Extended Abstract

Connecting Votes, Exploring the Impact of Broadband Infrastructure Deployment on Voter Behavior

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1 Introduction

Implemented in 2013 in France, the Plan France Très Haut Debit (PFTHD) is meant to support the global broadband coverage (fiber coverage) in France, subsidizing the municipalities where deploying the network is not cost effective for private actors. While the objective is to cover 100% of french territory, mayors may be interested in using their local power to influence priority on this process, for re-election purposes (cf Stigler, 1972 ; Rogger & al., 2023).

Indeed, broadband infrastructure deployment may provide a positive signal to electors, as developed in Mevlude Akbulut-Yuksel et al. (2020). However this positive signal might be offset by negative externalities, typical of infrastructure construction, such as roadworks, noises, ideological opposition to broadband network (cf Bock & Blemings, 2023)

Thus, the following question must be analysed : *To what extent does the deployment of fiber technology influence the public approval and re-election local prospects of incumbent mayors ?* Furthermore, broadband network may have an impact on the composition of candidates set, because the deployment of this kind of infrastructure is not unanimously supported, and it has effects on ease of information retrieval. Hence, we'll consider voter welfare, defined by the variety he can observe within the pool of candidates in his municipality.

2 Method : Does Broadband affect the probability of reelection of a mayor ?

The aim of this project is to focus empirically on local effects of broadband network deployment, as municipal elections capture satisfaction on local infrastructure projects.

2.1 Data

The data used comes from several sources : data from the french regulator of communications (ARCEP) for detailed panel data on coverage of each municipality, and public government data for election at polling station level. The global data base is aggregated by polling station.

We consider 2008, 2014 and 2020 municipal elections in France in order to have reelection data for 2014 and 2020 elections. Data on fiber coverage completely covers this period of time.

2.2 Empirical strategy

To estimate the probability of reelection with a broadband network deployment variable with panel data we have to face diverse challenges

Then, we have to deal with broadband network deployment variable endogeneity. For this purpose, we use as an instrument variable the output of

Bourreau et al. (2023) fiber entry model that has proven its robustness. This instrumental model is estimated with two stages least squared method (2SLS)

As we are estimating reelection probability, we want to disentangle from selection biases : in order to be reelected, an incumbent mayor has to be candidate to his own reelection. Hence, we select municipalities with candidate incumbent mayors and we account for selection bias thanks to Heckman selection models that are applied to both stages of instrumental variable regression. As a matter of fact, this Heckman model with endogeneity is estimated following the method defined in Wooldridge, 1999.

Moreover, broadband network is not likely to have an impact on the outcome of municipal election where the mayor has been reelected with a large majority. So we add a second condition in the Heckman selection models to consider close ballots election. For this close ballot condition we tested several thresholds, depending on the magnitude of the observed effect. The most effective one only considers municipality where the mayor has been reelected with less than 51% share of votes at the second round of municipal elections.

Because we are considering voters behavior, we have to take into account some behavioral biases, such as saliency bias or recency bias. In our context, the most prominent behavioral bias is recency bias. In order to take it into account, we built one deployment variable per year, to be able to account for the chronological evolution of the link between fiber deployment and reelection probability.

A second step of our empirical strategy consists in an adaptation of discrete choice model to voting behavior (cf Iaryczower et al. 2022), in order to evaluate the impact of broadband network deployment on voter's welfare : this approach allow us to study democratic representation evolution analysing the set of candidates with their political affiliation in each municipality.

These elements define our empirical strategy in a nutshell.

3 Outcomes

The model produced significant coefficient estimates, varying overtime. Overall, the effect of fiber deployment on reelection is positive (except for 2015), with an increasing trend. However, the magnitude of the effect is sensible, being globally inferior to 1 point of percentage in vote share. This trend goes along with the recency bias assumption, and confirms the initial assumption that mayors may use broadband network as a political tool. We also observe some differences between the model considering all municipalities and the model considering "close ballots" municipalities, but overall it goes along with main findings.

Concerning voters welfare effect, there is no clear result at the moment, as outcomes are very heterogeneous and lack significance for the moment.

4 Concluson and policy implications

Even though mayors at municipal level are not directly involved in fiber deployment policies, they can play a significant part in allocating deployment priorities in their best interest. This kind of electioneering behaviour is not new when we consider infrastructure deployment, but considering fiber deployment it may have democratic implications due to the "informational" effect of broadband network infrastructure

Hence, we considered broadband network as a pure infrastructure and not as a new information vector. If this is motivated by the fact that broadband network does not offer a new way to communicate, as almost 100% of french municipalities had access to internet before, there are information effects related to this technology as Gavazza et al. (2018) developed . Indeed broadband network has an effect on election turnout, and this effect on election turnout is very socially heterogeneous. Thus, it is likely that broadband network deployment has an "informational" effect, that goes beyond the "infrastructural" effect. However, taking this effect into account is very complex for the reason that fiber doesn't enable access to information as copper network did when it was built.

5 References

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