Better Alone? Evidence on the Costs of Intermunicipal Cooperation

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Abstract

What is the optimal jurisdiction size? While central governments tend to encourage intermunicipal cooperation in order to achieve economies of scale, municipalities are often reluctant to integrate. Exploiting a 2010 reform in France that forced non-integrated municipalities to enter an intermunicipal community, this paper provides causal evidence that resistance is driven by local costs of integration. Using a difference-in-differences strategy, I first find that municipalities forced to integrate experienced a 12.4 percent increase in the number of building permits delivered, raising congestion in urban municipalities. Second, I find that rural municipalities experienced a decrease in the number of public service facilities located within their territory, increasing the distance to public services for their residents. Additional results suggest that these costs are sufficiently high to offset the benefits of integration in terms of better access to public transport and higher fiscal revenues. These findings shed new light on the factors explaining municipalities' resistance while stressing the consequences of changing the scale of decision making.

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1 Introduction

Over the last century, central governments in developed countries have sought to consolidate their local jurisdictions in order to achieve economies of scale in the provision of public goods. In particular, they tend to set reforms to encourage intermunicipal cooperation. However, municipalities are often reluctant to cooperate, slowing down or even blocking the consolidation process.[1] On the one hand, cooperating municipalities benefit from efficiency gains and economies of scale. On the other, the loss of autonomy over public policies can be costly, most notably when integration implies cooperating with other municipalities that have different preferences (Tiebout, 1956; Alesina and Spolaore, 1997; Alesina et al., 2004).

This paper studies the factors explaining municipalities' resistance. In particular, it seeks to assess whether resistance can be explained by actual local costs of integration, beyond ideological or political considerations. For instance, a municipality cooperating with neighbors that have different preferences regarding urban planning or the location of public goods may end up with more construction than desired, or farther away from public services. For these municipalities, the costs of integration can outweight their share of the benefits, leading them to oppose integration. Moreover, as they do not internalize the aggregate benefits of cooperation, they can refuse to integrate even when it would improve welfare overall. Absent appropriate mechanisms to compensate them, this may stall cooperation as a whole.

Identifying the costs, if any, that municipalities face when integrating is empirically challenging. First, despite the fact that intermunicipal cooperation can take various forms, most of the empirical literature has focused on mergers. While these studies can perhaps identify the overall impact of consolidation, it is difficult to use merger laws to assess the impact on individual municipalities. Indeed, after the merge, administrative data are collected at the post-merger level, preventing researchers from using such data to compare the situation of pre-existing municipalities before and after integration. Second, when municipalities do not fully merge but instead share some public policies, cooperation is usually voluntary. Hence, we observe the consequences of integration only for municipalities that have chosen to cooperate, and for which the costs are likely to be the lowest.

This paper is the first to causally identify the effects of integration for resisting municipalities. To do so, I exploit a 2010 reform in France that made intermunicipal cooperation mandatory, forcing around 1,800 municipalities to enter an intermunicipal community. Importantly, when entering

[1] Despite large financial incentives, voluntary mergers in Japan resulted in a higher number of municipalities than what the government would have chosen to impose (Weese, 2015); other countries such as Denmark or Sweden instead decided to force mergers (Mouritzen, 2010; Lidström, 2010); in the US, after a wave of consolidation in the 19th century, municipalities became more and more reluctant to integrate (Jackson, 1987); in France, the government failed to impose mergers in the 1970s and then strove to promote the formation of intermunicipal communities.

an intermunicipal community, municipalities do not disappear (as they do in mergers), but coexist with this new higher level of governance. Using a difference-in-differences strategy, I compare, before and after 2010, municipalities that were forced to integrate with municipalities that have been part of an intermunicipal community for a long time. This strategy enables me to measure the causal impact of integration on the municipalities that resisted integration the most, and for which the costs are likely to be the highest. I then compare these results with the consequences of integration faced by municipalities that instead voluntarily integrated before the law, using a staggered adoption design where the date of the treatment corresponds to the year when a community was integrated.[2] Through this comparison, I can infer the reasons why municipalities forced to integrate opposed integration in the first place.

Municipalities that are part of the same community share two main policies, over which losing autonomy can be costly. First, French intermunicipal communities are in charge of urban planning and thus decide where and how much to build in each member municipality. As discussed by the literature on housing restrictions and NIMBYism,[3] new constructions impose several costs on residents that can explain why a municipality might prefer to keep control over its own housing supply: More housing in high-demand and densely-built municipalities is likely to create congestion in the use of local amenities; it may also increase population's heterogeneity in municipalities whose neighbors are different, by bringing in minorities and/or poorer households; and it might decrease housing prices, threatening the value of residents' assets in municipalities with a large share of homeowners. These costs explain why local housing restrictions are difficult to overcome when decisions are made by the residents (Glaeser and Gyourko, 2018; Glaeser, 2014). They may also explain why municipalities are reluctant to share such policies with outsiders. Second, municipalities that are part of the same community jointly finance and provide some public services: waste management, road maintenance, public transport, and social, cultural, and sport facilities. While pooling resources for large-scale services such as public transport seems generally beneficial, sharing decisions over the location of local public service facilities can be costly for some municipalities. Indeed, with the aim of achieving economies of scale, intermunicipal communities seek to rationalize the offer of local public services and thus tend to concentrate resources on facilities located in high-density places. As a result, low-density municipalities might lose some public service facilities, increasing the distance to public services for their residents.

I show that both dimensions are important in explaining municipalities' resistance, but that the

[2] In light of the recent literature focusing on the issues associated with the staggered adoption design (Borusyak and Jaravel, 2017; Goodman-Bacon, 2018), I also use an alternative estimation procedure developed by de Chaisemartin and D'Haultfoeuille (2019). See Section 4.1.2 for more details.

[3] NIMBYism ("Not In My BackYard") dates back to Frieden (1979) and captures the idea that residents tend to oppose new constructions in their locality, as they do not want a stranger to settle in their backyard. See Gyourko and Molloy (2015) for a review.

costs of integration are not the same for urban and rural municipalities.

Exploring first the consequences of the loss of autonomy over urban planning, I find that municipalities forced to enter an intermunicipal community experienced an increase of 12.4 percent in the number of building permits delivered per year, on average. To investigate further whether such effect can explain their resistance, I compare this result with the impact of integration for municipalities that instead voluntarily joined an intermunicipal community before the law. I find that municipalities that voluntarily integrated did not experience any change in their housing supply following integration. Hence, only municipalities that did not want to enter an intermunicipal community faced an increase in construction. This finding supports the view that resisting municipalities refused to integrate to avoid an increase in housing supply.[4] It also provides evidence that their decision was driven by actual costs of integration, beyond ideological or political considerations.

I then carry additional analyses to assess which specific costs implied by a rise in housing supply explain their opposition. Results show that the increase in building permits is driven by municipalities where a rise in construction is the most likely to create congestion: those where the demand for housing is high and that are already densely built. In contrast, the impact on housing is not stronger for municipalities whose neighbors are more different, in terms of residents' income, share of immigrants, or political preferences, and the results are similarly not driven by municipalities where the share of homeowners is particularly large. This suggests that municipalities that opposed integration to keep control over their housing supply are mainly urban municipalities trying to avoid congestion costs, rather than municipalities fearing an increase in population heterogeneity or a housing price decline. In line with this interpretation, I find that despite its effect on construction, integration did not lead to a significant decrease in housing prices.

Second, I assess the consequences of forced integration on local public services. To do so, I gathered local-level data on two different local public services: the number of daycare facilities and public libraries located in each municipality. For both services, evidence suggest that resisting municipalities experienced a decrease in the number of facilities located within their territory, implying that integration increased the distance to public services for their residents. This effect is entirely driven by rural municipalities, that ended up with 20 percent fewer facilities on average relative to control municipalities. These results suggest that, while urban municipalities resisted

[4]Section 6 discusses further the differential impact between municipalities that voluntarily integrated and those that resisted. First, I provide additional evidence that this is not driven by the fact that resisting municipalities were forced to enter already-formed communities where the other members could have punished them for having resisted. In particular, the impact is similar for resisting municipalities that entered existing communities as for those that created new ones, supporting the fact that they would have experienced the same effects had they integrated earlier. Second, I show that municipalities that resisted integration typically ended up with less bargaining power inside their IC compared to the average municipality, making them less able to fight IC's decisions. This helps explain why they experienced costs other municipalities were able to avoid.

integration to prevent further constructions from raising congestion, rural municipalities resisted to avoid losing local public services.

In the last part of the paper, I turn to the analysis of the benefits of integration. I explore whether resisting municipalities also benefited less from the gains of integration, which would contribute to explaining why they resisted longer. I first look at the impact of integration on public transport. By enhancing cooperation and enabling municipalities to pool resources, integration is likely to help neighboring municipalities build larger and more efficient public transport networks. As a result, joining an intermunicipal community might increase a municipality's probability of being connected. In line with this argument, I find that municipalities forced to enter an intermunicipal community became twice as likely to have access to public transport.[5] This is similar to the effect experienced by municipalities that voluntarily joined a community before the law, showing that resisting municipalities enjoyed the same benefits in terms of public transport as other municipalities.

Finally, I measure the impact of integration on municipalities' fiscal revenues and find that resisting municipalities experienced an increase of 13.0 percent per year in their total revenues per capita, on average. As with public transport, this increase is comparable to the increase experienced by municipalities that integrated voluntarily before the law. Assuming that municipalities anticipated such gain,[6] this suggests that they did not oppose integration because they anticipated getting a lower share of the benefits, but rather that the benefits were not high enough to compensate for the congestion costs faced by urban municipalities and the loss of local public services faced by rural municipalities.

This paper provides new evidence on the factors explaining municipalities' opposition to consolidation and shows that resistance is driven by local costs of integration. These findings help understand consolidation failures and could help policymakers design better compensation schemes to implement consolidation policies more effectively. In particular, it is important to take into account that rural and urban municipalities do not face the same costs of integration.

This paper relates to several strands of literature. The first analyzes patterns of integration to study the factors explaining jurisdictions' choice to cooperate. Using structural or spatial econometric models, papers have emphasized the role of expected change in fiscal revenues, expected

[5]This result is obtained using data on regular public transport networks that are managed at the municipal or intermunicipal level, excluding the ones managed at the departmental or regional level. Municipal networks account for half of French public transport networks and 90 percent of all public transit trips. See Section 2.3 for more information on public transport data.

[6]It is likely that municipalities could anticipate the change in revenues they would face after integration. The first parameter to take into account is the state transfer awarded to the community they would join, which was public information, as the goal of the transfers were to incentivize cooperation. The second parameter is the tax rate and tax base of other municipalities, which are quite easy to learn given the geographical proximity between municipalities inside the same IC.

distance to public services, and municipalities' socio-demographic characteristics, as well as the role of neighbors' characteristics and thus heterogeneity (Gordon and Knight, 2009; Saarimaa and Tukiainen, 2014; Weese, 2015; Bel and Warner, 2016; Di Porto and Paty, 2018).[7] In contrast, this paper provides new evidence on the factors explaining resistance by directly assessing the causal impact of integration on resisting municipalities.

Closer to my empirical strategy, a second strand of literature seeks to identify the causal impact of merger laws on cost reduction in the newly formed jurisdictions. The results are mixed (Bel and Warner, 2015): Although Reingewertz (2012) finds evidence of overall efficiency gains in Israel, Blom-Hansen et al. (2016) find no effect of recent merger laws in Denmark. The vast majority of these papers focus on the aggregate effects of consolidation. Two recent papers use geocoded data to study the distributional impact of mergers on local public sector jobs (Harjunen et al., 2019) and night-light intensity (Egger et al., 2017). In contrast, this paper measures the impact of forced collaboration (not mergers) on resisting municipalities and provides evidence on both the local costs and benefits of integration by looking at the effects on the housing market, local public services, public transport, and fiscal revenues.

Third, I contribute to the literature on housing restrictions. Recent empirical papers show that regulations in high-demand places are responsible for lowering productivity, preventing households from moving to opportunity and fostering urban sprawl (Glaeser and Gyourko, 2018; Hsieh and Moretti, 2019; Glaeser and Maré, 2001; Chetty et al., 2016; Glaeser and Kahn, 2010; Jones and Kammen, 2013). Despite these consequences, housing regulations are unlikely to lessen if decisions are made by residents at the local level, as most residents consider a new construction project nothing but a bother (Glaeser, 2014). In line with this argument, results show that municipalities are reluctant to lose control over urban planning. They also suggest that transferring urban planning to a higher level, and thus allowing outsiders and potential future residents to participate in the decision making, helps overcome local housing restrictions.[8] These results stress the tension between local preferences and aggregate effects and highlight the risk of the local trap, where decisions made at the local scale ignore macro consequences (Purcell, 2006; Hankinson, 2018).

The remainder of the paper is organized as follows. Section 2 presents the institutional framework and the data. Section 3 describes the empirical strategy. I present the main results on housing supply and local public services in Section 4 and the results on the benefits of integration in Section 5. Section 6 discusses alternative interpretations and external validity. Section 7 concludes.

[7] Papers using different settings and identification strategies include Sorensen (2006) and Lapointe (2018). The first one uses surveys among local politicians in Norway and shows that their decisions to merge are mainly driven by the expected changes in revenues. The second paper studies voters' preferences over secession in Canada and find that income and language differences affect the likelihood of secession.

[8] Consistent with this finding, cross-sectional evidence in the US shows that municipalities with ward-based representatives do more exclusionary zoning than those with at-large representatives (Clingermayer, 1994).

2 Institutional background and data

2.1 Intermunicipal cooperation in France

France is divided into about 36,000 municipalities, accounting for 40 percent of all municipalities in Europe.[9] Municipalities are the lowest and third tier of local government and represent 11 percent of total public spending. They are responsible for local urban planning; social housing; the provision of nurseries and primary schools; social, sport, and cultural facilities; municipal roads; and public transport. Municipalities' revenues come mainly from local taxation (54%) and state transfers (23%). They raise four local taxes: the local business tax paid by firms, the housing tax paid by all residents on the cadastral value of their accommodations (whether they are renters or owners), the property tax paid by owners, and the land tax. Each municipality is governed by a municipal council chaired by the mayor. Elections for municipal councilors take place every six years.

In the 1970s, the French government intended to pass a law that would have reduced the number of municipalities by 20 percent through mergers. But mayors massively blocked the reform and only few mergers took place; the number of municipalities was reduced by only 3 percent. Following this failure, the government decided to pivot toward promoting the creation of a new administrative structure: intermunicipal communities **(IC)**.[10] When entering an IC, the municipality does not disappear as it does in mergers, but continues to exist under a new level of local governance and share some public services with the other municipalities part of the same community.

First, by law, intermunicipal communities are in charge of "territory and economic development," or the promotion of local businesses and urban planning. Since the 1980s decentralization laws, French municipalities are in charge of the delivery of building permits, and they need to produce a planning and development plan (*plan local d'urbanisme*). Once part of an IC, the local planning made by the municipality becomes subject to guidelines set by the community through the housing planning plan (*plan local d'habitat*) and the territorial coherence plan (*schéma de cohérence territoriale*). Hence, even if the municipality remains administratively in charge of delivering the building permits, the overall planning is done by the intermunicipal community, which decides where and how much to build in each municipality within the community.

[9] The average municipality size is 1,800 inhabitants, compared to 5,500 and 8,990 for the average municipality in the European Union and in the US, respectively.

[10] Intermunicipal communities are widespread in Europe (Hulst et al., 2009). In France, they are called EPCI, for *Etablissement public de coopération intercommunale*. France counts four types of ICs: *Communautes de Communes* (CC), *Communautes d'Agglomerations* (CA), *Communautes Urbaines* (CU) and *Métropoles*. The definition of these different ICs depends mainly on the number of mandatory competences to be transferred to the community and the size of the municipalities. The vast majority of municipalities are part of CC (more than 80 percent), the form of cooperation I describe below and the one that gives the most freedom to municipalities in deciding which public services to transfer.

On top of urban planning, municipalities decide which additional public services to transfer to the IC. The most commonly delegated ones are services for which cooperation is likely to result in economies of scale: waste management, road maintenance, public transport, and social, cultural and sport facilities. Finally, ICs' revenues consist of state transfers and local taxes. The intermunicipal community can either apply an additional tax rate to the four municipal tax rates, or set a single business tax rate while still applying an additional tax rate on the three other local tax rates. In the latter case, the municipalities lose the right to set their own business tax. Municipalities choose the tax system when creating the community.

The IC is run by a board made of members of the municipal councils of all participating municipalities. The number of seats held by a municipality inside the intermunicipal council is proportional to the municipal population. By law, each municipality has at least one seat, and no municipality has more than half of the seats. Once the allocation of the seats is decided, each municipal council elects the municipal councilors who will be part of the intermunicipal council.[11] Then, the intermunicipal council elects its president. Decisions over which public services to transfer to the community or over which tax system to adopt require the approval of either (a) two thirds of the municipal councils representing more than half of the IC's total population or (b) at least half of the municipal councils representing more than two thirds of the population, as well as the approval of all municipal councils that represent more than one fourth of the IC's population. Then, day-to-day decisions about urban planning or the delivery of public services are made by the intermunicipal council, by majority. Hence, when joining an intermunicipal community, a municipality loses power over policies, the more so the smaller its population compared with the population of the other municipalities from the same IC.

Until 2010, municipalities were free to decide whether to create or join an IC or remain outside, but the financial incentives to integrate into an IC were high: Since the "Chevènement law" in 1999, ICs receive a state transfer on top of the individual transfers received by each municipality. The latter remains unchanged whether the municipality integrates or not. This law marked a turning point: whereas half of the municipalities were part of an IC in 1999, 95 percent were integrated by 2010. In 2010, France counted 2,611 ICs, and a community gathered on average 13 municipalities and 22,192 inhabitants. Still, 5 percent of the municipalities, or about 1,800, remained isolated in 2010.

[11] In municipalities of more than 1,000 inhabitants and only since the 2014 election, the members of the intermunicipal council are directly elected by voters during municipal elections. Each list presents a ballot containing the list of candidates for both the municipal council and the intermunicipal council. As members of the intermunicipal council have to be municipal councilors, the two lists are typically very similar.

2.2 The 2010 law

In December 2010, a new law passed requiring that **(1) all municipalities must be part of an intermunicipal community** (2) all intermunicipal communities must contain at least 5,000 inhabitants. This law followed a report issued by the French Court of Auditors (*Cour des comptes*) indicating that, in general, ICs were too small to achieve economies of scale. The goal of the reform was thus to draw a new map of intermunicipal communities and organize the territory more effectively.[12]

This law forced the 5 percent of municipalities that were isolated to enter a community. The only exceptions were Paris and municipalities in three départements around it,[13] as well as a few islands that make up one municipality. It also forced existing small intermunicipal communities to merge with other communities in order to comply with the 5,000 threshold. This threshold did not apply for ICs located in mountain zones, where municipalities are typically far from each other. In this paper, I focus on the first aspect of the law and look at what happened to the municipalities that were not part of an IC before 2010 and were thus forced to integrate.

Figure 1 shows the geographic distribution of French municipalities depending on their integration status in 2010. Red indicates that the municipality was still not integrated in 2010; blue indicates that the municipality was already part of an IC. The gray areas are municipalities excluded from the sample, as further explained in Section 3.1. Even if many isolated municipalities are located in the center-north region of the country, red municipalities are present across the whole country and in all French regions.

The implementation of the reform took place between 2011 and 2014 and was conducted by the departmental prefect.[14] In 2010, municipalities forced to enter an IC shared a common border with 2.4 intermunicipal communities on average. They could choose which IC to join, but the decision had to be approved by the prefect. When possible, and if allowed by the prefect, they could also create a new IC with neighboring isolated municipalities. Finally, if a municipality was still not integrated in 2013, the prefect could force its integration in the IC she chose. At the end, 77 percent of the isolated municipalities entered an IC between 2011 and 2013, and 23 percent of them entered an IC chosen by the prefect in 2014. The majority (73 percent) joined an existing

[12]The 2010 law also changed the rule for the allocation of seats inside the intermunicipal council, as well as the way municipal councilors are elected. These changes became effective only after the 2014 municipal elections. At this time, all municipalities were already part of an IC, and it thus affected all municipalities the same way.

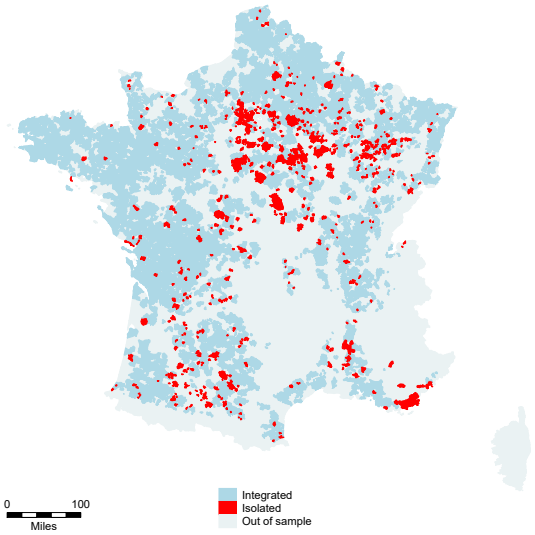
[13]Paris and municipalities in three départements around Paris (Hauts-de-Seine, Seine-Saint-Denis, and Val-de-Marne) were exempt from this law as they are part of the "Great Paris Project," which has a goal of consolidating the Paris metropolitan area.

[14]The prefect is appointed by the French president and represents the state to local governments in the départements. Her main responsibilities include coordinating the police forces, applying immigration rules, and ensuring that local policies are in line with national ones.

community, whereas the remaining ones created new ICs.[15]

On average, municipalities forced to integrate represented about 5 percent of the population of the community they joined. In 2014, the average intermunicipal community included 17 municipalities and 29,197 inhabitants.

Figure 1: French municipalities depending on their integration status in 2010



Notes: Municipalities in red were not part of an intermunicipal community in 2010. Municipalities in blue were already integrated. Grey areas represent municipalities excluded from the sample of analysis, as explained in Section 3.1.

2.3 Data

This study combines several databases at the municipality level.

Municipalities' characteristics. The broad range of municipalities' characteristics I use for the descriptive statistics as well as the heterogeneity analysis come from various sources. Municipalities' socio-demographic characteristics, such as population size or the share of immigrants, are available from censuses conducted by the National Institute of Statistics and Economic Studies (INSEE). They also provide the number of housing units and the share of homeowners in each municipality. On top of the censuses, INSEE provides a classification of the municipalities as urban or rural, based on the share of built land and population density, as well as the list and composi-

[15] As shown in Section 6, the effects are similar whether municipalities entered an existing IC or created a new one. This may sound surprising, as we could have expected resisting municipalities forming new ICs to be able to coordinate to avoid integration costs. However, once in a community, municipalities have no choice but to share some policies, and coordinating on the status quo might be difficult when different types of municipalities face different costs. As further discussed in Section 6, this result provides support for the fact that municipalities would have experienced the same effects had they integrated earlier, and thus that the costs I measure explain why they resisted.

tion of French urban areas. Household taxable income data aggregated at the municipality level are provided by the Ministry of Finance and extracted from income tax declarations. Municipal electoral results and presidential electoral results at the municipality level are obtained from the Ministry of the Interior.

Housing building permits. Housing building permits data come from the Ministry of Sustainable Development (sit@del2 database). The dataset contains the number of housing building permits delivered every year in each municipality.[16] More precisely, it provides the "number of authorized constructions," or the number of housing units allowed for construction. Hence, if a building of 10 apartments was approved, the dataset registers 10 authorized housing units, even if only 1 permit was delivered in practice. The database also indicates whether the unit is a house or an apartment and whether the construction takes place on empty land or as an extension to an existing building.

The ministry collects the data from the local institutions in charge of delivering the building permits. Integration into an IC could affect the data collection if, for instance, the information is transmitted more consistently or thoroughly once the IC is in charge. This, however, is unlikely to explain the results I find. First, this would be particularly relevant for small and remote municipalities where the information is difficult to collect. Instead, as shown in Section 4.1.3, the increase in building permits is particularly strong for urban and central municipalities. Moreover, I find that contrary to municipalities forced to integrate, municipalities that voluntarily entered an IC did not experience a similar increase, showing that there is no mechanical effect of entering an IC on the number of housing building permits reported in the database (see Section 4.1.2).[17]

Housing prices. Building on Combes et al. (2018) and following INSEE's guidelines (see Gouriéroux and Laferrère, 2009; Musiedlak and Vignolles, 2016), I measure housing prices using indices estimated at the municipality level based on official transactions records. I perform the analysis separately for the Parisian region of Ile-de-France and for the rest of France, as the two databases come from two distinct notary associations and do not define dwellings' characteristics in the same way. The data are made available by the Ministry of Sustainable Development for every even year since 2000. They are available until 2014 for Ile-de-France and until 2016 for the rest of the country. To construct the indices, I regress separately for each year the log of the price per square meter on the characteristics of the house or apartment. I then compute the indices as the average of the residuals for each municipality and year after adding the regression constant. Since I center the explanatory variables, the resulting indices can be interpreted as the price per

[16] I focus on ordinary housing, excluding residences providing particular services, such as medical or retirement residences.

[17] Note also that data at the year level are particularly reliable: The ministry collects the information every month and corrects past information if they realize any permits were omitted. Moreover, those in charge of collection told me that they did not notice any differences when collecting the data from ICs or municipalities.

square meter of a reference dwelling. Appendix D provides further details on the construction of the indices.

Local public services. I gathered data on two local public services: daycare and municipal libraries. Daycare data come from the Family Allowance Agency (CAF), which gives the number of daycare facilities and the total number of daycare spots available in each municipality for every year over the 2007-2017 period. Data on municipal libraries come from a yearly survey run by the Ministry of Culture from 2009 to 2017. The dataset lists all municipal libraries and their location, enabling me to compute the number of libraries in each municipality for each year. Unfortunately, when the Ministry of Culture began to survey local public libraries in 2009, only 7 départements took part in the survey. The analysis is thus restricted to those départements for this particular outcome.

Public transport. I obtained information on municipalities' access to public transport thanks to the CEREMA[18] that surveys public transport operators every year in all French regions except Ile-de-France. During the survey, operators report the list of municipalities served by their network. Hence, I know for each year which municipalities have access to a public transport network. It includes all regular public transport networks that are managed at the municipal or intermunicipal level. They represent about half of French public transport networks (the other half being managed at the departmental or regional level) and account for 90 percent of all public transit trips. Specific and temporary transports such as school bus services or transport services during market days are not included in the database. Data are available for the period 1995-2017.

Fiscal revenues. To measure municipalities' fiscal revenues, I use municipalities' and ICs' annual accounts that are made publicly available by the French Ministry of Economy and Finance (DGFiP) from 2010 to 2017. For years prior to 2010, the data come from Fabre (2017).

3 Empirical Strategy

3.1 Treatment and control groups

This paper uses a difference-in-differences strategy in order to assess the impact of integration on municipalities that resisted integration and were forced to enter an intermunicipal community. More precisely, I compare, before and after the 2010 law, municipalities that were not part of an intermunicipal community in 2010 and thus forced to integrate (treatment group) with municipalities that were already part of an IC in 2010 and thus not affected by the law (control group).

[18]CEREMA stands for *Centre d'Etudes et d'Expertise sur les Risques, l'Environnement, la Mobilité et l'Aménagement*, which means in English "Center for Studies and Expertise on Risk, the Environment, Mobility and Development". It operates under the authority of the Ministry of Sustainable Development and of the Ministry of Territorial Cohesion.

I consider a balanced panel of municipalities focusing on metropolitan France, excluding overseas territories and Corsica. I also exclude municipalities exempt from the law (Paris, municipalities in the 3 départements around Paris, and a few islands) as well as municipalities located in mountain zones where the law applied differently.[19]

To make sure that control municipalities are not affected by their shift in integration status during the period of analysis, I restrict the control group to municipalities that were already integrated since 1999 and focus on the time period around the 2010 law, from 2004 to 2018. Hence, I exclude from the main sample of analysis the 45 percent of French municipalities that entered an IC between 1999 and 2010.[20] Note that the results are robust both in terms of significance and magnitude to varying the latest date of integration of the control municipalities, ranging from 1999 to including all municipalities already integrated in 2010 (see Appendix B1).

The final sample is composed of a balanced panel of 16,362 municipalities: 15,065 in the control group and 1,297 in the treatment group (8 percent). To illustrate the sample, Figure 2 plots an indicator variable equal to one if the municipality is part of an IC, separately for the control group (blue line) and the treatment group (red line). By construction, all municipalities in the control group belong to an IC since 1999 and over the whole period. In contrast, no municipality in the treatment group belongs to an IC before 2010. After the law, they gradually enter a community: 34 percent of the treated municipalities enter an IC during the first two years following the law, 43 percent in 2013, and the remaining 23 percent in 2014. By 2014, all municipalities from the sample are part of an IC.[21]

Table 1 provides some descriptive statistics on the two groups in 2010.[22] Although it first seems that treated municipalities are smaller on average (first line), once I remove the 31 municipalities with a population higher than the one of the largest treated municipality from the control group, the average population size is similar in the two groups: 1,558 in the control group and 1,626 in the treatment group (second line).

Similarly, the population growth between 1999 and 2010, the population density, and the share of urban municipalities are quite comparable across the two groups. Turning to the population

[19] As noted, because those municipalities are typically small and far from each others, the 2010 law applied differently. First, the prefect had less leverage to force municipalities to enter an IC, as her decision had to be approved by the local "mountain committee," which slowed down the process: By 2013, only 60 percent of them were integrated, compared to 77 percent outside of mountain zones. Second, communities in mountain zones were not subject to the 5,000 threshold, meaning that isolated municipalities were free to create or join small ICs.

[20] This definition of the sample also excludes less than 1 percent of municipalities whose integration status changed over the 1999-2010 period: Isolated municipalities in 2010 that were part of an IC at some point between 1999 and 2010, as well as municipalities that were part of an IC in 2010 but briefly isolated at some point between 1999 and 2010. The results remain unchanged if I include them.

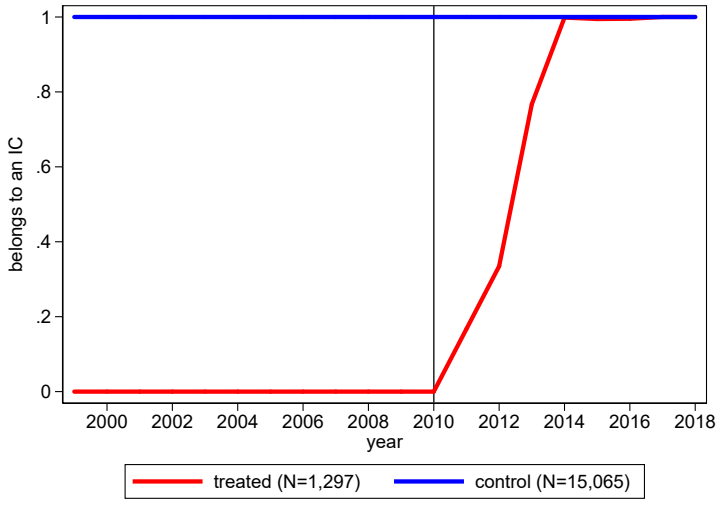
[21] There are only two exceptions: one municipality that integrated in 2015 and another in 2017. Both went to court to challenge the decision made by the prefect, but finally had to comply with it.

[22] The t-tests of the differences between the control and treatment groups are displayed in Appendix B3, along with the matching exercise (see Section 3.2).

composition, the main difference between the two groups comes from the average share of executives in the municipality: 7.0 percent on average in the treatment group against 5.2 percent in the control group. Accordingly, residents are on average richer: The average annual taxable income per capita is 14,209 euros in 2010 in the treated municipalities versus 12,633 euros in the control municipalities. Note, however, that the standard deviation in the treatment group is large (4,432), indicating that it encompasses both rich and poor municipalities. Finally, treated municipalities are more likely to have a right-wing mayor (62.1 vs. 57.1), but the turnout rate in the 2008 municipal election or the probability of having a mayor not affiliated with any party ("NC," standing for "non-classified") is comparable.[23]

Overall, the two groups are quite similar based on observables. This is reassuring for the identification strategy, as we would not expect completely different groups to display parallel trends in the outcomes of interest. It also illustrates that there is not one type of resisting municipality, and that the explanation for why treated municipalities resisted integration cannot be based solely on their socio-demographic characteristics. Instead, it suggests that it is key to assess the impact of entering an IC on these municipalities to understand why they resisted integration.

Figure 2: Integration status



Notes: This graph plots the probability of being part of an intermunicipal community for the treatment group (red line) and the control group (blue line) separately.

[23] Descriptive statics using municipalities' characteristics in 1999 instead of 2010 display comparable patterns (see Table A1 in the Appendix).

Table 1: Descriptive statistics – 2010

	Control (N=15,065)				Treatment (N=1,297)			
	mean	sd	min	max	**mean**	sd	min	max
population	**1,943**	11,692	7	852,395	**1,626**	4,661	15	70,829
w/out largest	***1,558***	*4,114*	*7*	*66,002*	***1,626***	*4,661*	*15*	*70,829*
Δ population	**0.09**	0.14	-0.47	3.50	**0.09**	0.15	-0.41	1.18
density	**155**	449	1	9,876	**161**	540	2	6,931
urban	**0.22**	0.42	0.00	1.00	**0.20**	0.40	0.00	1.00
urban area	**0.61**	0.49	0.00	1.00	**0.64**	0.48	0.00	1.00
core urban area	**0.12**	0.32	0.00	1.00	**0.09**	0.29	0.00	1.00
immigrants	**0.04**	0.04	0.00	0.67	**0.05**	0.04	0.00	0.34
unemployed	**0.09**	0.04	0.00	0.42	**0.08**	0.04	0.00	0.57
child	**0.08**	0.02	0.00	0.23	**0.07**	0.02	0.00	0.21
farmers	**0.04**	0.05	0.00	0.60	**0.04**	0.05	0.00	0.44
executives	**0.05**	0.04	0.00	0.56	**0.07**	0.07	0.00	0.43
workers	**0.17**	0.07	0.00	0.67	**0.15**	0.08	0.00	1.00
retired	**0.29**	0.10	0.00	1.00	**0.28**	0.10	0.00	0.79
no diploma	**0.19**	0.07	0.00	0.61	**0.17**	0.07	0.00	0.46
baccalaureate	**0.15**	0.04	0.00	0.56	**0.16**	0.04	0.00	0.32
high education	**0.07**	0.05	0.00	0.54	**0.09**	0.07	0.00	0.51
residents' income	**12,633**	2,926	3,237	66,868	**14,209**	4,432	5,495	61,360
turnout mun	**0.78**	0.09	0.37	1.00	**0.76**	0.10	0.43	1.00
right-wing mayor	**0.57**	0.50	0.00	1.00	**0.62**	0.49	0.00	1.00
left-wing mayor	**0.34**	0.473	0.00	1.00	**0.27**	0.44	0.00	1.00
NC mayor	**0.09**	0.29	0.00	1.00	**0.11**	0.31	0.00	1.00
% vote right pdt	**0.56**	0.11	0.14	1.00	**0.60**	0.11	0.15	1.00
% vote far-right	**0.13**	0.05	0.00	0.52	**0.14**	0.06	0.00	0.47

Notes: Data on the municipal population, age, education, and occupational composition comes from the 2008 census, which applies to the 2010 year. The variation of the population (line 3) is computed as the variation in the number of inhabitants between the 1999 and 2008 census. Indicator variables for whether the municipality is urban, part of an urban area, or located in the urban core are based on the INSEE 2010 classification. The municipal turnout rate and political orientation of the mayors are based on the results of the 2008 municipal elections. The last two variables give the vote share at the municipal level of the right and the far-right during the 2007 presidential elections, in the second and first round respectively.

3.2 Specification and identification

I estimate the following specification for all municipalities in the sample over the 2004-2018 period:

$$Y_{mt} = \alpha + \beta 1_{\{t>2010\}} 1_{\{treated_m=1\}} + \delta_t + \theta_m + \varepsilon_{mt} \quad (1)$$

where m stands for the municipality and t for the year. Y_{mt} represents the outcome considered. Outcomes are standardized: I divide each outcome by the 2010 municipal population and then multiply by 10,000. Hence, Y_{mt} is, for instance, the number of housing building permits delivered in municipality m during year t per 10,000 inhabitants using the 2010 population. $1_{\{t>2010\}}$ is an indicator variable equal to one for years after the reform, starting in 2011. $1_{\{treated_m=1\}}$ is an indicator variable equal to one for municipalities that were not yet integrated in 2010 and thus forced to join an IC. δ_t and θ_m are time and municipality fixed effects, respectively. The inclusion of municipality fixed effects controls for any time-invariant unobserved factors, while the inclusion of year fixed effects captures changes over time that affect all municipalities the same way. Standard errors are clustered at the municipality level.[24]

The identification assumption is that absent the law, municipalities would have evolved the same way in the control and in the treatment groups. Under this assumption, the main coefficient of interest β captures any deviation from a parallel evolution in the outcome of interest between the treatment and the control groups due to the 2010 law. I outline below the additional analyses and robustness checks I performed to alleviate the identification concerns and provide support for the common-trend assumption.

Selection into treatment. The first concern is the selection into treatment: Municipalities in the control group chose to integrate early, whereas municipalities in the treatment group chose to resist. The question is whether we can expect those two groups to display parallel trends in the outcomes of interest. First, as seen in Section 3.1, control and treated municipalities are quite similar based on socio-demographic characteristics. Moreover, to make sure that the results are not driven by differences in observables, I test the robustness of the main estimates to using propensity score matching. As shown in Appendix B3, matching leaves the significance and magnitude of the results almost unchanged.

Still, one could question whether control municipalities experience different trends because they are part of an intermunicipal community. Removing municipalities that integrated after 1999 alleviates the concern that control municipalities' shifts in integration status affect their trends

[24] I also run specifications with standard errors clustered at the IC level, considering municipalities' IC either in 2014 or 2018. While, as expected, the standard errors are generally slightly larger, the significance of the main results is left unchanged (see Appendix B2).

during the period of interest. Nevertheless, being part of an IC might make control municipalities evolve differently across time and react differently to shocks. This is ultimately an empirical question, and while the parallel trend assumption cannot be directly tested, I run several analyses to provide support for it.

First, when presenting the results, I systematically test for the presence of pre-trends by plotting for each outcome the coefficients of the following leads-and-lags regression:

$$Y_{mt} = \alpha + \sum_{k=2004}^{2018} \beta_k 1_{\{t=k\}} 1_{\{treated_m=1\}} + \delta_t + \theta_m + \varepsilon_{mt} \quad (2)$$

where $1_{\{t=k\}}$ is an indicator variable equal to 1 for year k. All coefficients are normalized relative to 2010. On top of visually inspecting the pre-trends, I also test for the significance of the pre-treatment estimates as well as their joint significance. Second, I estimate the impact of a series of placebo reforms on the outcomes of interest by pretending that treated municipalities were forced to enter an IC before 2010 and excluding the actual treatment period from the estimation (see Figure B4). The results of the placebo exercise are discussed in the main text for each outcome.[25]

Control municipalities affected. We can interpret the estimated β of equation (1) as the causal impact of integration on the treated municipalities, provided that only municipalities in the treatment group are affected by the law. However, some municipalities in the control group might also be impacted—namely, those that are part of an intermunicipal community where a treated municipality entered, as well as those that are part of ICs that fall below the 5,000-inhabitant threshold (and that had thus to enter larger ICs or whose IC had to merge with another one). Appendix B5 reports the main results using an alternative control group that excludes all municipalities whose IC changed as a result of the 2010 law. I also test the robustness of the results to excluding all control municipalities sharing a common border with a treated municipalities, to address potential spillovers. The effects are very similar, suggesting that the estimated effects capture the impact on the treated municipalities only.

4 Main results: the costs of integration

4.1 Impact on housing supply

4.1.1 Impact on municipalities forced to integrate

In this section, I estimate the impact of integration on the number of housing building permits delivered in municipalities forced to enter an intermunicipal community. The outcome is the number

[25] Unfortunately, I cannot run the placebo tests on daycare and public libraries, given the few pre-treatment periods I have in the data. This analysis is thus restricted to the number of building permits, fiscal revenues, and public transport.

of housing units allowed for construction in the municipality in a given year per 10,000 inhabitants (using the 2010 population).

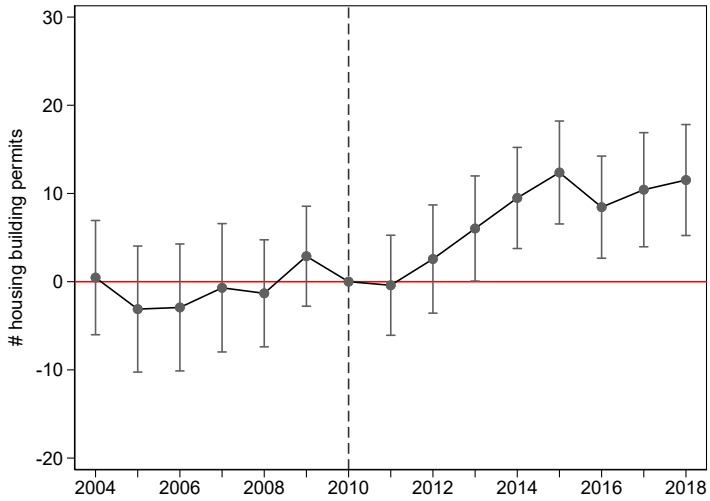
Figure 3 plots the coefficients of the leads-and-lags regression, each coefficient corresponding to the interaction between an indicator variable for the year and an indicator variable equal to one for municipalities in the treatment group. Vertical lines represent the 95-percent-confidence intervals. First, no coefficient before 2010 is significant, and all coefficients prior to the law are close to 0 in magnitude. The F-stat for the joint significance of the pre-reform estimates is equal to 0.670 (p-value 0.673), confirming the absence of pre-trend. Instead, after the law, we observe a large increase in the number of building permits delivered in treated municipalities compared to control municipalities. The increase starts in 2012, consistent with the fact that most municipalities forced to integrate joined an IC after 2011.[26]

Table 2 provides the formal estimate. On average, integration into an intermunicipal community increased by 8.2 the number of housing building permits delivered per 10,000 inhabitants per year in treated municipalities (column 1). The estimate is significant at the 1-percent level. As, on average, municipalities that resisted integration were delivering 66.2 building permits per year per 10,000 inhabitants before 2010, this represents an increase of 12.4 percent. The size of the impact is very similar when using propensity score matching (+7.9), and the estimate remains significant at the 1-percent level (see Table B3.3 in Appendix B3). Moreover, in line with the absence of pre-trends, Figure B4 in Appendix B shows that none of the placebo reforms have a significant effect on housing supply, supporting the fact that the estimate is capturing the impact of the 2010 law rather the impact of factors that systematically affect treated and control municipalities differently.

As shown in columns 2 and 3, the increase is mainly driven by new constructions: On average, municipalities forced to enter an IC experienced an increase of 6.8 in the number of building permits delivered to build new housing units on empty land, while they experienced an increase of only 1.4 in the number of building permits delivered to expand existing units. This result shows that resisting municipalities had to expand their share of built land once integrated, which is consistent with municipalities losing control over both the number of building permits delivered and the land-use policy. As nothing prevented municipalities from building more before the law, this rise in construction is unlikely to reflect their preferences; it is best interpreted as a cost of their loss of autonomy.

[26]Moreover, when splitting the treatment group according to the exact year treated municipalities entered an IC, we see that the increase starts after their integration, confirming that the effect captures the impact of entering an IC rather than the influence of other factors impacting the treated and control groups differently after 2010 (see Figure A1 in the Appendix).

Figure 3: Impact on housing building permits



Notes: This graph plots the estimates and 95-percent confidence intervals from the leads-and-lags regression (see equation (2)).

Table 2: Impact on housing building permits

	(1)	(2)	(3)
Outcome	Number of building permits per 10,000 inhabitants		
	All	New	Extensions
Treatment	8.228***	6.862***	1.366***
	(1.609)	(1.477)	(0.520)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	245,430	245,430	245,430
Mean DepVar	66.203	55.154	11.049
Sd DepVar	94.440	86.470	35.995

Notes: Standard errors are in parentheses and are clustered at the municipality level. ***, **, and * indicate significance at 1, 5, and 10% respectively. The mean of the dependent variable gives the average of the outcome variable in the treatment group during the pre-reform period (from 2004 to 2010). The outcome is the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). It counts the total number of housing units allowed for construction. The last two columns distinguish between two types of building permits: whether the permit allows the construction of a new unit on empty land (column 2) or the extension of an existing housing unit (column 3).

4.1.2 Impact on municipalities that voluntarily integrated

I now compare this effect with the impact of integration for municipalities that joined an IC voluntarily before the law. If the increase in housing supply explains why treated municipalities resisted, we should see a differential impact for municipalities that instead decided to integrate.

I consider municipalities that were previously excluded from the main sample of analysis: municipalities that joined an IC between 2000 and 2010.[27] I focus on metropolitan France and consider all municipalities that voluntarily integrated, including municipalities located in the Paris area, islands, and mountain zones.[28] This results in a balanced panel of 14,702 municipalities. To estimate the impact of their voluntary integration, I use a staggered adoption design, where the date of the treatment is the year when the municipality first joined an IC. I run the analysis over the period from 1999 to 2018: In 1999, no municipality in this sample is part of an IC, whereas all are part of a community starting in 2010. Hence, I observe municipalities up to 11 years prior to the integration (for municipalities integrating in 2010) and up to 18 years after the integration (for municipalities integrating in 2000). I estimate the following dynamic specification:

$$Y_{mt} = \sum_{d=-5}^{d=5} \beta_d 1_{\{t=t_{m0}+d\}} + \gamma_1 1_{\{t<t_{m0}-5\}} + \gamma_2 1_{\{t>t_{m0}+5\}} + \delta_t + \theta_m + \varepsilon_{mt} \tag{3}$$

where the year of integration of municipality m is denoted t_{m0}, and d indexes time-to-integration (negative before integration and positive after). The β_ds measure the difference between municipalities that are part of an IC and municipalities not already part of a community, for each of the 5 years preceding and following the integration. γ_1 (resp. γ_2) estimates the effect for being more than 5 years before (resp. after) the integration. All coefficients are normalized relative to the year preceding the integration ($d = -1$). As in the last estimations, regressions include time and municipality fixed effects, and the standard errors are clustered at the municipality level.

In light of the recent literature focusing on the issues associated with event study design (Borusyak and Jaravel, 2017; Goodman-Bacon, 2018; de Chaisemartin and D'Haultfoeuille, 2019), I also use an alternative estimation procedure developed by de Chaisemartin and D'Haultfoeuille (2019). As shown by the authors, two-way fixed effect regressions identify weighted sums of the average treatment effects in each group and period, with weights that may be negative, making

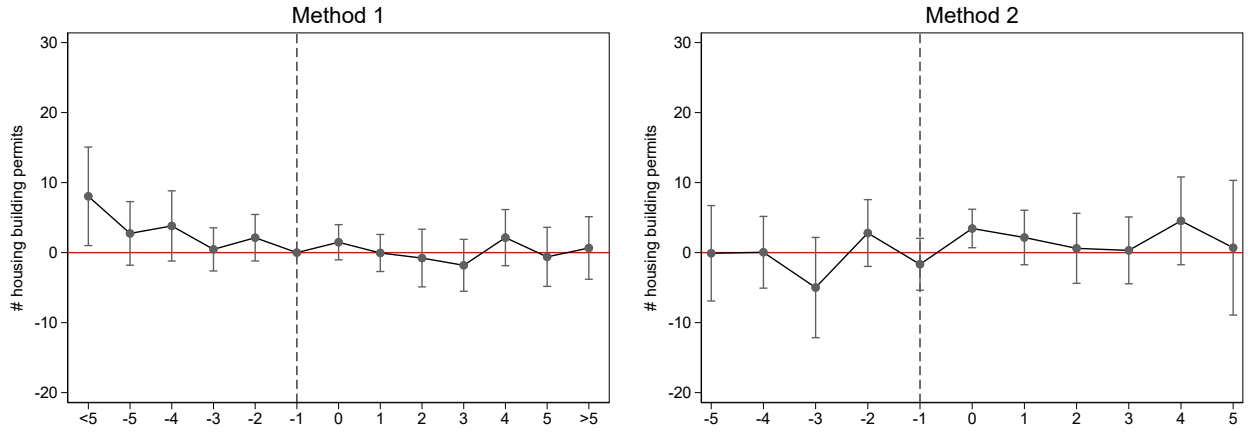
[27] Because the municipal composition of French ICs is only available from 1999, we cannot know which year municipalities that integrated earlier entered an IC. I thus focus only on municipalities joining an IC between 2000 and 2010. Also, as the structure of ICs changed following the Chevènement law in 1999, municipalities that integrated voluntarily after 1999 entered ICs more comparable to the ICs municipalities forced to enter joined, making the comparison more relevant.

[28] In the main analysis, I exploit the 2010 law that forced isolated municipalities to enter an IC in order to assess the impact of integration on resisting municipalities. I thus had to exclude law exceptions: municipalities located in the Paris area, islands, and mountain zones. In this section I assess the impact of voluntary integration, and I can thus consider all municipalities that decided to join an IC.

the results often not robust to heterogeneous treatment effects across groups and over time. Their new estimand deals with this issue. In the context of staggered adoption designs, the coefficient at the date of treatment ($t = 0$) is estimated by comparing trends between $t-1$ and t for units that switched to treatment in t compared with units that are not yet treated in t. Similarly, the coefficient at $t = 1$ is obtained by comparing trends between $t-1$ and $t+1$ for units that switched to treatment in t compared with units not already treated in $t+1$, and so on. To implement their estimation, one group needs to remain untreated during the whole period. I thus run the analysis from 1999 to 2009 only, so that municipalities that integrate in 2010 are never treated during the period of analysis.[29]

Figure 4 plots the coefficients, taking as outcome the number of housing building permits delivered per year per 10,000 inhabitants[30] and applying the same scale as in Figure 3. The left-hand side graph shows what I obtain using the regular staggered adoption design (referred to as method 1) and the right-hand side graph what I obtain using de Chaisemartin and D'Haultfoeuille (2019)'s method (referred to as method 2).

Figure 4: Impact on housing building permits for municipalities voluntarily integrating



Notes: This graph plots the estimates and 95-percent confidence intervals from the linear regression based on (3) (left-hand side graph) and using de Chaisemartin and D'Haultfoeuille (2019)'s method, implemented using the Stata command did_multipleGT, available on SSC repository (right-hand side graph).

[29]For more details on de Chaisemartin and D'Haultfoeuille (2019)'s method for staggered adoption design, see Section 5.2 of their paper. Note that this method allows me to compute the estimates of being a given number of years before or after the treatment, but not to compute the estimates for being more than 5 years before or after the date of the treatment, which are thus absent in the right-hand side graph below.

[30]As I consider municipalities integrating from 2000, I divide the outcome by the 1999 population instead of the 2010 population.

Using the first method, no coefficient, except the one associated with being more than 5 years before the integration, is significant at the 5- or even 10-percent level. In particular, no coefficient after the integration is significant, and all are close to 0 in magnitude. The test for the joint significance of the pre-integration estimates confirms the absence of pre-trends (F-stat of 1.78 with a pvalue of 0.11), and the test for the joint significance of post-integration estimates confirms the absence of impact (F-stat of 1.39 with a pvalue of 0.20). On the second graph, only the coefficient at $t = 0$ is significant at the 5-percent level, but the estimated effect is small in magnitude (3.4), and no other post-treatment estimate is significant. We can thus conclude that joining an IC had no significant impact on housing supply for municipalities that integrated voluntarily.

Hence, only municipalities that did not want to enter an IC experienced a rise in construction. This differential impact supports the view that treated municipalities opposed integration to avoid a rise in housing supply. It also suggests that mayors' decision to resist was driven by actual costs of integration, beyond purely ideological or political considerations. Section 6 discusses further the differential impact between resisting municipalities and those that voluntarily integrated and provides additional evidence supporting this interpretation.

4.1.3 Further evidence on the costs linked to housing supply

As noted in the literature on housing restrictions, several costs can explain why municipalities would oppose new constructions, depending on their characteristics. First, construction may create congestion in high-demand and densely-built places by limiting the space available and increasing the number of people using local amenities (Saiz, 2010; Hilber and Robert-Nicoud, 2013). Second, it might increase the population's heterogeneity in municipalities surrounded by different neighbors by bringing in poorer households and/or minorities (Rolleston, 1987; Bates and Santerre, 1994). Third, through its effect on housing prices, new constructions might decrease the value of residents' assets in municipalities with a large share of homeowners (Fischel, 2001; Ortalo-Magné and Prat, 2014).

To determine which of these costs best explain municipalities' opposition to construction, I explore which types of municipalities are driving the impact on housing supply.[31] To do so, I perform heterogeneity analyses along several municipalities' characteristics measured in 2010, prior to the reform. For clarity, I present the graphs and tables obtained by splitting the sample at the median value of the heterogeneity variable. In Appendix C, I also report the results from

[31] The rationale for this test is the following: Places driving the effect are those that are the most likely to have resisted cooperation to avoid an increase in housing supply. Depending on the characteristics of those places, I can infer which of the costs associated with construction they were trying to avoid by resisting cooperation. For instance, if municipalities driving the results are mostly high-demand and densely-built places, rather than municipalities surrounded by poor neighbors, it is more likely that municipalities resisted an increase in construction to avoid congestion rather than to keep poorer people out.

the estimation of equation (1) where I add an interaction term between the treatment variable and the continuous heterogeneity variable. The corresponding coefficient measures the change in the treatment effect coming from an increase of 1 standard deviation in the heterogeneity variable.

Congestion and NIMBY costs. If congestion costs explain why municipalities were opposed to a rise in housing supply, we should see that the effect is stronger in high-demand and densely-built municipalities, where new construction is the most likely to increase congestion. Indeed, as pointed out by Gyourko and Molloy (2015), more desirable locations will have a larger share of developed land and, consequently, will be more likely to oppose new constructions in order to prevent further development from raising congestion disamenities.

Consistent with the monocentric model,[32] the demand for housing in French municipalities is the highest for those municipalities closer to the core of the urban area (Combes et al., 2018), reflecting how connected the municipality is to the local center of employment.[33] Table 3 and Figure A2 in the Appendix display the impact on housing supply depending on whether the municipality is part of an urban area and, moreover, whether it is located in the core of the urban area.

As shown in columns 2 and 3, the entire effect is driven by treated municipalities that are part of an urban area: After integration, they experienced an average increase of 10.6 in the number of building permits delivered per year per 10,000 inhabitants, an effect significant at the 1-percent level, while municipalities outside any urban area experienced an average increase of 3.1 only, which is not significant. The effect is even stronger for municipalities located in the core, as the number of buildings permits per 10,000 inhabitants increased by 24.9 on average per year (37.7 percent), an impact significant at the 1-percent level. In line with this result, Table C1 in Appendix C shows that a shorter Euclidean distance to the core is indeed associated with a stronger effect of integration on housing supply. Finally, using residents' income as an alternative measures of desirability, I also find that the effect is stronger in municipalities where residents are richer on average (see Figure A3 and Table A2 in the Appendix and Tables C2 in Appendix C).

Focusing on municipalities inside an urban area, I next look at whether the effect is stronger the more densely built the municipality is. Table 4 and Figure A4 in the Appendix show the impact on housing for rural and urban municipalities separately, the definition of an urban municipality

[32]The monocentric model predicts that the housing demand is the highest in the center (Alonso, 1964). This is consistent with most housing markets in developed countries, with the notable exception of the US, where the more desirable places are usually located in the suburbs (see, for instance, Jackson, 1987).

[33]Close to the definition of American metropolitan areas, a French urban area is defined as a group of neighboring municipalities encompassing an urban core (urban unit) providing at least 5,000 jobs, and by rural districts or urban units (urban periphery) among which at least 40 percent of the employed resident population works in the core or in the municipalities attracted by this core. I use the 2010 urban area breakdown and consider both large (providing at least 10,000 jobs) and medium (providing between 5,000 and 10,000 jobs) urban areas. I test the robustness to using the 1999 breakdown, and the results are left unchanged. In 2010, France counted 372 urban areas, representing two thirds of the municipalities and 85 percent of the population.

being based on the share of built land and population density.[34] Although the coefficients for urban municipalities are noisier—urban municipalities represent around 27 percent of the sample—the increase after 2010 is larger in magnitude: The number of building permits per 10,000 inhabitants increased by 15.9 per year in urban municipalities forced to integrate (23.6 percent, column 2) against 9.9 in rural municipalities (15.3 percent, column 3). I further split municipalities that are part of an urban area according to a continuous measure of housing density, equal to the number of housing units per square km in 2010. As shown in columns 3 and 4 and on Figure A4 in the Appendix, the impact is higher for municipalities above the housing density median: They experienced an increase of 14.1 building permits per 10,000 inhabitants per year (column 5), against 9.4 for treated municipalities below the median (column 4). Table C3 in Appendix C indicates that a one-standard-deviation increase in housing density increases the treatment effect by 8.6. This corresponds to increasing the effect by more than half compared with the impact on housing for an average treated municipality in the urban area.

Table 3: Impact on housing supply – urban area

	(1)	(2)	(3)	(4)
Outcome	Number of building permits per 10,000 inhabitants			
	All	Outside	Inside	Core
Treatment	8.228***	3.134	10.634***	24.888***
	(1.609)	(2.733)	(1.929)	(5.622)
Municipality FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	245,430	94,305	151,125	28,665
Mean DepVar	66.203	67.802	65.288	66.107
Sd DepVar	94.440	102.100	89.761	108.505

Notes: Column 2 (resp. 3) includes only those municipalities that are not part (resp. part) of an urban area. Column 4 considers only those located in the core of the urban area. The municipal composition of urban areas is based on INSEE 2010 breakdown and I consider both large (providing at least 10,000 jobs) and medium (providing between 5,000 and 10,000 jobs) urban areas. Other notes as in Table 2.

[34]Based on international standards, an urban municipality is a municipality belonging to an urban unit, defined as a continuously built up zone (no cut of more than 200 meters between two constructions) counting at least 2,000 inhabitants.

Table 4: Impact on housing supply inside urban areas – housing density

	(1)	(2)	(3)	(4)	(5)
Outcome	Number of housing building permits per 10,000 inhabitants				
	All	Rural	Urban	Housing density median	
				Below	Above
Treatment	10.634***	9.939***	15.902***	9.415***	14.139***
	(1.929)	(2.102)	(3.971)	(2.395)	(2.919)
Mun. FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Obs.	151,125	105,180	45,945	75,540	75,585
Mean	65.288	64.490	67.469	66.330	64.062
Sd	89.761	85.479	100.535	89.241	90.370

Notes: The sample includes only municipalities inside an urban area. Columns 2 to 5 add further restrictions. Among them, column 2 (resp. 3) includes only rural (resp. urban) municipalities, and column 4 (resp. 5) includes only municipalities with a housing density in 2010 below (resp. above) the median. Other notes as in Table 2.

Neighbors' characteristics. If municipalities were resisting new construction to avoid different people coming in, we should see that the effect is stronger for municipalities surrounded by neighboring municipalities that are more different from them.

I consider several heterogeneity dimensions: residents' average annual taxable income, the share of unemployed workers, and the share of immigrants. For each, I construct a ratio equal to the value for the municipality divided by the average value in neighboring municipalities, weighted by their population. For instance, the immigration ratio indicates whether the proportion of immigrants in a given municipality in 2010 was greater than, less than, or equal to the average proportion in surrounding municipalities. I define surrounding municipalities as encompassing all other municipalities from the same département. The results are robust if I instead define surrounding municipalities as direct neighbors—i.e., municipalities sharing a common border.

Table 5 reports the impact on housing supply depending on whether the municipality is above or below the median value of the ratio. If municipalities were resisting new construction to prevent poorer people from coming in, we should see a stronger effect the larger the average resident's income in the municipality compared with its neighbors, and thus the higher the income ratio. Instead, the two coefficients are close and, if anything, the impact is even larger for municipalities below the median (8.9 vs. 7.3, columns 2 vs. 3). Conversely, if municipalities resisted because they expected more immigrants or unemployed workers to come, we should see that the effect is stronger the smaller the share of immigrants or unemployed in the municipality compared with

its neighbors, and thus the smaller the ratios. Again, the effect is actually goes in the opposite direction, as the impact is larger above the median (columns 4 to 7).

Table 5: Impact on housing supply – neighbors' characteristics

Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Number of housing building permits per 10,000 inhabitants						
	All	Median income ratio		Median immigrants ratio		Median unemployed ratio	
		Below	Above	Below	Above	Below	Above
Treatment	8.228***	8.934***	7.349***	6.483***	9.962***	4.406**	12.042***
	(1.609)	(2.139)	(2.285)	(2.008)	(2.542)	(2.216)	(2.333)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	245,430	123,195	121,995	122,445	122,985	122,535	122,895
Mean DepVar	66.203	59.188	70.940	61.057	71.719	68.351	64.032
Sd DepVar	94.440	80.847	101.636	87.041	101.496	97.203	91.523

Notes: For each municipality, the ratio divides the value of the heterogeneity variable in the municipality by the average value in the other municipalities from the same département, weighted by their population. Column 2 (resp. 3) includes only municipalities below (resp. above) the median value of the ratio using the residents' average annual taxable income. Data on taxable income in 2010 are missing for the 16 municipalities with the smallest populations, in order to protect residents' privacy. Column 4 (resp. 5) includes only municipalities below (resp. above) the median value of the ratio using the share of immigrants in 2010. Columns 6 and 7 repeat the same exercise using the share of unemployed in 2010. Other notes as in Table 2.

The effect is even surprisingly large for municipalities where the share of unemployed workers is higher compared to neighboring municipalities (column 6). However, the estimate obtained by interacting the treatment variable with the unemployment ratio is small and not significant, indicating that this result should not be overinterpreted. Similarly, the interactions with the income and immigrant ratios provide small and non-significant estimates (see Table C4 in Appendix C). Overall, these results suggest that municipalities whose neighbors are more different in terms of income level, immigration, and unemployment status are not driving the effect.[35]

Next, I consider two measures related to political heterogeneity. I first look at whether, in 2010, the mayor had the same political orientation as the member of parliament elected by the legislative district the municipality belongs to. If not, this indicates that the municipality was not politically aligned with the median voter of its district.[36] Second, I consider another measure based on the

[35]Here, I consider all immigrants no matter their country of origin. The effects are similar if I consider non-European immigration only.

[36]The last parliamentary election before 2010 took place in 2007. At this time, metropolitan France counted 551

share of voters in the municipality that voted for the right-wing candidate in the second round of the 2007 presidential election, where a candidate from the right faced a candidate from the left. I compute the absolute value of the difference between the right vote share in the municipality and the average right vote share in neighboring municipalities. The higher this difference, the less politically aligned the municipality is with its neighbors. As shown in Table A3 in the Appendix, the impact on housing is similar whether the mayor shares the same orientation as the member of parliament or not, and even a bit larger when she does (9.1 vs. 7.4, columns 2 and 3). Moreover, while the impact is slightly larger for municipalities above the median value of the absolute difference in terms of right vote share (9.6 vs. 6.4, columns 4 and 5), the coefficient corresponding to the interaction of the heterogeneity variable with the treatment variable is small and not significant (Table C4 in Appendix C). This suggests that municipalities less politically aligned with their neighbors are not driving the effect either.

Homeowners and housing prices. Finally, if homeowners' fear of a housing price decline explains why municipalities resisted new construction, we should see that the effect on housing is higher the larger the share of homeowners in the municipality. Instead, the impact of integration on housing supply is not stronger for treated municipalities above the median (Table 6), and the interaction between the treatment variable and the share of homeowners is negative and not significant (Table C5 in Appendix C).

Table 6: Impact on housing supply – share of homeowners

	(1)	(2)	(3)
Outcome	Number of housing building permits		
	All	Median % homeowners	
		Below	Above
Treatment	8.046***	9.079***	7.891***
	(1.607)	(2.848)	(1.892)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	245,430	117,405	128,025
Mean DepVar	66.203	72.555	62.046
Sd DepVar	94.440	102.776	88.325

Notes: Column 4 (resp. 5) includes only municipalities below (resp. above) the median value of the share of homeowners in 2010. Other notes as in Table 2.

legislative districts (*circonscriptions*), each encompassing 128 municipalities on average. In 2010, 58 percent of the mayors had the same political orientation as the member of parliament representing them (63 percent in the treatment group).

These results are consistent with the lack of empirical evidence supporting the hypothesis that housing regulations are stronger in places with a higher rate of homeownership (e.g., Brueckner, 1998; Glaeser and Ward, 2009; Hilber and Robert-Nicoud, 2013), as well as with recent evidence suggesting that renters can express as much NIMBYism as homeowners, particularly in high-rent places (Hankinson, 2018).

I further investigate the actual impact of integration on municipalities' housing prices. To do so, I use indices based on official housing transactions, which can be interpreted as the price per square meter of a reference house or apartment (see Section 2.3 and Appendix D for more details). As data on housing transactions for the Parisian region of Ile-de-France and for the rest of France come from two distinct databases using different measures for housing characteristics, I present the results for the two parts of France separately. I have transaction data for every even year until 2014 for the Parisian region and until 2016 for the rest of France. Since housing prices are forward looking (Chapelle and Eyméoud, 2019), we can expect them to reflect any changes in expectations about housing value shortly after the 2010 reform. I consider a balanced sample of municipalities, restricting the analysis to municipalities where at least one transaction took place during every even year. This gives a sample of 455 municipalities in the Parisian region and 6,732 in the rest of France (43.9 percent of the initial sample in total). Considering instead all municipalities with at least one transaction during the period of interest almost doubles the sample size and leaves the results unchanged (Figure D1 in Appendix D).

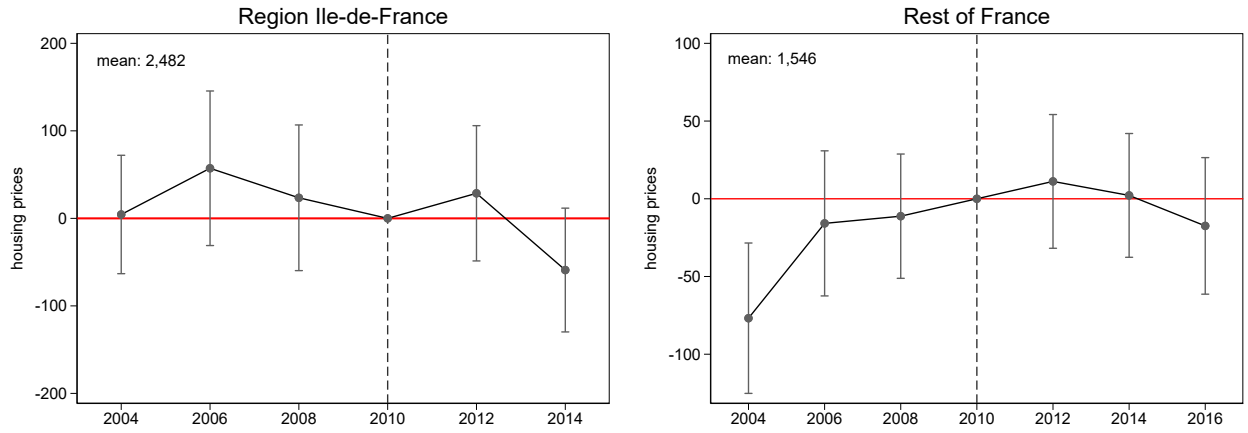
As shown in Figure 5, we see a small decrease in housing prices in 2014 for treated municipalities located in the Parisian region, but the estimated impact is not significant and small in magnitude (-36 euros per square meter). Compared to the average price in the Parisian region in the treatment group before the law (2,482), this would represent a decrease of only 1.5 percent. The decrease is even smaller for the rest of France, suggesting that overall, integration had no significant impact on housing prices for municipalities forced to join an IC. These results are robust to using an alternative version of the indices where I include a larger set of houses' and apartments' characteristics in the hedonic regressions (see Figure D2 in Appendix D). The results also remain similar when restricting the analysis to municipalities inside the urban area, which are driving the impact on building permits (see Figure D3 in Appendix D).

The absence of effect on prices do not rule out the homeowner hypothesis: They may have wrongly believed that prices would go down and, as argued by Fischel (2001), homeowners are above all risk averse and thus tend to oppose any housing projects, even those that may end up having positive effects on housing value growth. Nevertheless, the facts that the effect does not vary with the homeownership rate and that we do not see a significant change in prices suggest that municipalities were not resisting mainly to avoid a price decline. Moreover, the absence of effect on prices is consistent with high-demand places driving the impact on construction: Increasing the

housing supply in places where the demand is the highest is less likely to lead to a decrease in prices.

To conclude, the heterogeneity analysis along with the estimated effect on housing prices suggest that municipalities that opposed integration to keep control over their housing supply are mainly urban municipalities trying to avoid congestion costs, rather than municipalities fearing an increase in population heterogeneity or a housing price decline.

Figure 5: Impact on housing prices



Notes: The sample includes only municipalities where at least one housing transaction took place each even year over the period studied. The graph on the left-hand side includes only municipalities located in the Parisian region Ile-de-France, while the graph on the right-hand side includes all the other municipalities. On each graph, the average value of the price index in the treatment group before 2010 is displayed on the top left corner. Other notes as in Figure 3.

4.2 Impact on local public services

In order to achieve economies of scale, ICs seek to rationalize the offer of local public services and will thus tend to concentrate resources on a subset of public service facilities. In particular, they are likely to concentrate resources on facilities located in central and densely-populated areas, closing facilities or preventing new ones from opening in other areas. As a result, low-density municipalities may lose local public service facilities when entering a community, which is costly, as it increases the distance to public services for their residents.

To explore the consequences of integration on the presence of local public services, I gathered data at the municipal level on two different local public services: daycare facilities and public libraries. For both, I look at whether municipalities forced to join an IC experienced a loss in the number of facilities located within their territory, taking as outcome the number of facilities per 10,000 inhabitants (using the 2010 population). Note that the data available are less comprehensive

than the ones on building permits for two reasons. First, data on daycare and libraries start in 2007 and 2009 respectively, which does not leave enough time before the law to compare the main results with the effects of integration for municipalities that voluntarily integrated between 2000 and 2010. Moreover, data on libraries are available for 7 départements only.[37] Nevertheless, the results go in the exact same direction for both daycare and libraries, strengthening the conclusions we can draw about the effects of integration on the presence of local public services in municipalities forced to integrate.

In Figure 6 as in Figure 7, the graph on the full sample suggests that, on average, municipalities forced to integrate experienced a decrease in the number of public service facilities compared to control municipalities. Moreover, in both cases, the entire effect is driven by rural municipalities: While the number of daycare facilities and public libraries decreases in rural municipalities after 2010, we do not see any decline for urban municipalities and, if anything, the trend is even slightly increasing after the law.

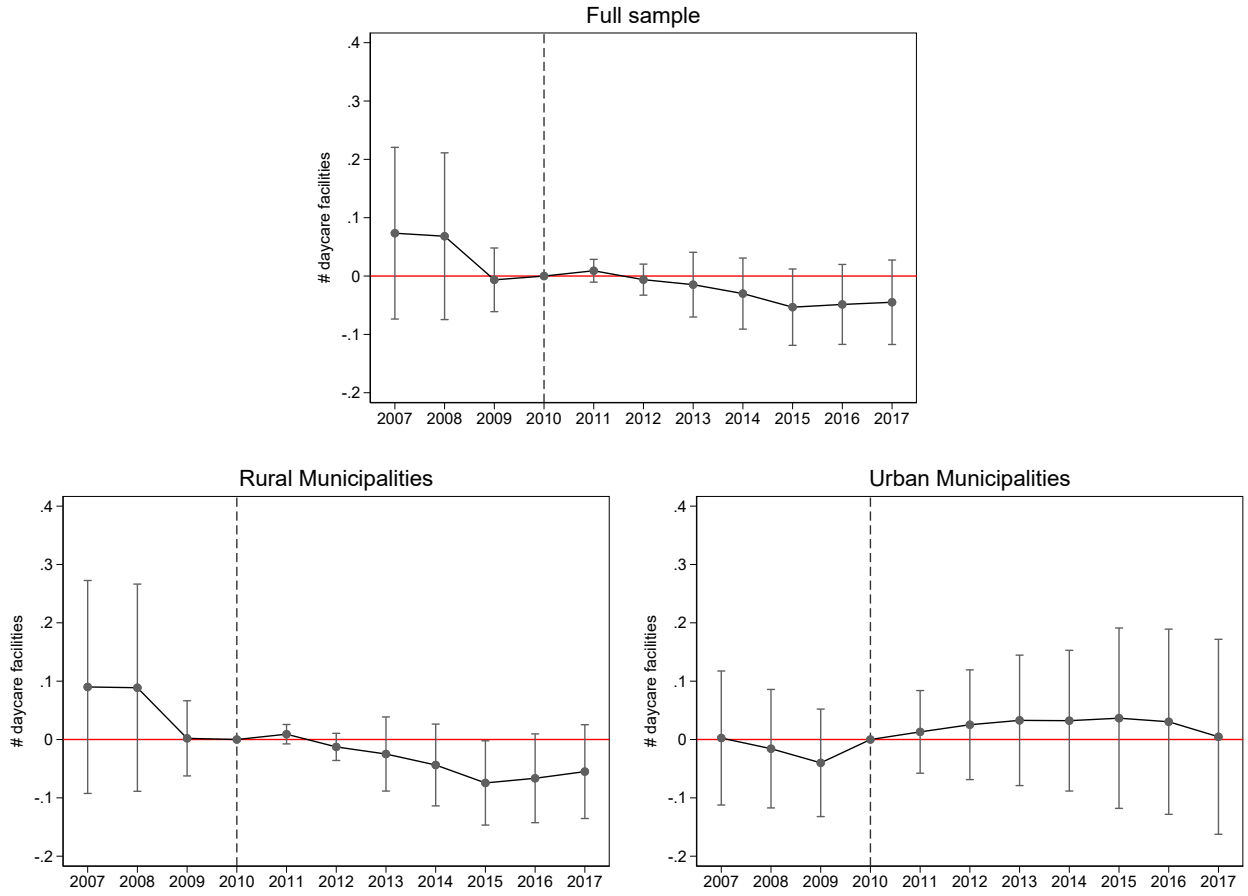
Table 7 provides the estimates. Even if no coefficient is significant at the standard levels for daycare facilities (columns 1 to 3), in line with the graphical evidence, the coefficient for rural municipalities is negative, whereas the coefficient for urban municipalities is positive. Taken at face value, the estimate suggests that in the average year post 2010, rural municipalities forced to integrate had 38.6 percent less daycare facilities located within their territory compared to rural control municipalities. The patterns are similar if we take as outcome the total number of daycare spots available at the municipal level rather the number of facilities (see Figure A5 and Table A4 in the Appendix).

Turning to public libraries (columns 4 to 6 of Table 7), the coefficients corresponding to the full sample and to rural municipalities are both negative and significant at the 10-percent level, while the coefficient for urban municipalities is close to 0 and not significant. The magnitude of the impact indicates that, in the average year after 2010, rural municipalities forced to integrate had 1.1 public libraries less per 10,000 inhabitants, corresponding to a decrease of 21.3 percent. Focusing on the last year of analysis, the estimate suggests that, in 2017, the number of public libraries per 10,000 inhabitants was lowered by 2.1 (39.6 percent) in rural municipalities forced to integrate compared to rural control municipalities.

These findings are consistent with ICs concentrating resources in denser municipalities and help explain rural municipalities' resistance to integration.

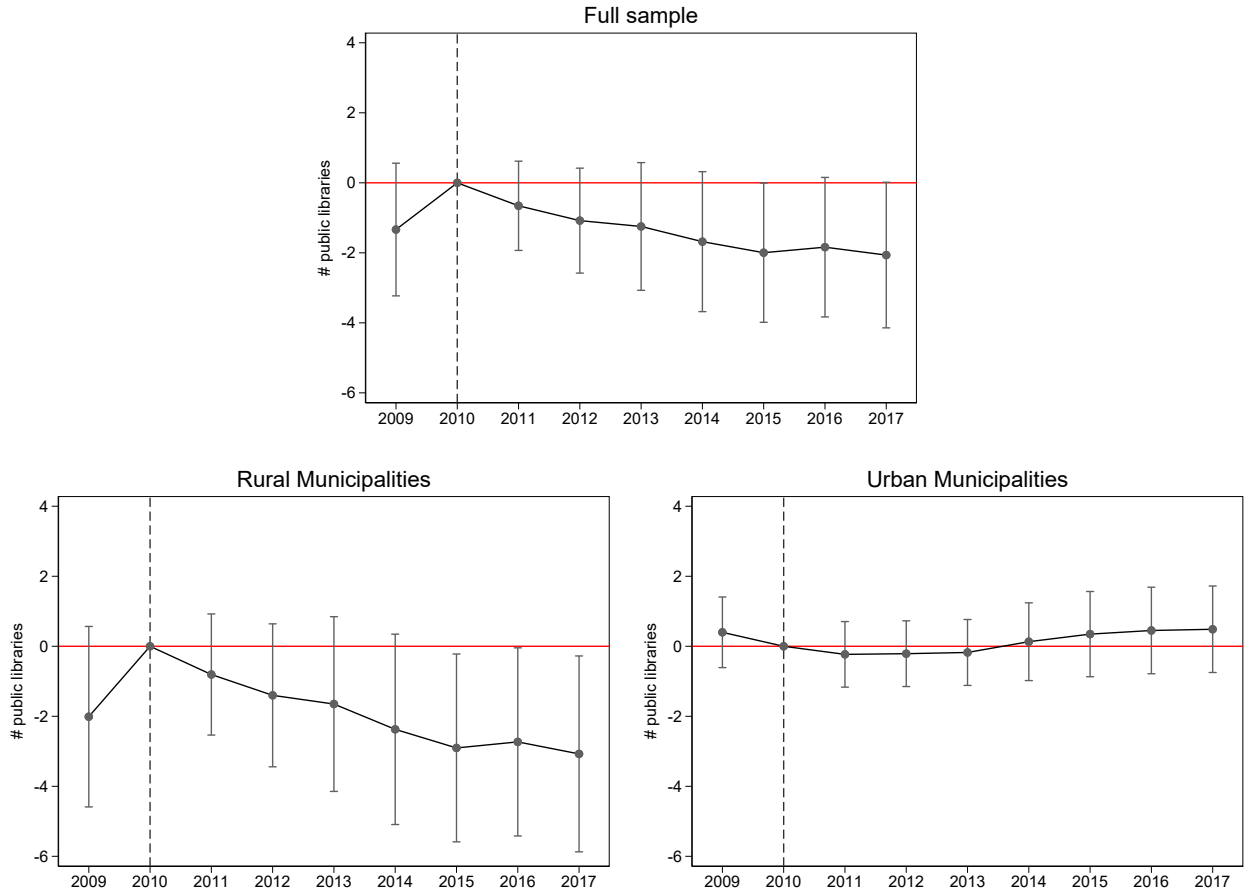
[37]The 7 départements are located in different parts of the countries: Aisne (in the north of France), Finistère (west), Drôme (southeast), Gironde and Dordogne (southwest), and Essonne and Val d'Oise (center north). They represent 9 percent of the municipalities in the main sample of analysis.

Figure 6: Impact on daycare facilities



Notes: The graph on the bottom left-hand side includes only rural municipalities, while the graph on the bottom right-hand side includes only urban municipalities. Other notes as in Figure 3.

Figure 7: Impact on public libraries



Notes as in Figure 6.

Table 7: Impact on local public services

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Number of facilities per 10,000 inhabitants					
	Daycare facilities			Public libraries		
	All	Rural	Urban	All	Rural	Urban
Treatment	-0.061	-0.083	0.038	-0.841*	-1.129*	-0.086
	(0.046)	(0.055)	(0.063)	(0.465)	(0.627)	(0.312)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	179,982	140,272	39,710	12,825	9,900	2,925
Mean	0.438	0.210	1.326	4.395	5.302	2.045
Sd	2.174	2.211	1.762	9.611	11.026	3.095

Notes: In columns 1 to 3, the outcome is the number of daycare facilities located in the municipality per 10,000 inhabitants (using the 2010 population), and the period of analysis is 2007-2017. In columns 4 to 6, the outcome is the number of public libraries located in the municipality per 10,000 inhabitants (using the 2010 population), the period of analysis is 2009-2017, and the sample is restricted to 7 départements for which data are available starting in 2009. Columns 2 and 5 include only rural municipalities, while column 3 and 6 includes only urban municipalities. Other notes as in Table 2.

5 Evidence on the benefits of integration

Results so far suggest that urban municipalities resisted cooperation to prevent more construction from raising congestion, while rural municipalities resisted to avoid losing local public services. This section explores whether, on top of experiencing costs of integration, resisting municipalities also benefited less from eventual gains of cooperation, which would contribute to explaining why they resisted longer. I first investigate the impact on public transport, a large-scale public service that integration is likely to improve, and then turn to the impact on fiscal revenues.

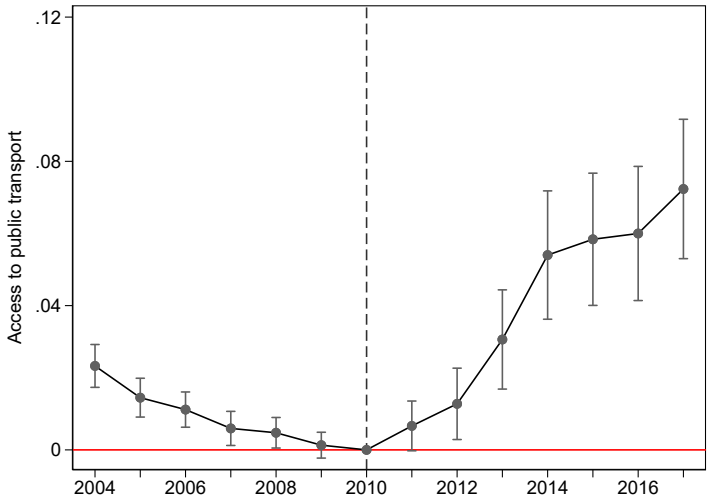
5.1 Impact on public transport

By enhancing cooperation and enabling municipalities to pool resources, integration is likely to help neighboring municipalities build larger and more efficient public transport networks. As a result, joining an intermunicipal community might increase a municipality's probability of being connected. To investigate whether municipalities forced to join an IC enjoyed such a benefit, I estimate the impact of forced integration on an indicator variable equal to one if the municipality has access to public transport. This analysis excludes municipalities located in the Parisian region

of Ile-de-France, for which data on public transport are not available (representing 20.2 percent of treated municipalities).

As shown in Figure 8, pre-reform coefficients are significant, and the decreasing pre-trend suggests that before 2010, access to public transport increased more rapidly for control municipalities than for treated municipalities. One plausible explanation is that coordination inside ICs helped control municipalities develop transport networks more rapidly. In contrast, the large increasing trend after 2010 suggests that, after the law, access to public transport increased more rapidly for municipalities forced to join an IC.

Figure 8: Impact on public transport



Notes as in Figure 3.

Table 8 indicates that resisting municipalities' probability of having access to public transport was 3.3 percentage points higher in the average year post 2010, an effect significant at the 1-percent level. Given that only 2.4 percent of treated municipalities were connected to a transport network before 2010, it means that their entry into an intermunicipal community more than doubled their probability of having access to public transport. In 2017, the point estimate reaches 7.2, corresponding to more than tripling the probability of being connected.[38] The point estimate is larger for urban municipalities (10.9, column 3 of Table 8) than for rural municipalities (2.1, column 3 of Table 8), but the magnitude relative to the pre-treatment mean is similar, and both estimates are significant at the 1-percent level. In line with the presence of pre-trends, the coefficients associated

[38]The fraction of treated municipalities with access to a public transport network prior to 2010 is particularly low for two reasons. First, treated municipalities were not part of an IC before 2010, making them less likely to be part of a transport network. As a comparison, the share of control municipalities with access to a public transport network prior to 2010 is equal to 13.0 percent. Second, the data I use cover the regular public transport networks that are managed at the municipal or intermunicipal level, excluding the ones managed at the departmental or regional level (see Section 2.3).

to the placebo reforms before 2010 are significant but small and negative, contrasting with the large and positive effect of the true reform (Figure B4 in Appendix B).

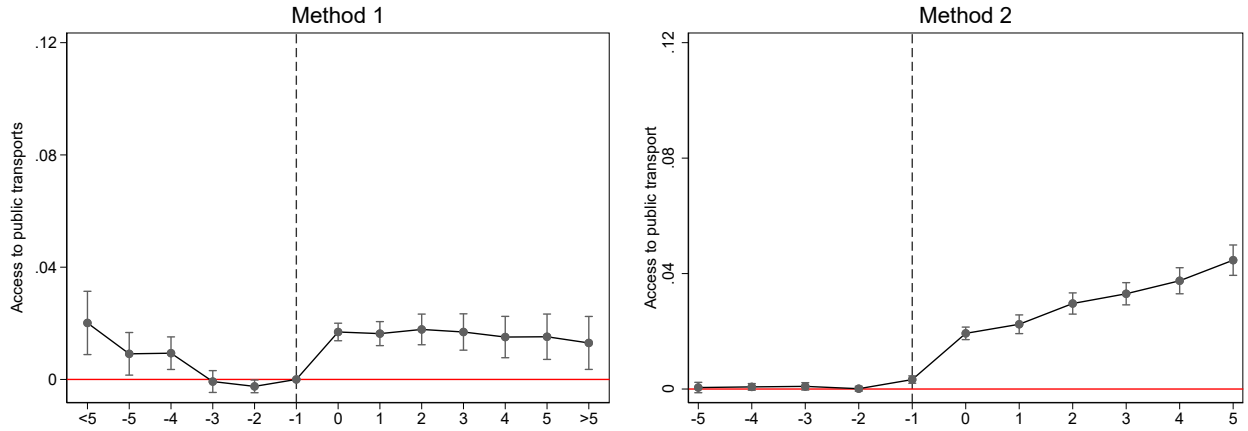
Table 8: Impact on public transport

	(1)	(2)	(3)
Outcome	Access to public transport		
	All	Rural	Urban
Treatment	0.033***	0.021***	0.109***
	(0.007)	(0.007)	(0.025)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	220,948	173,684	47,264
Mean DepVar	0.024	0.014	0.078
Sd DepVar	0.153	0.116	0.269

Notes: The outcome is an indicator variable equal to one if the municipality has access to public transport. The sample excludes municipalities located in the Parisian region, Ile-de-France, for which the data are not available. Column 2 includes only rural municipalities, while column 3 includes only urban municipalities. Other notes as in Table 2.

I then use the same estimation methods as in Section 4.1.2 to estimate the impact of integration on public transport for municipalities that instead voluntarily joined an IC before 2010. The first graph in Figure 9 uses the regular staggered adoption design (method 1) and shows that on average, the probability of having access to public transport was 2 percentage points higher in the years following integration for municipalities that voluntarily integrated. The estimated effect is larger using de Chaisemartin and D'Haultfoeuille (2019)'s method: As shown on the second graph (method 2), the effect is increasing over time and reaches up to 4 percentage points 4 years after integration. This is a sizable effect, given that only 2.8 percent of the municipalities that integrated between 2000 and 2010 had access to public transport in 1999. Taken together, these results suggest that integration had a large positive effect on public transport for both municipalities that voluntarily joined an IC and those that resisted integration.

Figure 9: Impact on public transport for municipalities voluntary integrating



Notes as in Figure 4.

5.2 Impact on fiscal revenues

Finally, I study the impact of integration on municipalities' resources. When entering an IC, municipalities' fiscal revenues can be impacted in two ways. First, while municipalities' own state transfers do not change after integration, once part of an IC, municipalities also benefit from the additional state transfers allotted to the community they are now part of. Second, municipalities' tax revenues can change. In particular, if the business tax is decided at the IC level, as is the case in about half of the ICs, the tax rate and tax base might differ from the municipality's own rate and base prior to integration, which can lead to either a decrease or increase in tax revenues, depending on the gap in tax rate and tax base compared with the other members of the community.

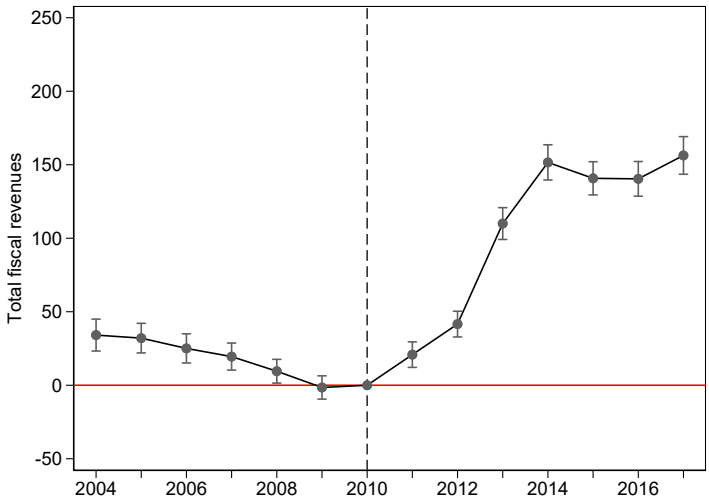
To investigate whether municipalities forced to integrate benefited from larger resources after their integration, I estimate the impact of forced integration on municipalities' total fiscal revenues, which I compute as follows. If a municipality is isolated, its fiscal revenues are made up of the municipality's own tax revenues and state transfers. If a municipality is part of an intermunicipal community, I compute its fiscal revenues as the sum of the municipality's own fiscal revenues and the total IC's fiscal revenues scaled by the share of the IC population the municipality represents.[39] Finally, I divide the total fiscal revenues by the municipal population in 2010.

As shown in Figure 10, contrasting with the small decreasing trend before 2010, we see a large increasing trend after the law, suggesting that treated municipalities experienced an increase in their fiscal revenues compared to control municipalities following their integration.

[39]If the IC gives direct transfers to one of the member municipalities—for instance, as part of the "solidarity transfers" given to poorer municipalities in the community—I consider these transfers as part of the revenues of that municipality only, but not as part of the total IC revenues shared among all members.

Table 9 indicates that on average, integration increased fiscal revenues by 91.8 euros per capita per year (13.0 percent) in municipalities forced to join an IC, an effect significant at the 1-percent level. As shown in columns 2 and 3, the increase compared to the average fiscal revenues prior to 2010 is similar for rural and urban municipalities: 13.3 and 12.5 percent respectively. As for public transport, the estimates associated to placebo reforms are small and negative, working against the large and positive effect of the true reform (Figure B4 in Appendix B).

Figure 10: Impact on fiscal revenues



Notes as in Figure 3.

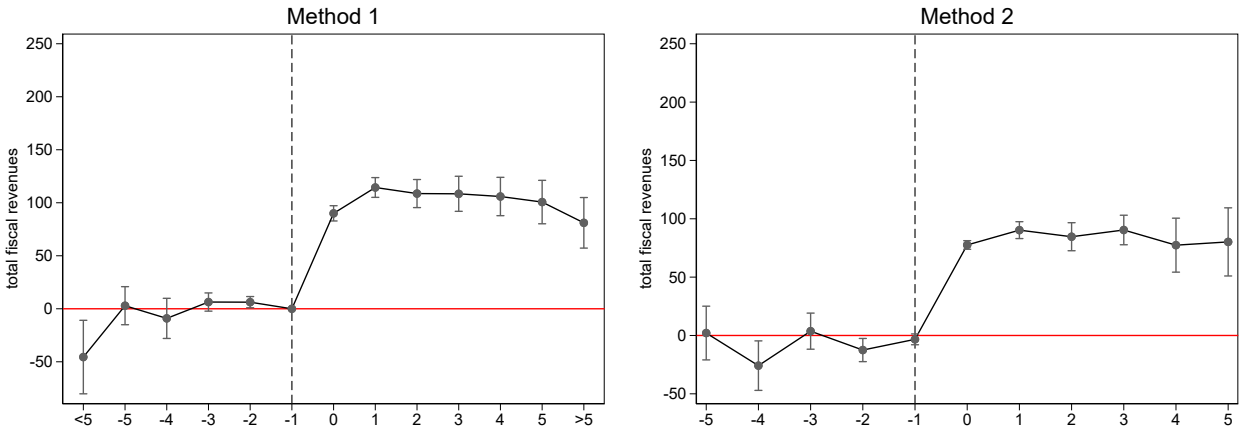
Table 9: Impact on fiscal revenues

Outcome	(1)	(2)	(3)
	Fiscal revenues per capita		
	All	Rural	Urban
Treatment	91.8***	82.9***	128.5***
	(5.1)	(5.4)	(12.8)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	227,766	177,618	50,148
Mean DepVar	705.7	624.0	1,025.3
Sd DepVar	431.9	329.7	602.4

Notes: The outcome is the municipality's total fiscal revenues per capita, as defined in the text. I exclude from the analysis few municipalities for which the data are missing for at least one year over the period 2004-2017 (0.6 percent of the sample). Column 2 includes only rural municipalities, while column 3 includes only urban municipalities. Other notes as in Table 2.

I then compare this effect to the one experienced by municipalities that instead decided to join an IC voluntarily before the law, again using the same estimation methods as in Section 4.2.1. As shown in Figure 11, both estimation methods suggest that they experienced an increase in fiscal revenues of about 100 euros per capita after their integration (or about 15.2 percent).[40] Hence, municipalities forced to integrate gained about the same amount of revenue as municipalities that chose to integrate. Assuming that municipalities could anticipate such effects,[41] these results suggest that municipalities forced to integrate did not oppose integration because they believed they would get a lower share of the benefits, but rather that these benefits were not high enough to compensate for the costs of integration.

Figure 11: Impact on fiscal revenues for municipalities voluntary integrating



Notes: Data on fiscal revenues are only available starting in 2002. The analysis is thus restricted to municipalities integrating between 2003 and 2010. I further exclude from the analysis a few municipalities for which the data are missing for at least one year over the period 2002-2017 (1.4 percent of the sample). In method 1, the period of analysis goes from 2002 to 2017, whereas in method it goes from 2002 to 2009. Other notes as in Figure 4.

[40] Data on municipalities' and IC's fiscal revenues are available starting in 2002 only. I thus focus the analysis on municipalities that voluntarily integrated between 2003 and 2010. For the regular staggered adoption design, the period of analysis goes from 2002 to 2017, while in using de Chaisemartin and D'Haultfoeuille (2019)'s method I restrict to the period from 2002 to 2009 (see Section 4.2.1). To compute the magnitude of the effect, I compare the increase of 100 euros to the average fiscal revenues in 2002.

[41] It is likely that municipalities could anticipate the change in revenues they would face after integration: The record of state transfers awarded to ICs was public information, as the goal was to incentivize cooperation, and the tax rate and tax base of other municipalities are quite easy to learn given the geographical proximity between municipalities inside the same IC.

6 Discussion

6.1 Interpretation

While municipalities forced to integrate experienced the same benefits of integration as municipalities that voluntarily integrated, they faced some costs in terms of housing supply and loss of local public services that the other municipalities did not, at least in terms of construction. I have interpreted those results as evidence that municipalities resisted integration to avoid such costs. This interpretation assumes that they correctly anticipated the consequences of integration and that they would have experienced the same had they integrated earlier.

Alternatively, one could argue that resisting municipalities faced such effects because they entered an intermunicipal community later on and were forced to do so. As a result, they might have entered more organized ICs that were more able to impose costs on them, and municipalities already integrated in those communities might have wanted to punish them for having resisted so long. This would imply that forced municipalities would not have experienced the same had they voluntarily integrated earlier, casting doubt on whether the results presented in this paper can explain their resistance. I test this alternative interpretation by looking at the impact of integration depending on the types of ICs the resisting municipalities joined after the 2010 law.

First, if this is the correct interpretation, we should see that the effect of forced integration on building permits and local public services are driven by municipalities that entered existing intermunicipal communities after the law, as opposed to municipalities that created new ICs after 2010. Instead, as shown in Table 10, the 27 percent of treated municipalities that created new ICs also experienced a large increase in the number of building permits delivered (+10.0 vs. +8.2 for the full sample, columns 2 and 1). The same conclusion holds when focusing on municipalities inside the urban area, which drive the impact on housing (columns 6 vs. 5). When entering a new IC, the integration process of resisting municipalities resembles the integration process of municipalities that integrated early on, supporting the view that municipalities that opposed integration would have experienced the same had they integrated earlier. Tables A5 and A6 in the Appendix provides the results for daycare facilities and public libraries, for the full sample and focusing on rural municipalities only. While the impact on both services is on average smaller in magnitude for municipalities entering new ICs, it remains negative. Moreover, the effect on daycare facilities for rural municipalities entering new ICs is high and even becomes significant.[42]

Second, focusing on the larger sample of municipalities that entered existing ICs, I look at the impact depending on whether resisting municipalities had the choice of joining several communi-

[42]The results on public services are, however, difficult to interpret, given the general lack of precision for the effects on daycare facilities and the extremely small sample available for public libraries (there are only 15 municipalities that entered a new IC and for which data on libraries are available).

ties when they were forced to integrate in 2010. If punishment for having refused to enter earlier was driving the results, we should see that municipalities that had common borders with several communities experienced lower costs. While the effect on housing is a bit smaller on average for municipalities that had the choice between at least two ICs (5.2 vs 8.2, columns 3 vs. 1), the impact is very similar when focusing on municipalities inside an urban area (9.2 vs. 10.6, columns 7 vs. 5), and all estimates remain significant at the 1-percent level. Moreover, as shown in Tables A5 and A6 in the Appendix, the impact on daycare facilities and public libraries remains the same depending on the number of options the municipalities had, both overall and focusing on rural municipalities only.

Finally, I study the impact of integration for resisting municipalities that joined existing communities made of recently integrated neighbors. In particular, I consider communities whose members integrated later than 2000 and were thus quite recently created in 2010. If entering communities that had been in existence for a long time was driving the results, we should see a smaller impact for those municipalities. Instead, the impact on building permits and public services remain as high in magnitude as for the full sample (see columns 4 vs. 1 and 8 vs. 5 in Table 10, and Table A5 and A6 in the Appendix).

Table 10: Impact on housing depending on the integration process

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outcome	Number of building permits per 10,000 inhabitants							
	Full sample				Municipalities inside an urban area			
	All	New IC	Existing IC		All	New IC	Existing IC	
			$\geq$ 2 choices	Recent			$\geq$ 2 choices	Recent
Treatment	8.228***	10.024***	5.233***	8.852***	10.634***	8.803***	9.182***	15.730***
	(1.609)	(3.061)	(1.853)	(3.305)	(1.929)	(3.409)	(2.302)	(3.690)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	245,430	231,225	239,055	231,015	151,125	142,665	146,385	141,750
Mean	66.203	65.660	67.273	62.718	65.288	64.439	67.071	59.873
Sd	94.440	92.082	95.565	98.893	89.761	86.693	91.364	88.177

Notes: Columns 5 to 8 focus on municipalities inside an urban area. Columns 2 and 6 includes only treated municipalities that joined an existing IC after the law. Columns 2 and 6 include only treated municipalities that created a new IC in 2010. Columns 3 and 7 include only treated municipalities that entered an existing IC and that had the choice between at least two of them in 2010. Columns 4 and 8 include only treated municipalities that entered an existing IC in which all other members integrated after 2000. Other notes as in Table 2.

6.2 External validity

The results above further support the view that municipalities forced to integrate opposed cooperation knowing that they would face some costs in terms of housing supply and local public services. Conversely, it also suggests that municipalities that voluntarily integrated entered an IC knowing they would be able to avoid such costs. This begs the question: Why or how were those municipalities able to avoid them?

A first possible explanation is that those costs of integration apply only to a particular type of municipality, which would limit the external validity of the results. However, based on observable characteristics and as shown in Section 3.1, resisting municipalities are on average quite similar to municipalities that integrated the earliest. Moreover, as shown in Section 4, different types of resisting municipalities faced different costs, urban municipalities suffering from more construction and rural ones from a decrease in local public services. This shows that there is not one type of cost impacting a specific type of municipality, but rather that integration costs can apply to a wide range of municipalities.

Hence, a most likely explanation is that municipalities that voluntarily integrated knew that they would get a higher bargaining power among their neighbors and would thus be able to oppose costly IC decisions. This is consistent with forced municipalities having less bargaining power in their intermunicipal communities today compared with the average municipality. As the number of seats a municipality gets in the intermunicipal council is proportional to its population, I measure a municipality's bargaining power as the ratio between the share of the IC's total population living in that municipality divided by the population share an average municipality from the same IC represents. Hence, the greater this ratio, the larger the share of seats the municipality has compared with the average number of seats others get. I look at the composition of ICs at the end of the period of analysis, in 2018. While the average value of the ratio is 1 by construction, it is on average equal to only 0.80 for municipalities that were forced to integrate. Those municipalities are also more likely to end up in an IC that encompasses a big city (of more than 10,000 inhabitants): 36.6 percent, versus 32.2 on average. This supports the view that municipalities resisted knowing that once they became part of a community, they would not be able to prevent their neighbors from imposing new construction or decreasing the availability of public services within their territory.

All in all, this suggests that the costs identified in this paper can explain resistance beyond the specific case of municipalities forced to enter an IC in 2010. In particular, they might explain why the vast majority of French municipalities recently opposed new laws aimed at increasing the size and competences of intermunicipal communities. An increase in the size of ICs would lead many municipalities to lose bargaining power and thus to suffer from costs they have been able

to avoid up to now.[43] Moreover, as most forms of cooperation among local jurisdictions imply sharing urban planning policies and public services, these findings can help explain resistance against integration beyond the case of French municipalities.

7 Conclusion

This paper is the first to causally identify the effects of integration on resisting municipalities. Exploiting a 2010 reform in France that forced non-integrated municipalities to enter an intermunicipal community, I measure the impact of integration on resisting municipalities. Comparing those effects with those experienced by municipalities that instead voluntarily integrated before the law , I infer the factors explaining why forced municipalities opposed integration in the first place. I provide evidence that resistance is driven by actual local costs of integration: Urban municipalities resisted cooperation to prevent further constructions from raising congestion, while rural municipalities resisted to avoid losing local public services.

First, I find that municipalities forced to integrate experienced an increase of 12.4 percent in the number of building permits delivered per year. On the contrary, municipalities that integrated voluntarily did not experience any change in their housing supply following their integration. This finding supports the view that resisting municipalities refused to integrate to avoid an increase in housing supply and provides evidence that their decision was driven by actual costs of integration, beyond ideological or political considerations. Further analyses show that the impact is mainly driven by municipalities where the demand for housing is high and that are already densely built, for which more construction is likely to raise congestion.

I then assess the impact on local public services. To do so, I gathered data at the local level on two different local public services: daycare facilities and public libraries. For both, I find that rural municipalities forced to enter an intermunicipal community experienced a decrease in the number of facilities located on their territory, implying that integration increased the distance to public services for their residents.

Finally, I explore the benefits of integration. Results show that once in a community, municipalities forced to integrate became twice as likely to have access to public transport and that their fiscal revenues increased by 13.0 percent per year on average. I find that these gains are similar to the ones municipalities that voluntarily integrated experienced. These results suggest that resisting

[43] In 2015, a new law passed requiring that ICs should be at least 15,000 inhabitants by 2017 and requiring municipalities to share more public services. There was widespread complaint from mayors, leading to multiple revisions of the law (e.g., https://www.maire-info.com/organisation-gestion-communale/elus-locaux/un-fort-sentiment-de-perte-d-autonomie-chez-les-maires-selon-le-cevipof-article-22423). In the face of such resistance, the French president announced he might reconsider the law (see for instance: https://www.amf.asso.fr/documents-vers-une-revision-la-loi-notre-/39240).

municipalities did not oppose integration anticipating they would get a lower share of the benefits, but rather that these benefits were not high enough to compensate for the local costs of integration.

This paper provides new evidence on the factors explaining municipalities' reluctance to integrate. These findings could help policymakers design better compensation schemes to implement consolidation policies at the municipal level more effectively. In particular, the results suggest that rural and urban municipalities should be compensated differently, as they do not face the same costs of integration. Moreover, by identifying the local costs of integration, this paper provides the first step toward a welfare analysis of consolidation reforms and thus opens new avenues for research.

These results might also help understand consolidation failures in general, from the reluctance of countries to expand the European Union to the aspiration of Catalonia to secede from Spain. While the specific costs identified in this paper might not apply in these settings, my findings suggest that we should go beyond ideological and political considerations and identify the actual costs of integration in order to better understand what is at stake.

References

Alesina, A., Baqir, R., and Hoxby, C. (2004). Political Jurisdictions in Heterogeneous Communities. *Journal of Political Economy*, 112(2):348–396.

Alesina, A. and Spolaore, E. (1997). On the number and size of nations. *The Quarterly Journal of Economics*, 112(4):1027–1056.

Alonso, W. (1964). *Location and land use. Toward a general theory of land rent.* Harvard University Press, Cambridge, MA.

Bates, L. J. and Santerre, R. E. (1994). The determinants of restrictive residential zoning: Some empirical findings. *Journal of Regional Science*, 34(2):253–263.

Bel, G. and Warner, M. E. (2015). Inter-municipal cooperation and costs: expectations and evidence. *Public Administration*, 93(1):52–67.

Bel, G. and Warner, M. E. (2016). Factors Explaining Inter-municipal Cooperation in Service Delivery : A Meta-Regression Analysis. *Journal of Economic Policy Reform*, 19(2):91–115.

Blom-Hansen, J., Houlberg, K., Serritzlew, S., and Treisman, D. (2016). Jurisdiction Size and Local Government Policy Expenditure: Assessing the Effect of Municipal Amalgamation. *American Policital Science Review*, 110(4):812–831.

Borusyak, K. and Jaravel, X. (2017). Revisiting Event Study Designs, with an Application to the Estimation of the Marginal Propensity to Consume. *Available at SSRN 2826228*.

Brueckner, J. K. (1998). Testing for Strategic Interaction Among Local Governments: The Case of Growth Controls. *Journal of Urban Economics*, 44(3):438–467.

Chapelle, G. and Eyméoud, J.-B. (2019). Can Big Data increase our knowledge of local rental markets? Estimating the cost of density with rents. *Working Paper*.

Chetty, R., Hendren, N., and Katz, L. F. (2016). The Effects of Exposure to Better Neighborhoods on Children: New Evidence from the Moving to Opportunity Experiment. *American Economic Review*, 106(4):855–902.

Clingermayer, J. C. (1994). Electoral Representation, Zoning Politics, and the Exclusion of Group Homes. *Political Research Quarterly*, 47(4):969–984.

Combes, P.-P., Duranton, G., and Gobillon, L. (2018). The Costs of Agglomeration : House and Land Prices in French Cities. *Review of Economic Studies*, 86(4):1556–1589.

de Chaisemartin, C. and D'Haultfoeuille, X. (2019). Two-way fixed effects estimators with heterogeneous treatment effects. *NBER Working Paper No. w25904*.

Di Porto, E. and Paty, S. (2018). Cooperation among Local Governments to Deliver Public Services. *Politics & Policy*, 46(5):790–820.

Egger, P. H., Köthenbürger, M., and Loumeau, G. (2017). Local Border Reforms and Economic Activity. *CESifo Working Paper, No. 6738*.

Fabre, B. (2017). Political Colleagues Matter: The Impact of Multiple Office-Holding on Intergovernmental Grants. *PSE Working Paper 2017-43*.

Fischel, W. A. (2001). *The Homevoter Hypothesis*. Harvard University Press, Cambridge, MA.

Frieden, B. (1979). A New Regulation Comes to Suburbia. *Public Interest*, 55:15–27.

Glaeser, E. and Gyourko, J. (2018). The economic implications of housing supply. *Journal of Economic Perspectives*, 32(1):3–30.

Glaeser, E. L. (2014). Land Use Restrictions and Other Barriers to Growth. *Cato Institute*.

Glaeser, E. L. and Kahn, M. E. (2010). The greenness of cities: carbon dioxide emissions and urban development. *Journal of Urban Economics*, 67(3):404–418.

Glaeser, E. L. and Maré, D. C. (2001). Cities and Skills. *Journal of Labor Economics*, 19(2):316–342.

Glaeser, E. L. and Ward, B. A. (2009). The causes and consequences of land use regulation: Evidence from Greater Boston. *Journal of Urban Economics*, 65(3):265–278.

Goodman-Bacon, A. (2018). Difference-in-Differences With Variation in Treatment Timing. *NBER Working Paper No. 25018*.

Gordon, N. and Knight, B. (2009). A spatial merger estimator with an application to school district consolidation. *Journal of Public Economics*, 93(5-6):752–765.

Gouriéroux, C. and Laferrère, A. (2009). Managing hedonic housing price indexes: The French experience. *Journal of Housing Economics*, 18(3):206–213.

Gyourko, J. and Molloy, R. (2015). Regulation and Housing Supply. In Duranton, G., Henderson, V. J., and Strange, W., editors, *Handbook of Regional and Urban Economics*, volume 5b, pages 1289–1337. Amsterdam: Elsevier.

Hankinson, M. (2018). When Do Renters Behave Like Homeowners? High Rent, Price Anxiety, and NIMBYism. *American Political Science Review*, 112(3):473–493.

Harjunen, O., Saarimaa, T., and Tukiainen, J. (2019). Political representation and effects of municipal mergers. *Political Science Research and Methods*, pages 1–17.

Hilber, C. A. and Robert-Nicoud, F. (2013). On the origins of land use regulations: Theory and evidence from US metro areas. *Journal of Urban Economics*, 75:29–43.

Hsieh, C. T. and Moretti, E. (2019). Housing Constraints and Spatial Misallocation. *American Economic Journal: Macroeconomics*, 11(2):1–39.

Hulst, R., Montfort, A. V., Haveri, A., Airaksinen, J., and Kelly, J. (2009). Institutional Shifts In Inter-Municipal Service Delivery. *Public Organization Review*, 9:263–285.

Jackson, K. T. (1987). *Crabgrass frontier: The suburbanization of the United States*. Oxford University Press.

Jones, C. and Kammen, D. M. (2013). Spatial Distribution of U.S. Household Carbon Footprints Reveals Suburbanization Undermines Greenhouse Gas Benefits of Urban Population Density. *Environmental Science & Technology*, 48(2):895–902.

Lapointe, S. (2018). Love thy neighbour? The effect of income and language differences on votes for municipal secessions. *Regional Science and Urban Economics*, 70:229–245.

Lidström, A. (2010). The Swedish Model under Stress: The Waning of the Egalitarian, Unitary State? In *Territorial Choice. The Politics of Boundaries and Borders*, pages 61–80. Houndsmills: Palgrave.

Mouritzen, P. E. (2010). The Danish Revolution in Local Government: How and Why? In *Territorial Choice. The Politics of Boundaries and Borders*, pages 21–41. Houndsmills: Palgrave.

Musiedlak, Y. and Vignolles, B. (2016). Les mouvements des prix immobiliers dans l 'ancien au cours des années 2000 : des marchés locaux différenciées. *Document de travail du CGEDD*, (24):1–40.

Ortalo-Magné, F. and Prat, A. (2014). On the Political Economy of Urban Growth: Homeownership versus Affordability. *American Economic Journal: Microeconomics*, 6(1):154–181.

Purcell, M. (2006). Urban Democracy and the Local Trap. *Urban Studies*, 43(11):1921–1941.

Reingewertz, Y. (2012). Do municipal amalgamations work? Evidence from municipalities in Israel. *Journal of Urban Economics*, 72(2-3):240–251.

Rolleston, B. S. (1987). Determinants of restrictive suburban zoning: An empirical analysis. *Journal of Urban Economics*, 21(1):1–21.

Saarimaa, T. and Tukiainen, J. (2014). I Don't Care to Belong to Any Club That Will Have Me as a Member: Empirical Analysis of Municipal Mergers. *Political Science Research and Methods*, 2(1):97–117.

Saiz, A. (2010). The Geographic Determinants of Housing Supply. *Quarterly Journal of Economics*, 125(3):1253–1296.

Sorensen, R. J. (2006). Local Government Consolidations: The Impact of Political Transaction Costs. *Public Choice*, 127(1):75–95.

Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Political Economy*, 64(5):416–424.

Weese, E. (2015). Political mergers as coalition formation : An analysis of the Heisei municipal amalgamations. *Quantitative Economics*, 6:257–307.

Appendix

Contents

A. Additional tables and figures

Table A1: Descriptive statics using municipalities' characteristics in 1999

	Control (N=15,065)				Treatment (N=1,297)			
	mean	sd	min	max	**mean**	sd	min	max
population	**1,851**	11,095	2	798,430	**1,516**	4,434	18	67,304
w/out largest	***1,481***	*4,038*	*2*	*65,042*	***1,516***	*4,434*	*18*	*67,304*
urban	**0.19**	0.39	0.00	1.00	**0.18**	0.38	0.00	1.00
urban area	**0.54**	0.50	0.00	1.00	**0.57**	0.50	0.00	1.00
core urban area	**0.11**	0.31	0.00	1.00	**0.08**	0.27	0.00	1.00
unemployed	**0.10**	0.05	0.00	0.50	**0.10**	0.05	0.00	0.35
child	**0.07**	0.02	0.00	0.26	**0.07**	0.02	0.00	0.18
farmers	**0.05**	0.06	0.00	1.00	**0.05**	0.06	0.00	0.50
executives	**0.04**	0.03	0.00	0.50	**0.05**	0.06	0.00	0.43
workers	**0.17**	0.07	0.00	0.67	**0.16**	0.07	0.00	0.60
retired	**0.26**	0.08	0.00	1.00	**0.25**	0.09	0.00	0.75
no diploma	**0.22**	0.08	0.00	0.63	**0.20**	0.08	0.03	0.68
baccalaureate	**0.11**	0.03	0.00	0.43	**0.12**	0.04	0.00	0.29
high education	**0.05**	0.03	0.00	0.46	**0.06**	0.06	0.00	0.41
residents' income	**7,173**	1,854	1,937	38,895	**8,428**	3,198	2,739	30,590

Notes: Data on the municipal population, age, education, and occupational composition comes from the 1999 census. Indicator variables for whether the municipality is urban, part of an urban area, or urban core are based on the INSEE 1999 classification. Residents' income corresponds to the 2000 taxable income data.

Table A2: Impact on housing – residents' income

	(1)	(2)	(3)
Outcome	Number of housing building permits		
	All	Residents' income median	
		Below	Above
Treatment	8.228***	4.431*	9.273***
	(1.609)	(2.265)	(2.174)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	245,430	122580	122610
Mean DepVar	66.203	59.172	70.028
Sd DepVar	94.440	85.053	98.247

Notes: Standard errors are in parentheses and are clustered at the municipality level. ***, **, and * indicate significance at 1, 5, and 10% respectively. The mean of the dependent variable gives the average of the outcome variable in the treatment group during the pre-reform period (from 2004 to 2010). The outcome is the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). It counts the total number of housing units allowed for construction. Column 2 (resp. 3) includes only municipalities below (resp. above) the median of the average residents' taxable income in 2010. Data on taxable income in 2010 are missing for the 16 municipalities with the smallest populations, to protect residents' privacy.

Table A3: Impact on housing – political alignment

	(1)	(2)	(3)	(4)	(5)
Outcome	Number of housing building permits per 10,000 inhabitants				
	All	Same orientation		Vote share distance median	
		Yes	No	Below	Above
Treatment	8.228***	9.093***	7.408***	6.372***	9.636***
	(1.609)	(2.075)	(2.588)	(2.429)	(2.148)
Municipality FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Observations	245,430	139,545	100,125	122385	123045
Mean DepVar	66.203	66.172	66.253	71.593	62.184
Sd DepVar	94.440	95.290	92.935	99.830	90.012

Notes: Column 2 (resp. 3) includes only municipalities whose mayor had the same orientation (resp. a different orientation) as the member of parliament of their district in 2010. Column 4 (resp. 5) includes only municipalities below (resp. above) the median value of the absolute difference in the right vote share in the 2007 presidential election between the municipality and the other municipalities from the same département. Other notes as in Table A2.

Table A4: Impact on the number of daycare spots available

	(1)	(2)	(3)
Outcome	Number of daycare spots		
	All	Rural	Urban
Treatment	-1.273	-1.863*	1.487
	(0.877)	(1.036)	(1.388)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	179,982	140,272	39,710
Mean DepVar	11.414	4.519	38.391
Sd DepVar	52.408	50.936	49.294

Notes: The outcome is the total number of daycare spots available in the municipality per 10,000 inhabitants (using the 2010 population), and the period of analysis is 2007-2017. Column 2 (resp.3) include only rural (resp. urban) municipalities. Other notes as in Table A2.

Table A5: Impact on daycare depending on the integration process

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outcome	Number of daycare facilities per 10,000 inhabitants							
	Full sample				Rural municipalities			
	All	New IC	Existing IC		All	New IC	Existing IC	
			$\geq$ 2 choices	Recent			$\geq$ 2 choices	Recent
Treatment	-0.061	-0.025	-0.075	-0.189	-0.083	-0.065***	-0.096	-0.205
	(0.046)	(0.035)	(0.065)	(0.131)	(0.055)	(0.022)	(0.078)	(0.164)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	179,982	169,565	175,307	169,411	140,272	131,890	136,708	131,835
Mean	0.438	0.495	0.371	0.583	0.210	0.125	0.228	0.414
Sd	2.174	1.330	2.395	3.568	2.211	0.838	2.540	3.910

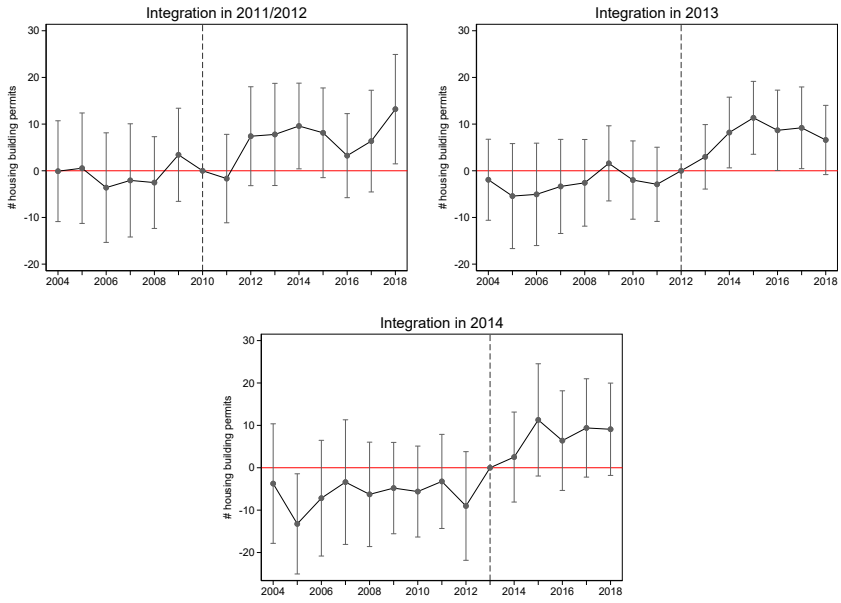
Notes: The outcome is the number of daycare facilities located in the municipality per 10,000 inhabitants (using the 2010 population), and the period of analysis is 2007-2017. Columns 5 to 8 include only rural municipalities. Columns 2 and 6 include only treated municipalities that created a new IC in 2010. Columns 3 and 7 include only treated municipalities that entered an existing IC and that had the choice between at least two of them in 2010. Columns 4 and 8 include only treated municipalities that entered an existing IC in which all other members integrated after 2000. Other notes as in Table A2.

Table A6: Impact on public libraries depending on the integration process

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outcome	Number of public libraries per 10,000 inhabitants							
	Full sample				Rural municipalities			
	All	New IC	Existing IC		All	New IC	Existing IC	
			$\geq$ 2 choices	Recent			$\geq$ 2 choices	Recent
Treatment	-0.841*	-0.402	-1.011*	-1.020	-1.129*	-0.541	-1.375*	-1.467
	(0.465)	(0.246)	(0.596)	(0.727)	(0.627)	(0.346)	(0.811)	(0.993)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	12,825	11,925	12,582	12,339	9,900	9,243	9,720	9,549
Mean	4.395	5.072	4.740	4.662	5.302	6.590	5.823	5.697
Sd	9.611	5.163	10.674	11.040	11.026	5.564	12.293	12.706

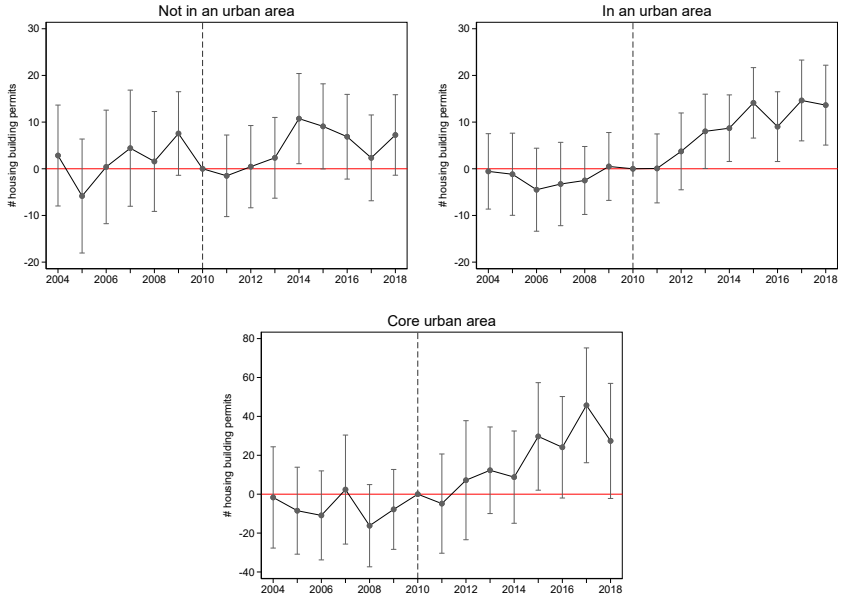
Notes: The outcome is the number of public libraries located in the municipality, per 10,000 inhabitants (using the 2010 population). The period of analysis is 2009-2017 and the sample is restricted to 7 départements for which data are available starting in 2009. Columns 5 to 8 include only rural municipalities. Columns 2 and 6 include only treated municipalities that created a new IC in 2010. Results should be interpreted with caution for this restriction, as it includes only 15 treated municipalities for the full sample and 10 treated municipalities for the rural sample, the only municipalities for which data on libraries are available. Columns 3 and 7 include only treated municipalities that entered an existing IC and that had the choice between at least two of them in 2010. Columns 4 and 8 include only treated municipalities that entered an existing IC in which all other members integrated after 2000. Other notes as in Table A2.

Figure A1: Impact on housing depending on the exact year of integration



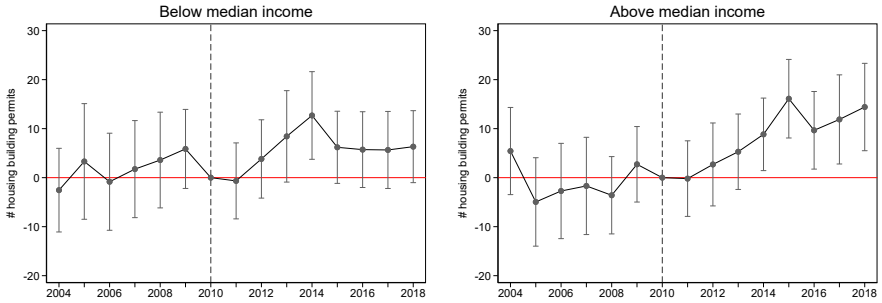
Notes: These graphs plot the estimates and 95-percent confidence intervals from the leads-and-lags regression, using as outcome the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). The first graph includes only treated municipalities that entered an IC in 2011 or 2012. The second (resp. third) graph includes only treated municipalities that entered an IC in 2013 (resp. 2014).

Figure A2: Impact on housing – urban area



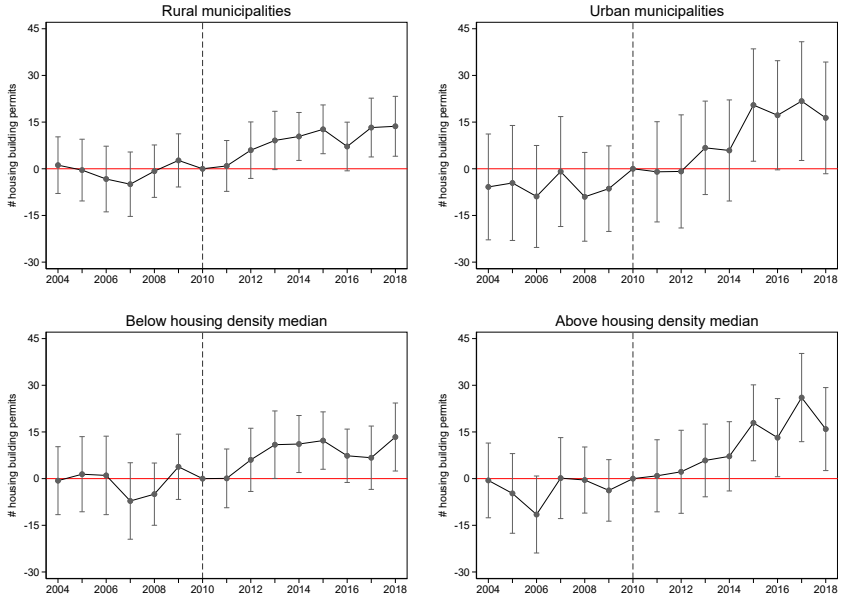
Notes: The first graph includes only municipalities that are not part of an urban area. The second graph includes only municipalities that are part of an urban area. The third graph includes only municipalities located in the core of the urban area (using a different scale given the magnitude of the results). Other notes as in Figure A1.

Figure A3: Impact on housing – residents' income



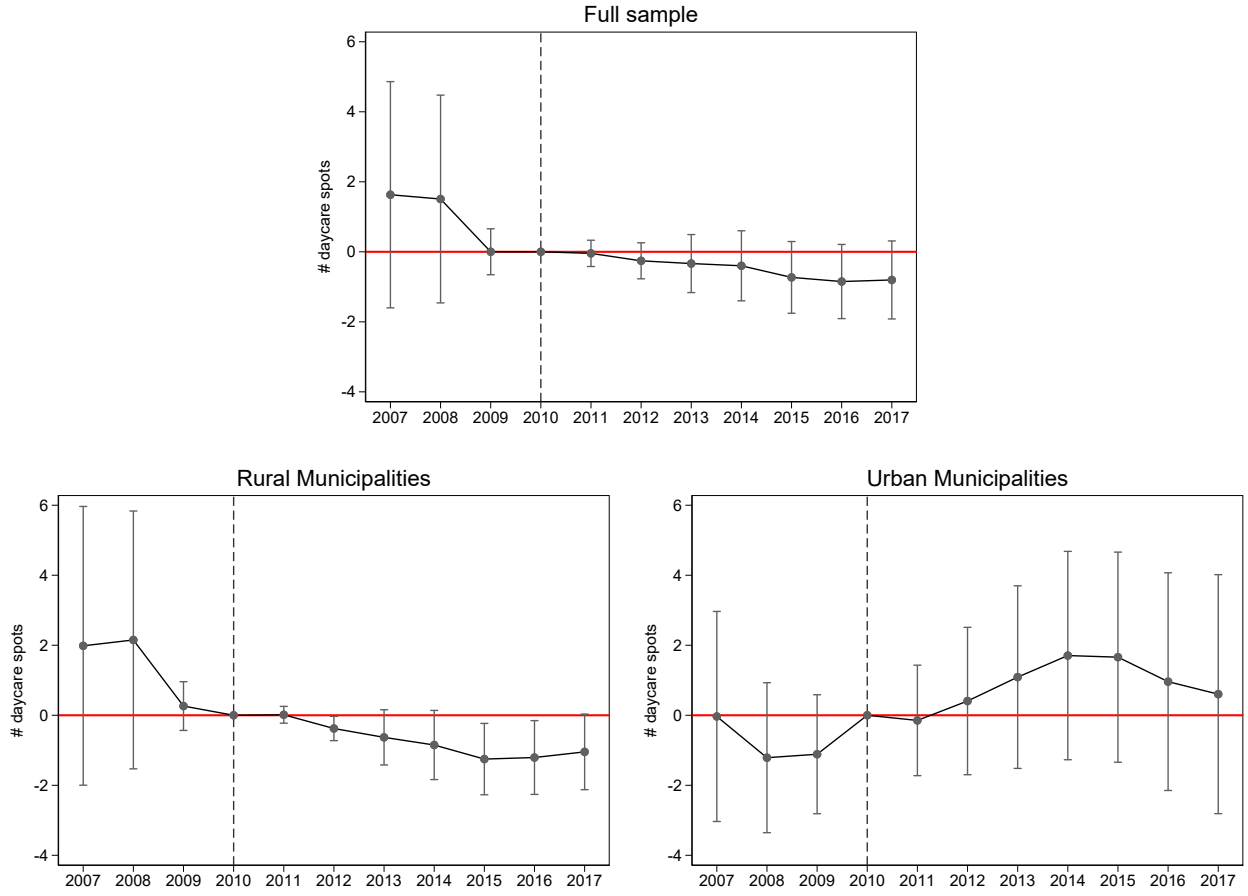
Notes: The left-hand side (resp. right-hand side) includes only municipalities below (resp. above) the median of the average residents' taxable income in 2010. Other notes as in Figure A1.

Figure A4: Impact on housing, inside the urban area – housing density



Notes: All graphs focus on municipalities inside an urban area. The first (resp. second) graph includes only rural (resp. urban) municipalities. The third (resp. fourth) graph includes only municipalities with a housing density in 2010 below (resp. above) the median. Other notes as in Figure A1.

Figure A5: Impact on the number of daycare spots available



Notes: The outcome is the total number of daycare spots available in the municipality per 10,000 inhabitants (using the 2010 population). The graph on the bottom left-hand side includes only rural municipalities, while the graph on the bottom right-hand side includes only urban municipalities.

B. Robustness checks

B1. Impact depending on the latest date of integration of the control municipalities

For each outcome, I test the robustness of the results to varying the control group depending on the latest date of integration of the control municipalities. In each table below, the first column gives the baseline estimate restricting the control group to municipalities integrated since 1999. The next columns provide the estimates obtained by considering instead all municipalities integrated since 2002, 2004, 2006, 2008, and 2010, respectively. Hence, in the last column, I include all municipalities already integrated in 2010. Note that each time I vary the date, the treatment group also slightly changes, as I remove municipalities that were isolated in 2010 but have been integrated at some point between the latest date of integration of the control group and 2010 (a group involving less than 1 percent of the isolated municipalities).

Table B1.1: Housing supply

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Number of building permits per 10,000 inhabitants					
Latest integration	1999	2002	2004	2006	2008	2010
Treatment	8.228***	8.255***	7.660***	7.455***	7.453***	7.639***
	(1.609)	(1.578)	(1.574)	(1.567)	(1.567)	(1.565)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	245,430	335,295	388,950	406,695	415,560	426,270
Mean DepVar	66.203	65.902	66.074	66.003	66.213	66.194
Sd DepVar	94.440	94.059	94.232	94.135	94.654	94.619

Notes: Standard errors are in parentheses and are clustered at the municipality level. ***, **, and * indicate significance at 1, 5, and 10% respectively. The mean of the dependent variable gives the average of the outcome variable in the treatment group during the pre-reform period (from 2004 to 2010). The outcome is the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). It counts the total number of housing units allowed for construction. Column 1 reproduces the baseline estimate as reported in the paper, using as control group municipalities integrated since 1999. The next columns include in the control group all municipalities integrated since 2002, 2004, 2006, 2008, and 2010, respectively.

Table B1.2: Daycare

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Number of daycare facilities per 10,000 inhabitants					
Latest integration	1999	2002	2004	2006	2008	2010
Treatment	-0.061	-0.062	-0.069	-0.070	-0.068	-0.067
	(0.046)	(0.045)	(0.045)	(0.044)	(0.044)	(0.044)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	179,982	245,883	285,230	298,243	304,744	312,598
Mean DepVar	0.438	0.434	0.439	0.439	0.443	0.446
Sd DepVar	2.174	2.162	2.160	2.156	2.155	2.155

Notes: The outcome is the number of daycare facilities located in the municipality per 10,000 inhabitants (using the 2010 population), and the period of analysis is 2007-2017. Other notes as in Table B1.1.

Table B1.3: Public libraries

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Number of public libraries per 10,000 inhabitants					
Latest integration	1999	2002	2004	2006	2008	2010
Treatment	-0.841*	-0.907**	-1.035**	-1.048**	-1.044**	-1.038**
	(0.465)	(0.434)	(0.426)	(0.426)	(0.426)	(0.422)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,825	17,397	22,032	23,013	23,184	23,841
Mean DepVar	4.395	4.224	4.285	4.285	4.285	4.253
Sd DepVar	9.611	9.373	9.392	9.392	9.392	9.361

Notes: The outcome is the number of public libraries located in the municipality per 10,000 inhabitants (using the 2010 population). The period of analysis is 2009-2017, and the sample is restricted to 7 départements for which data are available starting in 2009. Other notes as in Table B1.1.

Table B1.4: Public transport

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Access to public transport					
Latest integration	1999	2002	2004	2006	2008	2010
Treatment	0.033***	0.033***	0.035***	0.035***	0.034***	0.033***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	220,948	303,758	350,532	364,644	372,624	381,808
Mean DepVar	0.024	0.024	0.024	0.023	0.026	0.026
Sd DepVar	0.153	0.152	0.152	0.151	0.160	0.160

Notes: The outcome is an indicator variable equal to one if the municipality has access to public transport. The sample excludes municipalities located in the Parisian region of Ile-de-France, for which the data are not available. Other notes as in Table B1.1.

Table B1.5: Fiscal revenues

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Fiscal revenues per capita					
Latest integration	1999	2002	2004	2006	2008	2010
Treatment	91.8***	92.5***	91.1***	91.0***	90.6***	88.6***
	(5.1)	(5.0)	(4.9)	(4.9)	(4.9)	(4.9)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	227,766	311,262	360,990	377,426	385,644	395,640
Mean DepVar	705.7	709.8	710.9	710.7	711.0	711.3
Sd DepVar	431.9	438.7	438.9	438.3	437.9	437.7

Notes: The outcome is the municipality's total fiscal revenues per capita, as defined in Section 5.2. I exclude from the analysis few municipalities for which the data are missing for at least one year over the period 2004-2017 (0.6 percent of the sample). Other notes as in Table B1.1.

B2. Clusters at the IC level

Table B2.1: Housing supply

	(1)	(2)	(3)
Outcome	Number of building permits		
Cluster	Municipality	IC 2014	IC 2018
Treatment	8.228***	8.228***	8.228***
	(1.609)	(2.354)	(2.457)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	245,430	245,430	245,430
Mean DepVar	66.203	66.203	66.203
Sd DepVar	94.440	94.440	94.440

Notes: Standard errors are in parentheses. ***, **, and * indicate significance at 1, 5, and 10% respectively. In column 1, standard errors are clustered at the municipality level. In column 2 (resp. 3), standard errors are clustered at the IC level, considering the IC the municipality belongs to in 2014 (resp. 2018). The mean of the dependent variable gives the average of the outcome variable in the treatment group during the pre-reform period (from 2004 to 2010). The outcome is the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). It counts the total number of housing units allowed for construction.

Table B2.2: Local public services

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Number of facilities per 10,000 inhabitants					
	Daycare facilities			Public libraries		
Cluster	Municipality	IC 2014	IC 2018	Municipality	IC 2014	IC 2018
Treatment	-0.061	-0.061	-0.061	-0.841*	-0.841**	-0.841**
	(0.046)	(0.046)	(0.047)	(0.465)	(0.369)	(0.372)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	179,982	179,982	179,982	12,825	12,825	12,825
Mean	0.438	0.438	0.438	4.395	4.395	4.395
Sd	2.174	2.174	2.174	9.611	9.611	9.611

Notes: In columns 1 to 3, the outcome is the number of daycare facilities located in the municipality per 10,000 inhabitants (using the 2010 population), and the period of analysis is 2007-2017. In columns 4 to 6, the outcome is the number of public libraries located in the municipality per 10,000 inhabitants (using the 2010 population), the period of analysis is 2009-2017, and the sample is restricted to 7 départements for which data are available starting in 2009. Other notes as in Table B2.1.

Table B2.3: Public transport and fiscal revenues

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Access to public transport			Fiscal revenues per capita		
Cluster	Municipality	IC 2014	IC 2018	Municipality	IC 2014	IC 2018
Treatment	0.033***	0.033**	0.033***	91.8***	91.8***	91.8***
	(0.007)	(0.013)	(0.012)	(5.1)	(9.5)	(9.4)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	220,948	220,948	220,948	227,766	227,766	227,766
Mean	0.024	0.024	0.024	705.7	705.7	705.7
Sd	0.153	0.153	0.153	431.9	431.9	431.9

Notes: In columns 1 to 3, the outcome is an indicator variable equal to one if the municipality has access to public transport, and the sample excludes municipalities located in the Parisian region of Ile-de-France, for which the data are not available. In columns 4 to 6, the outcome is the municipality's total fiscal revenues per capita, as defined in Section 5.2, and I exclude from the analysis few municipalities for which the data are missing for at least one year over the period 2004-2017 (0.6 percent of the sample). Other notes as in Table B2.1.

B3. Matching

I test the robustness of the main results to using propensity score matching. I match control and treated municipalities on the following socio-demographic characteristics, considered in 2010: The number of inhabitants, population growth since 1999, population density, whether the municipality is urban, whether it belongs to an urban area, whether it belongs to the core of the urban area, the share of immigrants, the share of unemployed workers, the share of children, the share of the active population being farmers, executives, workers, or retired, the share of the population with no diploma, with the baccalaureate, or with higher education, and the average residents' annual taxable income. Descriptive statics on these variables are presented in Table 1.

In Tables B3.1 and B3.2, I first report the differences between the control and treatment groups along with the t-tests for each variable, with and without using matching, respectively. The next tables provide the estimates. For each outcome, the first column gives the baseline estimate, the second column the estimate obtained using propensity score matching, and the third column the estimate using matching and requiring common support on top.

Table B3.1: T-tests without matching

	Mean control	Mean treatment	Difference	P-value
population	1,943	1,626	-317	0.049**
Δ population	0.087	0.089	0.002	0.5628
density	154.9	160.6	5.7	0.7143
urban mun	0.222	0.204	-0.019	0.1122
urban area	0.614	0.636	0.022	0.1132
core urban area	0.119	0.091	-0.028	0.001***
immigrants	0.036	0.045	0.008	0.000***
unemployed	0.088	0.082	-0.005	0.000***
child	0.076	0.073	-0.002	0.001***
farmers	0.038	0.036	-0.002	0.3234
executives	0.052	0.070	0.019	0.000***
workers	0.169	0.152	-0.017	0.000***
retired	0.286	0.280	-0.006	0.035**
no diploma	0.185	0.173	-0.013	0.000***
baccalaureate	0.153	0.156	0.004	0.002***
high education	0.072	0.088	0.017	0.000***
residents' income	12,633	14,209	1,576	0.000***

Notes: Data on the municipal population, age, education, and occupational composition comes from the 2008 census, which applies to the 2010 year. The variation of the population (line 2) is computed as the variation in the number of inhabitants between the 1999 and 2008 census. Indicator variables for whether the municipality is urban, part of an urban area, or located in the urban core are based on the INSEE 2010 classification. ***, **, and * indicate significance at 1, 5, and 10% respectively.

Table B3.2: T-tests with matching

	Mean control	Mean treatment	Difference	P-value
population	1,581	1,626	45	0.745
Δ population	0.091	0.089	-0.002	0.662
density	146.4	160.6	14.2	0.359
urban mun	0.201	0.204	0.002	0.843
urban area	0.622	0.636	0.014	0.328
core urban area	0.093	0.091	-0.002	0.813
immigrants	0.044	0.045	0.001	0.664
unemployed	0.084	0.082	-0.002	0.147
child	0.074	0.073	-0.001	0.311
farmers	0.036	0.037	-0.001	0.5728
executives	0.063	0.070	0.007	0.000***
workers	0.158	0.152	-0.006	0.008***
retired	0.282	0.280	-0.002	0.466
no diploma	0.177	0.173	-0.005	0.020**
baccalaureate	0.155	0.156	0.001	0.293
high education	0.081	0.088	0.007	0.001***
residents' income	14,000	14,518	518	0.000***

Notes: Same notes as in Table B3.1.

Table B3.3: Impact using matching – housing supply

	(1)	(2)	(3)
Outcome	Number of building permits		
Matching	No	Yes	+ common support
Treatment	8.228***	7.859***	8.012***
	(1.609)	(1.745)	(1.737)
Municipality FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Observations	245,430	245,235	244,740
Mean DepVar	66.203	66.203	66.203
Sd DepVar	94.440	94.440	94.440

Notes: Standard errors are in parentheses and are clustered at the municipality level. ***, **, and * indicate significance at 1, 5, and 10% respectively. The mean of the dependent variable gives the average of the outcome variable in the treatment group during the pre-reform period (from 2004 to 2010). The outcome is the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). It counts the total number of housing units allowed for construction. In column 2, the analysis is performed using propensity score matching, and it excludes 16 observations for which the data on taxable income is missing. Column 3 repeat the same exercise including only observations in the control group that share common support with observations in the treatment group, with regards to the characteristics displayed in Table B3.1 and B3.2.

Table B3.4: Impact using matching – local public services

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Number of facilities per 10,000 inhabitants					
	Daycare facilities			Public libraries		
Matching	No	Yes	+ common support	No	Yes	+ common support
Treatment	-0.061	-0.054	-0.056	-0.841*	-0.508	-0.485
	(0.046)	(0.052)	(0.051)	(0.465)	(0.725)	(0.801)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	179,982	134,780	133,941	12,825	6,256	5,949
Mean	0.438	0.438	0.438	4.395	4.395	4.395
Sd	2.174	2.174	2.174	9.611	9.611	9.611

Notes: In columns 1 to 3, the outcome is the number of daycare facilities located in the municipality per 10,000 inhabitants (using the 2010 population), and the period of analysis is 2007-2017. In columns 4 to 6, the outcome is the number of public libraries located in the municipality per 10,000 inhabitants (using the 2010 population), the period of analysis is 2009-2017, and the sample is restricted to 7 départements for which data are available starting in 2009. Other notes as in Table B3.3.

Table B3.5: Impact using matching – public transport and fiscal revenues

	(1)	(2)	(3)	(4)	(5)	(6)
Outcome	Access to public transport			Fiscal revenues per capita		
Matching	No	Yes	+ common support	No	Yes	+ common support
Treatment	0.033***	0.033***	0.033***	91.8***	85.4***	85.2***
	(0.007)	(0.007)	(0.007)	(5.1)	(5.1)	(5.1)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	220,948	220,682	220,430	227,766	227,584	227,108
Mean	0.024	0.024	0.024	705.7	705.7	705.7
Sd	0.153	0.153	0.153	431.9	431.9	431.9

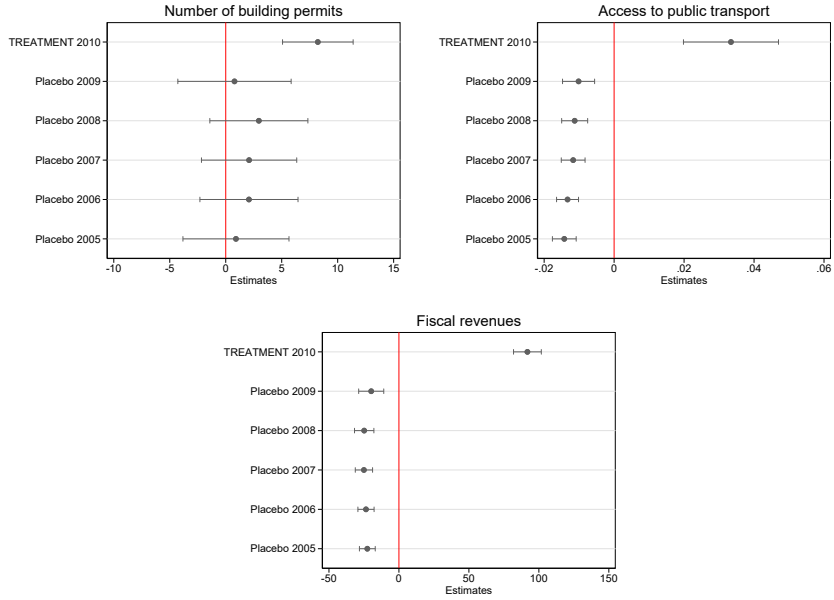
Notes: In columns 1 to 3, the outcome is an indicator variable equal to one if the municipality has access to public transport and the sample excludes municipalities located in the Parisian region of Ile-de-France, for which the data are not available. In columns 4 to 6, the outcome is the municipality's total fiscal revenues per capita, as defined in Section 5.2, and I exclude from the analysis few municipalities for which the data are missing for at least one year over the period 2004-2017 (0.6 percent of the sample). Other notes as in Table B2.3.

B4. Placebo tests

In this Section, I test the impact of a series a placebo reform. More precisely, I consider only the pre-treatment period from 2004 to 2010, and I run the same specification as the one described in Section 3.2, pretending that the law passed in 2005, 2006, 2007, 2008, or 2009. The graph below provides the estimates obtained for each placebo reform, along with the impact of the true reform (first coefficient on each graph). Unfortunately, I cannot run these placebo tests on daycare and public libraries, given the few pre-treatment periods I have in the data. This analysis is thus restricted to the number of building permits, access to public transport, and fiscal revenues.

As seen Figure B4, no coefficient associated with placebo reforms is significant at the standard level for the number of building permits. For public transport and fiscal revenues, consistent with the presence of decreasing pre-trends (see Section 5), the placebo estimates are significant but negative, which contrasts even more with the positive effect of the true reform. All in all, these results support the fact that the main results are capturing the impact of the 2010 law rather than the impact of factors that systematically affect treated and control municipalities differently.

Table B4: Placebo tests



Notes: The figure shows the impact of a series of placebo reforms on the number of building permits, the probability to have access to public transport and municipalities' fiscal revenues. In each graph, the first coefficient refers to the impact of the 2010 law, while the other estimates give the impact of a placebo reform implemented in 2005, 2006, 2007, 2008, and 2009, respectively. When estimating the impact of the placebo reforms, I include only the pre-treatment period. Horizontal lines are 95-percent confidence intervals.

B5. Alternative control groups

Table B5.1: Impact using alternative control groups – housing supply

	(1)	(2)	(3)	(4)	(5)
Outcome	Number of building permits per 10,000 inhabitants				
Control group	Group 1	Group 2	Group 3	Group 4	Group 5
Treatment	8.228***	8.696***	6.873***	8.622***	7.325***
	(1.609)	(1.631)	(1.673)	(1.616)	(1.674)
Municipality FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Observations	245,430	189,990	125,805	223,845	122,025
Mean DepVar	66.203	66.203	66.203	66.203	66.203
Sd DepVar	94.440	94.440	94.440	94.440	94.440

Notes: Standard errors are in parentheses and are clustered at the municipality level. ***, **, and * indicate significance at 1, 5, and 10% respectively. The mean of the dependent variable gives the average of the outcome variable in the treatment group during the pre-reform period (from 2004 to 2010). The outcome is the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). It counts the total number of housing units allowed for construction. In column 1, the control group is one used in the baseline estimation, including all municipalities integrated since 1999 (designated as "Group 1"). In column 2, I exclude from the control group all municipalities that were in an IC that received a treated municipality as a result of the 2010 law ("Group 2"). In column 3, I exclude more generally all municipalities that were in ICs that changed as a result of the 2010 law ("Group 3"). In column 4, I exclude control municipalities that share a common border with a treated municipality ("Group 4"). In column 5, I exclude both control municipalities whose ICs changed as well as neighbors ("Group 5").

Table B5.2: Impact using alternative control groups – local public services

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Outcome	Number of facilities per 10,000 inhabitants									
	Daycare facilities					Public libraries				
Control	Group 1	Group 2	Group 3	Group 4	Group 5	Group 1	Group 2	Group 3	Group 4	Group 5
Treat.	-0.061	-0.047	-0.036	-0.057	-0.034	-0.841*	-0.992**	-1.128**	-0.866*	-1.147**
	(0.046)	(0.046)	(0.048)	(0.046)	(0.048)	(0.465)	(0.479)	(0.476)	(0.467)	(0.476)
Mun FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	179,982	139,326	92,257	164,153	89,485	12,825	9,270	7,146	11,736	6,930
Mean	0.438	0.438	0.438	0.438	0.438	4.395	4.395	4.395	4.395	4.395
Sd	2.174	2.174	2.174	2.174	2.174	9.611	9.611	9.611	9.611	9.611

Notes: In columns 1 to 3, the outcome is the number of daycare facilities located in the municipality per 10,000 inhabitants (using the 2010 population), and the period of analysis is 2007-2017. In columns 4 to 6, the outcome is the number of public libraries located in the municipality per 10,000 inhabitants (using the 2010 population), the period of analysis is 2009-2017, and the sample is restricted to 7 départements for which data are available starting in 2009. Other notes as in Table B5.1.

Table B5.3: Impact using alternative control groups – public transport

	(1)	(2)	(3)	(4)	(5)
Outcome	Access to public transport				
Control group	Group 1	Group 2	Group 3	Group 4	Group 5
Treatment	0.033***	0.038***	0.051***	0.034***	0.051***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Municipality FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Observations	220,948	170,912	111,944	202,174	108,878
Mean DepVar	0.024	0.024	0.024	0.024	0.024
Sd DepVar	0.153	0.153	0.153	0.153	0.153

Notes: The outcome is an indicator variable equal to one if the municipality has access to public transport. The sample excludes municipalities located in the Parisian region of Ile-de-France, for which the data are not available. Other notes as in Table B5.1.

Table B5.4: Impact using alternative control groups – fiscal revenues

	(1)	(2)	(3)	(4)	(5)
Outcome	Fiscal revenues per capita				
Control group	Group 1	Group 2	Group 3	Group 4	Group 5
Treatment	91.8***	89.2***	94.5***	91.6***	95.0***
	(5.1)	(5.1)	(5.2)	(5.1)	(5.2)
Municipality FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Observations	227,766	176,638	117,054	207,886	113,540
Mean DepVar	705.7	705.7	705.7	705.7	705.7
Sd DepVar	431.9	431.9	431.9	431.9	431.9

Notes: The outcome is the municipality's total fiscal revenues per capita, as defined in Section 5.2. I exclude from the analysis few municipalities for which the data are missing for at least one year over the period 2004-2017 (0.6 percent of the sample). Other notes as in Table B5.1.

C. Housing supply – heterogeneity analysis

In the main text, I report the impact on housing supply obtained by splitting the sample according to the median value of the heterogeneity variable I consider. In this section, I explore the heterogeneity of the treatment impact by adding an interaction between the treatment variable and the heterogeneity variable in equation (1). I standardize each heterogeneity variable, subtracting its mean and dividing it by its standard error. As a result, in each table below, the impact of the treatment can be interpreted as the impact for a municipality with an average value of the heterogeneity variable, and the estimate associated to the interaction can be interpreted as the change in the treatment effect due to a one standard deviation increase in the heterogeneity variable.

Table C1: Distance to the core of the urban area

	(1)	(2)
Outcome	Number of housing building permits	
Heterogeneity	Distance to urban core	
	Ratio	Log ratio
Treatment	9.213***	10.204***
	(2.032)	(2.036)
Interaction	-3.301	-6.361***
	(2.028)	(2.110)
Municipality FE	Yes	Yes
Time FE	Yes	Yes
Observations	121,230	121,020
Mean DepVar	64.842	64.842
Sd DepVar	90.756	90.756

Notes: The sample includes only municipalities part of an urban area. Standard errors are in parentheses and are clustered at the municipality level. ***, **, and * indicate significance at 1, 5, and 10% respectively. The mean of the dependent variable gives the average of the outcome variable in the treatment group during the pre-reform period (from 2004 to 2010). The outcome is the number of housing building permits delivered in the municipality per year per 10,000 inhabitants (using the 2010 population). It counts the total number of housing units allowed for construction. The heterogeneity variable is the ratio between the municipality's euclidean distance to the core divided by the average distance to the core of the other municipalities from the same urban area. In column 2, I consider the log of the ratio, thus excluding 15 municipalities in the control group that constitute the core of their urban area and for which the distance is thus equal to 0.

Table C2: Residents' income

	(1)
Outcome	Number of housing building permits
Heterogeneity	Residents' income
Treatment	6.562***
	(1.668)
Interaction	5.416***
	(1.950)
Municipality FE	Yes
Time FE	Yes
Observations	245,190
Mean DepVar	66.136
Sd DepVar	93.870

Notes: The heterogeneity variable is the average residents' taxable income in 2010. Data on taxable income in 2010 are missing for 16 municipalities with the smallest populations, to protect residents' privacy. Other notes as in Table C1.

Table C3: Housing density

For this heterogeneity test, in the second column, I also include the interaction between the treatment variable and the square value of the housing density. Indeed, even if we expect the impact on housing to be larger in denser municipalities, we might not expect the densest places to experience the largest increase, as they may be too dense to be able to increase the housing supply as much as elsewhere. As a result, the effect is likely to rise non-monotonically with the housing density. The results confirm this hypothesis: While in the first column the interaction is close to zero and not significant, in the second column the interaction is large and significant, and the estimate associated to the interaction with the square value is negative and significant.

	(1)	(2)
Outcome	Number of housing building permits	
Heterogeneity	Housing density	
Treatment	10.524***	12.282***
	(1.903)	(1.952)
Interaction	-0.288	10.028***
	(2.002)	(3.824)
Interaction²		-1.456***
		(0.487)
Municipality FE	Yes	Yes
Time FE	Yes	Yes
Observations	151,125	151,125
Mean DepVar	65.288	65.288
Sd DepVar	89.761	89.761

Notes: The heterogeneity variable is the number of housing units per square kilometer in 2010. In column 2, I also include the interaction between the treatment variable and the square of the housing density. Other notes as in Table C1.

Table C4: Neighbors' characteristics

	(1)	(2)	(3)	(4)
Outcome	Number of housing building permits			
Heterogeneity	Ratio revenues	Ratio immigrants	Ratio unemployed	Vote share distance
Treatment	7.941***	7.916***	8.102***	8.239***
	(1.616)	(1.604)	(1.610)	(1.609)
Interaction	2.033	-1.904	1.191	1.358
	(1.730)	(2.365)	(1.775)	(2.002)
Municipality FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Observations	245,190	245,430	245,430	245,430
Mean DepVar	66.136	66.203	66.203	66.203
Sd DepVar	93.870	94.440	94.440	94.440

Notes: Each ratio (columns 1 to 3) divides the value of the heterogeneity variable in the municipality by the average value in the other municipalities from the same département, weighted by their population. In column 1, the heterogeneity variable used to compute the ratio is the residents' average annual taxable income. Data on taxable income in 2010 are missing for 16 municipalities with the smallest populations, in order to protect residents' privacy. In column 2 (resp. 3), the heterogeneity variable is the share of immigrants (resp. unemployed) in 2010. In column 4, the heterogeneity variable is the absolute difference in the right vote share in the 2007 presidential election, between the municipality and the other municipalities from the same département. Other notes as in Table C1.

Table C5: Share of homeowners

	(1)
Outcome	Number of housing building permits
Heterogeneity	Share of homeowners
Treatment	8.895***
	(1.601)
Interaction	-1.405
	(1.764)
Municipality FE	Yes
Time FE	Yes
Observations	245,430
Mean DepVar	66.203
Sd DepVar	94.440

Notes: The heterogeneity variable is the share of homeowners in the municipality in 2010. Other notes as in Table C1.

D. Housing price indices

Description of the method

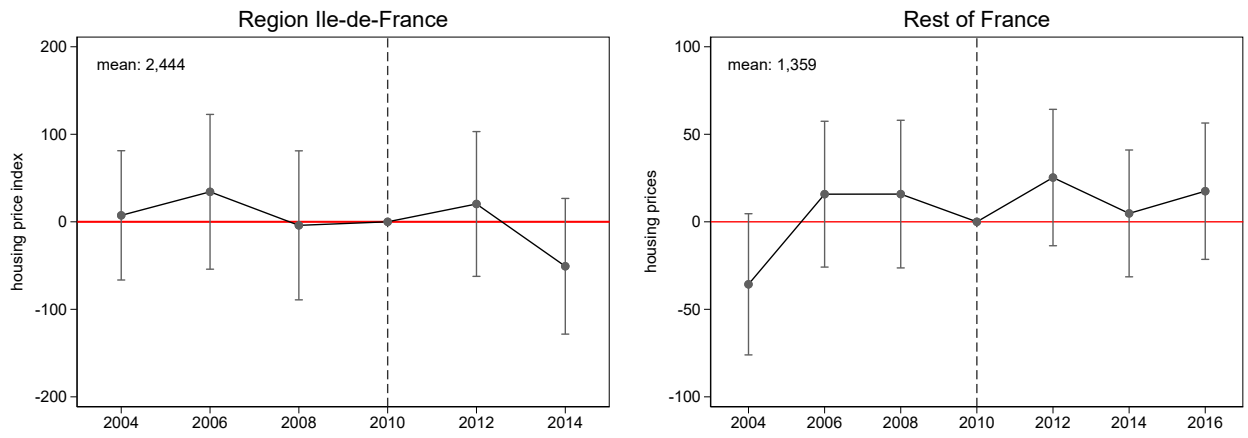
Following Combes et al. (2018), I built the housing price indexes using transaction data. These data come from an annual census conducted by the regional notary associations, which report the transactions of non-new dwellings. Although reporting is voluntary, it covers about 65 percent of all transactions. I perform the analysis separately for the Parisian region of Ile-de-France and for the rest of France, as the two databases come from two distinct notary associations and do not use the same definitions for the dwellings' characteristics. The data are made available by the Ministry of Sustainable Development for every even year since 2000. They are available until 2014 for Ile-de-France and 2016 for the rest of France.

First, following Gouriéroux and Laferrère (2009) and Musiedlak and Vignolles (2016)'s guidelines, I excluded some outliers from the transaction databases. Next, I regressed the log of the price per square meter of the dwelling on several characteristics. To build the baseline index I use in the paper, following Combes et al. (2018), I regressed the log of the price per square meter on indicator variables for the quarter of the transaction and the construction period. I next build a second index (which I refer to as the "augmented index") using additional characteristics. For houses, I added the floorspace area, the size of the land, the number of rooms, bathrooms and floors, and whether the house had parking. For apartment, I added the floorspace area, the floor at which it was located, the number of rooms and bathrooms, whether the building had an elevator, and whether the apartment had parking and a cellar.

While the price of the transaction was never missing, the floorspace area of the dwelling was missing in 10 percent of the cases for apartments and in 36 percent of the cases for houses. To compute the price per square meter, I replaced the missing floorspace areas by the average floorspace area of an apartment or a house with the same number of rooms located in the same département. Results are the same if I instead drop the transactions for which the floorspace area was missing. Regarding the right-hand side variables (the dwelling's characteristics), I replaced the missing values by the average of the variable and added an indicator variable equal to one if the variable was missing. I also centered all explanatory variables by subtracting the means and dividing by the standard errors.

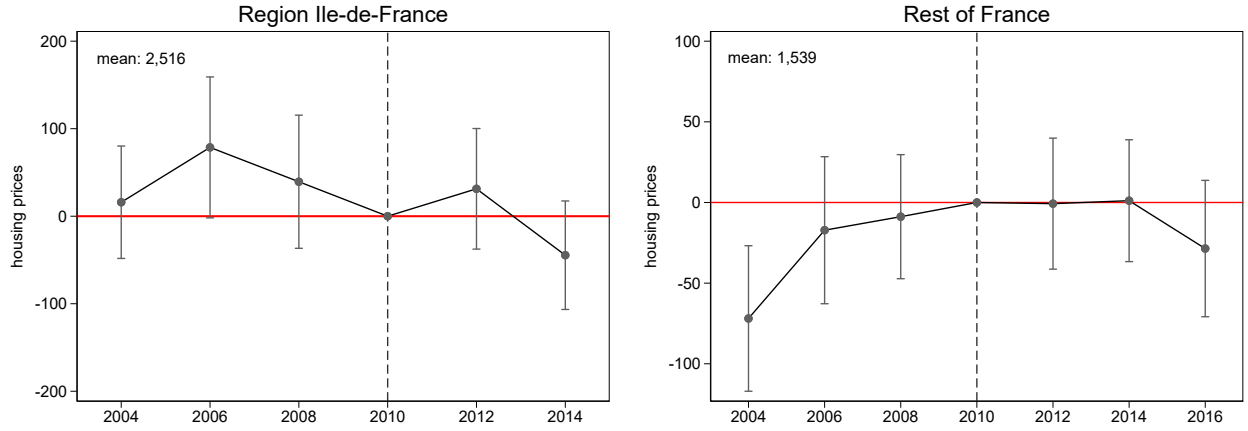
After running the hedonic regressions, I computed the mean of the residuals for each year and municipality separately, after having added the regression constant. Since the explanatory variables are centered, we can interpret the resulting indices as a price per square meter for a reference dwelling.

Figure D1: Impact on prices – unbalanced panel



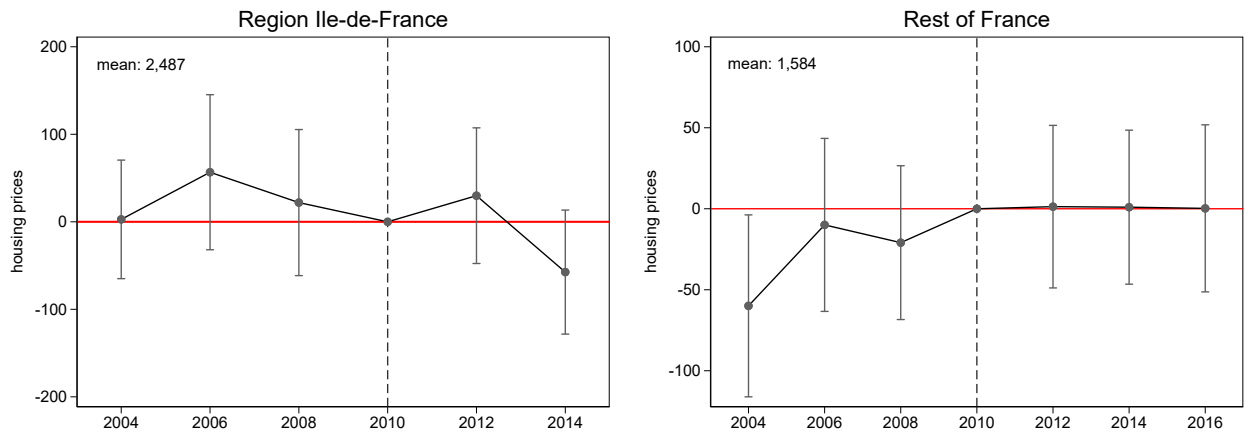
Notes: The sample includes all municipalities where at least one housing transaction took place in the period of analysis. The graph on the left-hand side includes only municipalities located in the Parisian region of Ile-de-France, while the graph on the right-hand side includes all the other municipalities. On each graph, the average value of the price index in the treatment group before 2010 is displayed on the top left corner.

Figure D2: Impact on prices – augmented index



Notes: For these graphs, I use an alternative version of the indices for which I include additional apartments' and houses' characteristics in the hedonic regressions. The sample includes only municipalities where at least one housing transaction took place each even year over the period studied. The graph on the left-hand side includes only municipalities located in the Parisian region of Ile-de-France, while the graph on the right-hand side includes all the other municipalities. On each graph, the average value of the price index in the treatment group before 2010 is displayed on the top left corner.

Figure D3: Impact on prices – urban area



Notes: The sample includes only municipalities part of an urban area and where at least one housing transaction took place each even year over the period studied. The graph on the left-hand side includes only municipalities located in the Parisian region of Ile-de-France, while the graph on the right-hand side includes all the other municipalities. On each graph, the average value of the price index in the treatment group before 2010 is displayed on the top left corner.