Distance*, which measures the distance to the closest cross-border municipality, takes positive values for French-speaking municipalities (at the right, r, of the language border) and negative values for municipalities in the German side (at the left, l, of the language border)[11]. We allow for different spatial trends. When the variable D takes the value 0, our measure of culture changes discontinuously at the language border. $\mathbf{Econ}_{ij}$ is a vector of efficiency-based variables, $\mathbf{Polit}_{ij}$ is a vector of public choice variables and finally $\mathbf{X}_{ij}$ is a vector of additional controls, including canton fixed effects (dummies).

The key parameter in this regression is δ. Indeed, δ estimates the contrast in the probability of contracting choices at the border, that is, the difference in the mean probability of contracting choices between French and German-speaking municipalities at the border (i.e., when $D = 0$).

α_l measures the mean of the outcome variable in French-speaking border municipalities if they were German-speaking. The parameter β_l measures the spatial trend in contracting choices outcomes in the Swiss German area, whereas the parameter β_r allows for a completely different spatial trend in the French area.

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[9]As the number of large municipalities is quite low, we chose to cluster the size of population in three classes —small, medium, big — instead of using it as a continuous variable so as to avoid heteroscedasticity.

[10]See Lee and Lemieux (2010) for a comprehensive discussion of spatial regression discontinuity design.

[11]To implement the local border contrast, the first step is to determine each municipality distance to the language border. To do so, we computed the Euclidian distance, using geodata provided by the Swiss Federal Office of Topography, to proxy for economic distance between pairs of cross-border municipalities. We then took the nearest cross-border neighbour as the value for the distance to the language border.

Service	Difficulty (PCA)	Ex-ante diff.	Ex-post diff.	Physical specificity	Knowledge specificity	Budget weight	Uncertainty (mean)	Sensitivity (mean)	Competition (mean)
Office cleaning	-3.2	-1.7	-1.9	-1.6	-1.4	-1.1	-2.1	-2.2	1.5
Maintenance of school buildings	-2.1	-1.0	-1.2	-1.6	-0.9	-1.0	-1.2	-0.9	1.5
Refuse collection	-2.0	-1.5	-1.1	0.7	-1.4	0.2	0.0	1.2	0.6
Snow cleaning	-1.6	-1.0	-0.7	-0.8	-0.9	-0.3	-0.1	1.6	0.1
Animal carcases removal	-1.3	-0.2	-0.8	-0.8	-0.9	-1.3	-0.4	-0.8	-1.5
Road cleaning	-1.2	-0.6	-0.2	-0.8	-0.9	0.0	-0.5	0.9	0.2
Parking control	-1.0	-0.2	-0.8	-0.8	-0.4	-0.5	0.0	-1.3	-0.8
Local parks and gardens	-0.9	-0.1	-0.3	-0.8	-0.9	0.1	-0.8	-1.1	0.8
Solid waste disposal	-0.9	-0.6	-0.2	1.1	-1.4	0.2	0.2	1.1	-0.1
Cemeteries	-0.9	-0.3	-0.9	-0.1	-0.4	-0.9	-0.9	-0.2	0.2
Trimming of trees	-0.7	-0.5	-0.7	-0.4	0.1	-1.0	-1.0	-1.3	1.3
Forests	-0.1	-0.1	0.0	-0.4	0.1	-0.6	-0.4	-1.2	0.3
Road maintenance	0.0	-0.1	0.2	0.7	-0.4	-0.8	0.2	0.8	1.9
Sewage treatment	0.8	0.0	0.0	1.5	0.6	1.8	-0.1	0.3	-1.3
Drinking water distribution	1.0	-0.3	0.8	1.5	0.6	0.9	-0.3	1.7	-1.5
Maintenance of water facilities	1.2	1.3	-0.1	0.7	0.6	0.7	-0.3	0.3	0.9
Security in public spaces	1.3	0.8	1.5	-1.2	0.6	0.8	1.0	-0.2	0.1
Street lights	1.5	0.2	0.7	1.5	1.1	0.0	-0.1	0.5	-0.7
School canteen	1.7	1.2	0.5	0.7	1.1	-0.3	1.8	0.1	-0.7
Public transportation	2.0	0.3	1.4	1.5	1.1	2.5	1.3	0.1	-1.1
Child day-care centres	3.0	1.9	2.0	-0.1	1.6	1.2	2.1	0.4	-0.7
Specialized services in school	3.4	2.5	1.8	-0.4	2.1	-0.6	1.6	0.1	-1.0

Table 4: Summary Statistics for Services

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Table 5: Summary Statistics for Municipalities

	Mean	Std Dev	Min	Max	Source of the data
City × Service characteristics					
Sensitivity	0.00	1.00	-2.09	1.31	Athias Wicht Municipal survey
Uncertainty	0.00	1.00	-0.96	0.96	Athias Wicht Municipal survey
Competition	0.00	1.00	-1.28	2.36	Athias Wicht Municipal survey
City characteristics					Athias Wicht Municipal survey
Size	Small	Medium	Big		Swiss Federal Statistical Office
	0.43	0.39	0.18		
Urban	Urban	Rural			Swiss Federal Statistical Office: "Niveaux
	0.39	0.61			géographiques de la Suisse 2012"
FDT Yield p.c. [1000 CHF)	1.17	1.40	0.13	12.2	Federal Tax Administration
Dependency ratio	64.07	8.2	22.2	85.3	Swiss Federal Statistical Office
Debt	0.03	0.02	0.00	0.13	Cantonal and municipal Finance Offices
Mountain	Yes	No			Swiss Federal Statistical Office: "Niveaux
	0.45	0.55			géographiques de la Suisse 2012"
Unemployment	3.20	1.74	0.00	10.10	State Secretariat for Economic Affairs (SECO)

In order to capture the pure effect of the language, we focus on the three bilingual cantons (Bern, Fribourg and Valais) to the extent that French and German municipalities of a same canton face the same institutional framework, which we capture through canton fixed effects. Note that the fact that the administrative language changes from 100 percent French speaking municipalities to 100 percent German speaking at the border allows us to use a sharp RDD framework. We confine the analysis on the municipalities located not more than 50 km from the language border. In order to check for the robustness of the model, we run our regression with two different ad-hoc bandwidths of 25 and 50 km, with both a linear and a quadratic spatial trend. This model is estimated with robust standard errors clustered at the municipal level.

To check the robustness of our results, we also run a logit regression, merging the categories *Public contracting* and *In-House provision*, thus directly opposing private and public provision:

$$\ln\left[\frac{Pr(Y_{ij} = Private)}{1 - Pr(Y_{ij} = Private)}\right] = \alpha_l + \delta F_{ij} + \sum_{k=1}^{2} \beta_{lk} D_{ij}^k + \sum_{k=1}^{2} \beta_{rk} D_{ij}^k \cdot F_{ij} +$$
$$\mathbf{Econ'}_{ij}\gamma + \mathbf{Polit'}_{ij}\zeta + \mathbf{X'}_{ij}\eta + \epsilon_{ij}. \quad (2)$$

where the variables are similar to the multinomial logit model. In this case, we are able to estimate the model with robust standard errors clustered at both the municipal and service levels.

5.2 Estimation Issues

The key identifying assumption of our RDD is that factors other than culture — that potentially influence municipalities' make-or-buy decisions — do not change discontinuously at the language border. In other words, the assumption boils down to conditional independence of outcome and potential language group membership at the language border.

This assumption is plausible for the segments of the language border that run through cantons. As already highlighted above, cantons have much discretion in setting legal and policy rules. But the within-canton segments allow us to adopt a within-canton estimation strategy, that is, to add canton fixed effects. Table 10 in Appendix A provides evidence that is consistent with this assumption.

5.3 Results

Throughout the paper, rather than reporting hard-to-interpret coefficients from the logit model, we report the marginal effects on the choice probabilities. Table 6 reports results from multinomial logit regressions whereas Table 7 reports results from logit regressions .

Our main empirical findings can be summarized as follows. The *FRENCH* variable has a significant impact on the propensity to contract with the private sector, suggesting that there exists a gap at the language border. Moreover, this result is robust both to different spatial trends (linear or quadratic) and to different bandwidths (25 km or 50 km). The effect is substantial: French-speaking border municipalities are around 50% less likely to contract with the private sector than their German-speaking adjacent municipalities (recall that on average about 23% of services are contracted privately and the estimated probability change is between -11 and -16 percentage points depending on the specification). We do not observe any significant impact of the language border in the propensity to contract with the public sector. This suggests that, when crossing the language border and keeping all other things equal, the main substitute for private contracting is in-house provision, and not public contracting. These results are confirmed if we merge the categories *public contracting* and *in-house provision* and run a (binary) logit regression, thus opposing private and public provision. Once again, French municipalities exhibit a significantly and substantially lower propensity to contract the provision of their services with the private sector. The marginal effects associated with distance or distance *times* language are for their part not significant, neither in multinomial logit nor in binary logit.

Regarding the efficiency-based predictions, they are partly corroborated. First, we observe, as expected, that greater contracting difficulty is associated with more public contracting and less private sector contracting, although the impact on private contracting depends on the bandwidth. This finding is consistent with Brown and Potoski (2003) and Levin and Tadelis (2010). The impact of contracting difficulty on public contracting might be explained by the fact that public contracting is a substitute for in-house provision for a municipality that wishes to take advantage of economies of scale while retaining more control over provision for services for which the contracting difficulty is high. Second, we find a striking effect of competition. Municipalities facing a weakly competitive private sector market for a given service are significantly less prone to contract it with private firms, which is in line with our expectations. The fact that we observe a negative impact of competition on public contracting suggests that public contracting acts as a substitute for private contracting when the degree of competition is low. Third, we observe that services for which future requirements are difficult to anticipate (variable *Uncertainty*) are more often contracted with private sector firms. This result is not in line with the prediction according to which uncertainty is associated with higher transaction costs. It may suggest that municipalities try to outsource to a third part the risks associated with uncertainty (e.g. the risk of having an over- or under-capacity in the future). This might however improve productive efficiency if the third part is best able to manage this risk at the lowest cost, *i.e.* is best able to affect the risky outcome and minimise any negative impact of the underlying uncertainty on the project (Debande, 2002; Välilä, 2005). Our results suggest that municipalities think that private firms have more skills to manage the risks happening during the operation phases.

Results related to public choice predictions are mitigated. We find no effect of municipality finances on make-or-buy decisions (*Debt* variable) and we find a significant positive correlation between private contracting and the measure of resident sensitivity to quality,

Table 6: Multinomial Logit Models for Frequency of Private and Public Contracting

Bandwidth	25 km Linear		25 km Quadratic		50 km Linear		50 km Quadratic	
	Public Contr.	Private Contr.	Public Contr.	Private Contr.	Public Contr.	Private Contr.	Public Contr.	Private Contr.
French	0.0237	-0.1064*	0.0158	-0.1562**	0.0548	-0.1087*	0.0746	-0.1053*
	(0.0525)	(0.0567)	(0.0685)	(0.0752)	(0.0464)	(0.0556)	(0.0516)	(0.0631)
Dist	-0.0016	0.0014	-0.0032	0.0017	-0.0014	0.0006	-0.0039*	0.001
	(0.0018)	(0.0016)	(0.0024)	(0.0017)	(0.0011)	(0.0012)	(0.0023)	(0.0025)
French $\times$ Dist	-0.0009	0.002	0.0033	0.0143	-0.0012	0.0029	-0.0005	0.0015
	(0.0038)	(0.0033)	(0.0152)	(0.0131)	(0.0019)	(0.0024)	(0.0065)	(0.0076)
Dist^2			-0.0001	0			-0.0001	0
			(0.0001)	(0.0001)			(0.0001)	(0.0001)
French $\times$ Dist^2			0	-0.0005			0.0001	0
			(0.0006)	(0.0004)			(0.0002)	(0.0002)
Service Characteristics								
Contracting Diff.	0.0567***	-0.0064	0.0568***	-0.0065	0.0557***	-0.0143**	0.0557***	-0.0142**
	(0.0081)	(0.0075)	(0.0081)	(0.0075)	(0.0061)	(0.0064)	(0.0062)	(0.0064)
Budget weight	0.0315**	0.0242	0.0317**	0.0241	0.0185	0.0448***	0.0185	0.0447***
	(0.0157)	(0.0164)	(0.0157)	(0.0164)	(0.0132)	(0.0129)	(0.0132)	(0.0129)
City $\times$ Service Characteristics								
Sensitivity	-0.015	0.0274**	-0.0158	0.0275**	-0.0179**	0.0254***	-0.0181**	0.0255***
	(0.0103)	(0.0108)	(0.0104)	(0.0109)	(0.0088)	(0.0095)	(0.0088)	(0.0096)
Uncertainty	-0.0007	0.0455***	-0.0009	0.0459***	0.0004	0.0397***	-0.0005	0.0399***
	(0.0132)	(0.0112)	(0.0134)	(0.0113)	(0.0101)	(0.0104)	(0.0103)	(0.0106)
City Characteristics								
Big	-0.0698**	-0.0809***	-0.0679*	-0.0778**	-0.0577	-0.0976***	-0.0578	-0.0978***
	(0.0353)	(0.0309)	(0.0365)	(0.0314)	(0.0355)	(0.0252)	(0.0356)	(0.0252)
Small	0.1175***	0.0134	0.1213***	0.0183	0.0992***	-0.0228	0.101***	-0.0239
	(0.0359)	(0.0272)	(0.0374)	(0.0274)	(0.0284)	(0.0259)	(0.0289)	(0.0257)
Urban	0.0552*	0.0105	0.0549*	0.0158	0.0723**	-0.0379	0.0683**	-0.0375
	(0.0316)	(0.0308)	(0.0326)	(0.0313)	(0.0298)	(0.0267)	(0.0302)	(0.0272)
FDT Yield p.c.	0.0549**	0.0448*	0.0572**	0.043	0.0282	0.0544**	0.029	0.0544**
	(0.0265)	(0.0261)	(0.0275)	(0.0291)	(0.0305)	(0.0243)	(0.0306)	(0.024)
Dependency ratio	-0.10387	0.3654*	-0.1064	0.3721*	-0.1133	0.2036	-0.1152	0.2072
	(0.2271)	(0.2030)	(0.2244)	(0.2038)	(0.1676)	(0.1837)	(0.1688)	(0.1852)
Debt	-0.1139	-0.6502	-0.1305	-0.5981	0.1383	0.3363	0.1218	0.3339
	(0.6861)	(0.698)	(0.6937)	(0.6866)	(0.2157)	(0.295)	(0.2122)	(0.2922)
Mountain	-0.0659*	0.0433	-0.0676*	0.0403	-0.0558*	0.0278	-0.0488	0.0268
	(0.0373)	(0.029)	(0.0377)	(0.0291)	(0.0312)	(0.0261)	(0.0319)	(0.0269)
Competition	-0.0807***	0.0475***	-0.0813	0.0471	-0.0783***	0.0523***	-0.0797	0.0525
	(0.0122)	(0.0124)	(0.0122)	(0.0123)	(0.01)	(0.01)	(0.0102)	(0.0102)
Unemployment	2.436*	-1.540	2.329	-1.865	-0.053	-0.094	-0.028	-0.079
	(1.378)	(1.316)	(1.481)	(1.411)	(0.998)	(1.146)	(1.015)	(1.153)
Observations	1,627	1,627	1,627	1,627	2,417	2,417	2,417	2,417

Notes: Reported coefficients are marginal effects on probability of different modes of service provision. In-house provision is the base outcome. Standard errors are clustered at the municipality level. All regressions include canton dummies. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 7: Logit Models for Frequency of Private Contracting

Bandwidth	25 km Linear	25 km Quadratic	50 km Linear	50 km Quadratic
French	-0.0961*	-0.1438**	-0.1072**	-0.104**
	(0.051)	(0.0664)	(0.0459)	(0.0494)
Dist	0.0015	0.0022	0.0007	0.0012
	(0.0017)	(0.0022)	(0.001)	(0.003)
French $\times$ Dist	0.0015	0.0125	0.0029	0.0012
	(0.0034)	(0.0115)	(0.0023)	(0.0073)
Dist^2		0		0
		(0.0001)		(0.0001)
French $\times$ Dist^2		-0.0005		0
		(0.0004)		(0.0002)
Service Characteristics				
Contracting Diff.	-0.0093	-0.0094	-0.0163	-0.0163
	(0.0282)	(0.0282)	(0.0303)	(0.0303)
Budget weight	0.0196	0.0195	0.0407	0.0407
	(0.0452)	(0.0451)	(0.0455)	(0.0455)
City $\times$ Service Characteristics				
Sensitivity	0.0274	0.0276	0.0255	0.0256
	(0.019)	(0.0191)	(0.0172)	(0.0172)
Uncertainty	0.0405***	0.0409***	0.0364***	0.0367***
	(0.0156)	(0.0158)	(0.0128)	(0.0135)
City Characteristics				
Big	-0.0655**	-0.0627*	-0.0882***	-0.0883***
	(0.032)	(0.0323)	(0.0316)	(0.0315)
Small	0.0064	0.0103	-0.0246	-0.0257
	(0.0315)	(0.0319)	(0.0298)	(0.0321)
Urban	0.0094	0.014	-0.0361*	-0.036*
	(0.0205)	(0.02)	(0.0206)	(0.0207)
FDT Yield p.c.	0.0237	0.0203	0.0425*	0.0424*
	(0.0233)	(0.0247)	(0.0252)	(0.0249)
Dependency ratio	0.3639	0.3719	0.2171	0.2204
	(0.255)	(0.255)	(0.210)	(0.209)
Debt	-0.6527	-0.6039	0.3051	0.303
	(0.6909)	(0.6884)	(0.2317)	(0.2318)
Mountain	0.0401*	0.0375	0.025	0.0243
	(0.0236)	(0.0239)	(0.0203)	(0.0204)
Competition	0.046**	0.0458**	0.0504**	0.0507**
	(0.0218)	(0.0219)	(0.0198)	(0.0201)
Unemployment	-1.699	-1.973	-0.156	0.142
	(1.382)	(1.465)	(1.081)	(1.076)
Observations	1,627	1,627	2,417	2,417

Notes: Reported coefficients are marginal effects on probability of private contracting. Standard errors are clustered at the municipality and service levels. All regressions include canton dummies. $*p < 0.10, **p < 0.05, ***p < 0.01$.

which is not consistent with the view that municipalities want control over the services that are more salient for the residents. This might be however consistent with the view that public authorities resort to private contracting to reduce their accountability (see Ellman (2006) and Athias (2013) for theoretical insights into this issue).

Regarding control variables, we find a striking pattern in municipality size. We observe that, compared to medium-sized municipalities, large municipalities are significantly less prone to contract both with the private and the public sector. Small municipalities for their part are more prone to contract with other public entities, but exhibit no significant impact towards private contracting. These results are to be explained by the fact that large municipalities have the critical size to provide local public services by themselves whereas medium-sized and small municipalities have to contract to take advantage of economies of scale. Moreover, small municipalities do not always dispose from sufficient means and competencies to manage efficiently certain services. Turning to a logit model, we observe no significant impact of size for small municipalities. This element, as well as the fact that we observe no impact on private contracting in the multinomial model regarding small municipalities, suggest that small municipalities use exclusively public contracting (inter alia Local Government Associations) as a substitute for in-house provision. Regarding large municipalities, the results of the logit estimation also confirm the results of the multinomial logit.

6   Possible Explanations

This Section discusses one potential channel by which cultural background translates into lower implication of the private sector in the provision of public services on the French side of the language border. This channel is systematic differences in the confidence towards the public and private sectors.

Using data from the World Value Survey 2007, we compare the answers given by French-Swiss and German-Swiss respondents when they were asked to rate *How much confidence do you have in the Civil Service* and *How much confidence do you have in major companies*. The first question wants to measure individual's confidence towards the public administration while the second wants to measure individual's confidence towards the private firms. Results are reported in Table 8. In both cases, we observe that French-Swiss respondents are less confident than German-Swiss respondents, although the difference is bigger (and more significant) regarding companies than regarding the Civil Service. More interesting is to observe the discrepancy between the individual levels of confidence towards companies and towards the Civil service. This allows us to obtain a result independent of the general degree of trust of the respondent. This shows that on average, German-Swiss respondents have higher confidence in major companies than in the public administration, whereas it is the exact opposite for French-Swiss respondents, and the difference is significant. These results are confirmed when we run ordered logit regressions for each question (see Table 9), so as to control for individual characteristics. These results suggest that individual preferences relative to the private and public sectors exhibit clear differences across both language group memberships. Hence, individual preferences are a potential channel of transmission of cultural traits that might explain the gap that we observe in the make-or-buy decisions of Swiss municipalities.

These different views can be reinforced by the feedback mechanism highlighted by Piketty (1995) and Bénabou and Tirole (2006). Indeed, actual differences in the modes of provision of public services lead to choices that reinforce diverging confidence in public

Table 8: Comparison of survey results between German-Swiss and French-Swiss respondents

Question	Data	# Resp.	Mean German	Mean Latin	Mean Total	Diff.	Pr(Diff≠0)	
1. How much confidence do you have in: The Civil Service	WVS (2007)	902	2.565 (0.7253)	2.683 (0.707)	2.636 (0.715)	-0.119	0.015**	From (1) = A great deal to (4) = None at all
2. How much confidence do you have in: Major companies	WVS (2007)	890	2.467 (0.719)	2.780 (0.757)	2.658 (0.757)	-0.313	0.000***	From (1) = A great deal to (4) = None at all
3. Discrepancy between the confidence towards Public administration (Q2) and Companies (Q3)		859	-0.095 (0.8146)	0.094 (0.8201)	0.020 (0.823)	-0.189	0.001***	Positive value = more confidence towards Public administration

Table 9: Culture and Confidence

	(1) Civil Service	(2) Companies	(3) ΔConfidence
French	0.310**	0.738***	0.398***
	(0.136)	(0.138)	(0.145)
Male	0.273**	-0.173**	-0.461***
	(0.134)	(0.0783)	(0.132)
< 30 yrs old	-0.103	-0.226	-0.120
	(0.190)	(0.161)	(0.134)
≥ 50 yrs old	-0.166	0.0966	0.292**
	(0.147)	(0.139)	(0.139)
Lower educ. level	0.189	0.0504	-0.102
	(0.177)	(0.270)	(0.268)
Upper educ. level	-0.0425	-0.0624	-0.0919
	(0.228)	(0.336)	(0.262)
Catholic	-0.0889	-0.405***	-0.241*
	(0.141)	(0.136)	(0.127))
Raised religiously	-0.431***	-0.0255	0.304***
	(0.139)	(0.137)	(0.0981)
Married	-0.160	-0.150	0.00136
	(0.142)	(0.110)	(0.167)
Observations	875	864	835

Ordered logit regression. Robust standard errors clustered at cantonal level in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Positive coefficients mean negative impact on confidence (cols 1-2). Positive coeff. mean higher confidence towards civil service compared to major companies (col. 3).

administration and private firms. This interplay of beliefs and real-life experience with respect to private provision has been investigated by Di Tella, Galiani and Schargrodsky (2012). In this paper, the authors try to assess the effect of propaganda versus reality in the formation of beliefs about privatization. They run a lab experiment immediately after the re-nationalization in 2006 of the main water company in Argentina. Within people who did not have access to water before "privatization", they distinguish two groups of people: (1) those who obtained access after privatization; (2) those who did not obtain access. They want to explain the difference of opinions between the benefits of privatization of water services and benefits of privatization in general (so as to control for individual characteristics). They show that a person's beliefs of the benefits of the water privatization were almost 30% more negative (relative to other privatizations) if his/her household did not gain access to water after the privatization. Thus, reality can change beliefs.

7   Conclusion

While it might seem natural to consider that economic factors are the principal determinants to explain economic decisions, our paper shows that the economic choices — make-or-buy decision — made by municipalities for the provision of their services are mainly explained by cultural factors. We focus on the language border in Switzerland to capture the pure effect of culture on make-or-buy decisions of Swiss municipalities, using a regression discontinuity design. We disentangle between three accounts for the make-or-buy decisions: efficiency-based determinants, public choice determinants, and cultural determinants. Our results show that cultural factors deeply shape municipalities decisions. French-speaking border municipalities are 50% less likely to choose the private provision than their German-speaking adjacent municipalities. We can expect that this effect might be even stronger when we compare choices of public authorities with bigger cultural differences than between municipalities of a same country.

We explain this cultural gap between French-speaking Swiss municipalities and German-speaking Swiss municipalities by systematic differences in confidence in public administration and private firms between French-Swiss and German-Swiss citizens. Using data from the World Value Survey 2007, we observe that German-Swiss respondents have higher confidence in private companies than in public administration, whereas French-Swiss respondents have higher confidence in public administration than in private companies, and the difference is highly significant.

A   Correlation Matrix

Table 10: Correlation matrix

	Contr. Diff.	Sensitivity	Uncertainty	Budget weight	FDT Yield p.c.	Dep. Ratio	City debt / rev.	Competition
Contr. difficulty	1							
Sensitivity	0.209	1						
Uncertainty	0.379	0.223	1					
Budget weight	0.195	0.371	0.132	1				
FDT Yield p.c.	0.000	0.023	0.045	-0.001	1			
Dep. Ratio	0.000	0.038	0.113	0.001	-0.119	1		
City debt / revenue	0.001	0.047	0.045	-0.002	-0.190	-0.036	1	
Competition	-0.238	0.032	-0.086	-0.133	0.008	0.040	0.068	1
Unemployment	0.000	0.099	0.040	0.000	-0.116	0.116	0.245	0.036

B   Robustness checks

B.1   Hausman test of IIA

The Hausman test aims to verify the validity of the Independence of Irrelevant Alternatives assumption (IIA), which is crucial for multinomial logit regressions. The null hypothesis (for each outcome) is that the odds of this outcome against the base outcome are independent of other alternatives (i.e. the IIA assumption is valid) . The first three rows are obtained in excluding successively the corresponding variables. The fourth row is obtained in recomputing the model with "Private contracting" — the largest remaining category — as the base outcome (Long and Freese, 2006).

Note that negative value of the chi square test statistic must be interpreted as an evidence *for* the null hypothesis (Hausman and McFadden, 1984).

Mult. logit without canton FE			
Omitted	**chi2**	**df**	**P>chi2**
1	5.079	43	1
3	-4.914	42	—
4	-1.557	42	—
2	-25.095	42	—

Mult. logit with canton FE			
Omitted	**chi2**	**df**	**P>chi2**
1	0	1	1
3	-6.41	56	—
4	0	1	1
2	0	1	1

RDD Mult. logit without canton FE			
Omitted	**chi2**	**df**	**P>chi2**
1	5.079	43	1
3	-4.914	42	—
4	-1.557	42	—
2	-25.095	42	—

RDD Mult. logit with canton FE			
Omitted	**chi2**	**df**	**P>chi2**
1	0.000	1.000	1.000
3	-6.410	56.000	—
4	0.000	1.000	1.000
2	0.000	1.000	1.000

According to these results, we cannot reject the hypothesis that the IIA assumption is valid.

B.2   Continuity of explanatory variables at the language border

A key issue in regression discontinuity designs is that all other explanatory variables do not exhibit any discontinuity at the cutoff. In order to check the balance of covariates at the language border, we estimate the following regression model:

$$Y_i = \alpha_0 + \alpha_1 \cdot F_i + \alpha_2 \cdot D_i + \alpha_3 \cdot F_i \times D_i + \alpha_4 \cdot D_i^2 + \alpha_5 \cdot F_i \times D_i^2 + \mathbf{X}'_i\beta + \varepsilon_i \quad (3)$$

where Y_i is the variable to test for municipality i, F_i a dummy taking the value 1 for French municipalities and D_i the distance to the language border. $\mathbf{X}'_i$ is a vector of canton dummies. For binary variables, we use a logit model with the same specification.

Results are provided in Table 11. Column 1 reports the mean of a characteristic in the French region, column 2 reports the corresponding mean in the German region, column 3 reports the contrast Swiss French versus Swiss German municipalities, column 4 provides an estimate of the local contrast with a bandwidth of 25 km, and column 5 provides an estimate of the local contrast with a bandwidth of 50 km with quadratic spatial trends. In columns 1 and 2, standard deviations are in parentheses; in columns 3 to 5, for municipality data, heteroscedasticity robust standard errors are in parentheses whereas for municipality-service characteristics (*uncertainty, sensitivity, competition*), standard errors are clustered at the municipality level.

Table 11: How do border municipalities compare?

	Mean French	Mean German	Difference All	Difference 25 km, linear	Difference 50 km, quadratic
Unemployment	0.039	0.027	0.012***	0.015***	0.001*
	(0.018)	(0.015)	(0.002)	(0.005)	(0.006)
FDT Yield p.c. [1000 CHF]	1.324	1.047	0.277**	0.133	.021
	(1.623)	(1.197)	(0.141)	(0.144)	(0.239)
Dependency ratio	0.663	0.624	0.039***	0.087***	0.107***
	(0.077)	(0.082)	(.008)	(0.028)	(0.039)
Debt	0.043	0.031	0.012*	-.010***	0.010
	(0.049)	(0.022)	(0.006)	(0.020)	(0.116)
Mountain	0.376	0.507	-0.534***	-0.523***	-0.808***
			(0.206)	(0.163)	(0.177)
Urban	0.357	0.409	-0.399	-0.128	-0.483
			(0.524)	(0.199)	(1.680)
Small	0.558	0.342	0.266**	0.399**	0.558***
			(0.127)	(0.187)	(0.383)
Medium	0.328	0.422	-0.145	-0.244	-0.337
			(0.095)	(0.199)	(0.221)
Big	0.115	0.236	-0.121	-0.156	-0.220
			(0.089)	(0.152)	(0.191)
Uncertainty	2.408	2.113	0.274***	0.451***	0.331***
	(0.049)	(0.022)	(0.023)	(0.086)	(0.093)
Sensitivity	3.525	3.466	0.059**	-0.00004	0.010
	(0.017)	(0.018)	(0.026)	(0.107)	(0.116)
Competition	2.416	2.391	0.025	0.370***	0.331***
	(0.018)	(0.015)	(0.024)	(0.084)	(0.092)
Number of municipalities	174	225		91	138
Number of observations	3823	4934		1645	2494

The first row contrasts unemployment at the border. There is a change in unemployment at the language border, much weaker than language group membership. Swiss French municipalities are characterized by 1.2 percentage points more unemployment in the whole sample but this contrast is attenuated at the border. We always control for unemployment in our various specifications. Results also indicate that there are significant but slight differences in age structure at the language border. Swiss French border municipalities are also most often smaller than their German neighbours. While there is no significant difference between French and German municipalities of the whole sample, there are significant differences between border municipalities, with a higher rate for private sector competition within French border municipalities. This might be explained by the fact that there are more German border municipalities in a mountain area than French ones (which can impede access to markets and make transportation less efficient).

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