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► **To cite this version:**

Lionel Wilner. Citizens' attitude towards subnational borders: Evidence from the merger of French regions. *Journal of Economic Geography*, 2023, 23 (3), pp.653-682. 10.1093/jeg/lbac032. hal-04799406

HAL Id: hal-04799406

<https://hal.science/hal-04799406v1>

Submitted on 22 Nov 2024

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Citizens' attitude towards subnational borders: Evidence from the merger of French regions

Lionel Wilner*

May 10, 2022

Abstract

Using the 2016 merger of French regions as a natural experiment, this paper adopts a difference-in-differences identification strategy to recover its causal impact on individual subjective well-being. No depressing effect is found in the short term; life satisfaction has even increased in regions that were absorbed from both economic and political viewpoints. The empirical evidence at stake suggests that local economic performance has enhanced in these regions, which includes a faster decline of the unemployment rate. In the context of a unitary state, economic gains have therefore outweighed cultural attachment to administrative regions.

Keywords: Merger of regions; natural experiment; difference-in-differences; subjective well-being; centralization.

JEL Classification: H75; I31.

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1 Introduction

Subnational integration is a hot topic in Europe where regions are very heterogeneous in terms of size and economic importance, due to historical reasons ([Alesina et al., 2017](#)). There are voices in Catalunya, Scotland, Flanders and Wallonia asking for further autonomy, and even independence from Belgium, Spain or the UK. In metropolitan France, most emblematic examples of attachment to local culture, and sometimes to specific common law, are Alsace-Lorraine, the Basque Country, Brittany, and Corsica. In such a context, France experienced a wide-scale merger of regions in 2016: its metropolitan territory was massively reorganized from 22 to 13 administrative regions.

Usual arguments in favor of large jurisdictions are related to efficiency gains and economies of scale, i.e., to fiscal considerations. However, mergers of regions are very rare in practice, mainly because local authorities are reluctant to lose autonomy and political power, but also because citizens have presumably a taste for being close to government decisions, i.e., for decentralization. In the framework of [Alesina and Spolaore \(1997\)](#), this trade-off between economies of scale and heterogeneity of preferences of the population determines the optimal number and size of regions. Remember [Barro \(1991\)](#): “a large country can spread the cost of public goods [...] over many taxpayers, but a large country is also likely to have diverse population that is difficult for the central government to satisfy”. *De facto*, the public opinion is frequently summoned by local governments to prevent integration, based on the argument that centralization would undermine feelings of regional identity. It is therefore an empirical issue to assess the relative importance of the mechanisms likely at play consecutive to such a merger: (i) the efficiency channel (economies of scale), (ii) the increased heterogeneity inside new regions, leading possibly to more centralized policies less tailored to local needs and characteristics of the population, but also (iii) the loss of regional identity, which might be more painful in regions that were absorbed from both political and economical viewpoints.

This paper seeks to test empirically whether citizens were hurt by the merger or not. This unique natural experiment allows the researcher to recover the causal impact of reshaping subnational borders on subjective well-being as self-assessed by individuals. This study also aims at disentangling among the previous three channels at stake. Interestingly, this merger of regions was not announced during the 2012 presidential election campaign; it was completely unexpected and came out as a surprise to political commentators and citizens at the time of its disclosure. The political debate that preceded the voting of the law implementing that merger gave rise to much concerns about administrative belonging feelings and the risk of losing one's regional identity. Initially motivated by the willingness to make efficiency gains, but also by the ambition to reach a critical size in order to compete with European regions, this law results from a subtle political process during which the perimeter of the new regions has much evolved with respect to original plans. For instance, Aquitaine and Nord-Pas-de-Calais were bound to remain on their own at the beginning of the process, but turned out to be part of the merger. On top of that, the initial project planned to extend even further the scope of regional authorities, giving them tasks and powers over roads and lower secondary education, among others.

The identification strategy adopted in this paper relies on a difference-in-differences approach that takes advantage of that reform viewed as a natural experiment. This method is particularly well suited to isolate the effect of a change in subnational borders on individual happiness. Individuals did not move from one region to another: by contrast, *the regions themselves* have changed over the period considered, which is rather unusual. The comparison group of this experiment is composed of individuals living in the 6 *non-merged regions* that did not participate to the merger. Different treatment groups may be defined: individuals living in the 16 former regions which became 7 new *merged regions*, in the 6 former regions that can be considered as *absorbed regions*, or in the 4 regions that have

absorbed them, which I call *absorbing regions*.¹ Absorbed regions lost executive power: in that sense, these regions have experienced increased centralization due to political decisions being taken further away from citizens. The econometric specification is based on a linear model with individual fixed effects; the dependent variable, namely individual subjective well-being, is provided on a discrete 0-10 scale, a Cantril scale. The estimation proceeds from longitudinal survey data: I exploit the *Enquête statistique sur les ressources et conditions de vie* (SRCV), where individuals are asked to report their overall satisfaction with life, on top of usual information including sociodemographic characteristics and geographic location.

On the whole, there is no empirical evidence of any increased discontent consecutive to the merger. When the treated group is composed of individuals living in merged regions, there is no significant effect on individual happiness. Similarly, individuals living in absorbing regions have not been hurt by the policy change. More strikingly, when focusing on the differential evolution of absorbed regions with respect to non-merged regions, a significant and positive impact is obtained, of about .066 on the 0-10 scale, which represents nearly 4% of a standard deviation, or 28% of the coefficient of variation. Put differently, everything happens as if 6.6% of individuals had reported a +1 change in their life satisfaction while the remaining part of people kept reporting the same level of life satisfaction as before. To get an alternate sense of the magnitude of this effect, the overall change in subjective well-being observed between 2013 and 2019 was .23, hence this estimated impact is far from negligible. Interestingly, the effect is short-lived: estimates obtained from an event study design suggest that the impact is mostly observed in 2017 with a marked increase of .15 on that year, and one cannot even reject that the effect exceeded .19, which is three times the magnitude of the average effect

¹The six remaining regions have a mixed status, which deserves special attention, since the governance seems to be shared among the concerned entities after the merger. By definition, regions are either *merged* or *non-merged*; *merged regions* are either *absorbed* or *non-absorbed*; the latter include *absorbing regions*, but also regions with a mixed status. More details are provided in Section 5 below.

above.

A number of tests are conducted in order to assess the plausibility of the identification strategy: the above results are robust to a variety of alternative assumptions, including different definitions of treatment or comparison groups, and sensitivity checks (attrition, sampling issues, clustering, etc.). As a falsification test, the simulation of placebo experiments, namely fake reforms occurring before the observed one, yields non significant estimates even in the absorbed regions, which supports the absence of pre-trend. Though centralization is usually associated with lower levels of life satisfaction (see, e.g., [Flèche, 2020](#), about Switzerland), regional belonging (if any) does not have depressing effects on individual subjective well-being here; more exactly, such effects, if present, have been more than compensated by improvements in local economic performance.² In any case, the empirical evidence at stake suggests that the institutional setting matters: in particular, it is useful to remember that France, contrary to Switzerland, is not a federal state, which helps explain why in that case the costs of dealing with increased heterogeneity are presumably small.

To understand further the above results, I investigate the role played by several mechanisms. First, the economic attractiveness of merged regions has improved, in line with public incentives to foster local business development and to enhance economic performance. In particular, the unemployment rate experienced a faster decline in absorbed regions after 2016, which is consistent with poorer, absorbed regions benefiting from promotion activities of richer, absorbing regions. This finding is especially relevant when debating the possibility of grouping local authorities. Second, an unintended effect of the merger has been to *increase* investment spending. As noticed by the French Court of Auditors ([Cour des Comptes, 2019](#)), investment spending has increased more in merged regions than elsewhere, especially as regards local public goods regions are exclusively in charge of (upper secondary education, vocational training, and trains). This increase in expendi-

²The French *département* might be the relevant layer to which citizens are attached, as [Boyer et al. \(2020\)](#) suggest in their analysis of the Yellow vests movement.

tures suggests that the provision of local public goods has not shrunk consecutive to some rationalization of supply of public services, but has rather increased -not only in absorbed regions, but also in absorbing regions: this empirical evidence is therefore consistent with low costs of heterogeneity. Finally, this process has contributed to some income convergence within new regions: for instance, civil servants employed by local governments had the variable part of their compensation (bonuses) revalued after the merger, according to the rules of the most advantaged regime; empirically, the magnitude of this phenomenon is too small, however, to drive previous findings -also given the somehow weak link between income and happiness, from an empirical viewpoint.

Overall, these results suggest that economic spillovers which come along the creation of larger subnational jurisdictions play a substantial role in alleviating, and even outweighing potential citizen discontent due to increased centralization -such a discontent being likely to be limited, by the way, in line with small heterogeneity costs. These findings are consistent with the relative importance of economic gains with respect to cultural norms. The positive effect obtained on absorbed regions indicates at least that the loss of regional identity, if any, has been limited and more than compensated by economic mechanisms. Note also that absorbing, richer regions were not significantly hurt: this Pareto improvement is somehow reminiscent of the impact of immigration on the labor market ([Card, 1990](#)) where local workers have been found not to be hurt by newcomers, and of peer effects in education ([Guyon et al., 2012](#)) where high-achieving pupils have been found not to be hurt by low-achieving roommates benefiting from interactions with the latter. As a caveat, it must be acknowledged that the 2016 merger implies both higher economies of scale and changes in competencies, which makes it empirically hard, if not impossible, to disentangle among these two active ingredients of the reform.

The remainder of the paper is organized as follows. Section 2 is devoted to a literature review. Section 3 presents the institutional setting and the merger.

Section 4 describes the data. Section 5 is devoted to the identification strategy. Section 6 presents the econometric specification. The results are exposed in Section 7 while Section 8 provides some robustness checks. Section 9 investigates possible mechanisms that help rationalize previous findings, and Section 10 concludes.

2 Literature

This paper lies at the intersection of two strands of literature: one devoted to both theoretical and empirical effects of integration of local jurisdictions, and another one concerned by spatial determinants of happiness.

First, in the theoretical framework built by [Alesina and Spolaore \(1997\)](#), the optimal number and size of countries result from a trade-off between economies of scale and heterogeneity of preferences. Empirical investigations on mergers of local jurisdictions (municipalities, counties, or regions) include [Jackson \(1987\)](#) in the USA, [Mouritzen \(2010\)](#) in Denmark and [Lidström \(2010\)](#) in Sweden. In Japan, [Weese \(2015\)](#) resorts to a structural model along with an asymmetric information problem between the national and local levels of government; he finds that the optimal number of subnational borders is about twice smaller than the actual one, hence the empirical application at stake illustrates somehow this result -recall that the number of regions decreased from 22 to 13. In the French case, a recent contribution by [Tricaud \(2021\)](#) concludes that local integration costs, including a rise in housing supply and higher congestion costs in urban municipalities, combined with an increased distance to public service facilities in rural areas, are major factors against intermunicipal cooperation. By contrast, this paper focuses at the regional level, which is relevant from an EU perspective. A number of papers are then devoted to explaining which factors determine integration ([Gordon and Knight, 2009](#); [Di Porto et al., 2013](#)). In contrast, this paper provides empirical evidence on the impact of a merger of regions on well-being, the causal relation-

ship being estimated on longitudinal survey data at the individual level. It is also natural to wonder whether such mergers have an impact on cost reduction in the newly formed jurisdictions. The literature has concluded to mixed results (Bel and Warner, 2015): overall efficiency gains have been found in Israel by Reingewertz (2012), but Blom-Hansen et al. (2016) conclude to the absence of any effect in the Danish case, and the same prevails in German jurisdictions with more than 100,000 inhabitants (Roesel, 2017). The current French case may sound like an outlier in this respect since local public spending has actually increased consecutive to the merger, but Frère et al. (2014) had already pointed out that intermunicipal cooperation did not reduce public spending in that country. Finally, from a fiscal federalism viewpoint, the decentralization theorem by Oates et al. (1972) balances heterogeneity in citizens' preferences and externalities between jurisdictions; it states that "the provision of public services should be located at the lowest level of government encompassing, in a spatial sense, the relevant benefits and costs". Analyzing tax competition, Breuillé and Zanaj (2013) show that regional (resp. local) taxes should increase (resp. decrease) following the merger of regions by comparing pre- and post- merger equilibria in a two-tier territorial organization with local and regional authorities. This result is consistent with what has been implemented in France by the decision maker: in practice, value-added contributions have been shifted from *départements* to regions after the merger.³

Second, this paper contributes to the identification of the impact of spatial determinants on subjective well-being.⁴ This task is all the more challenging as it requires observing individuals moving from one region to another, or regions somehow changing when looking at the same individuals over time, which sounds

³Before the NOTRe law (see below), local authorities (*départements*) received nearly one half of revenues issued from the *cotisation sur la valeur ajoutée des entreprises* (CVAE), a value-added contribution, while regions had exactly 1/4 of these revenues, the rest being allocated to municipalities or intermunicipal communities. After the NOTRe law, the share of regions increased to one half while the *départements*' share decreased to slightly less than 1/4. The CVAE must be distinguished from the French VAT, an indirect tax with a regular rate of 20%, although both of them rely on the same tax base; the CVAE is progressive, with a 1.5% top marginal rate beyond €50m.

⁴See a recent survey by Rentfrow (2018) on that topic.

even more difficult. From an econometric point of view, the former option requires to overcome the issue of endogenous location choice, which the latter option does not: the current paper exploits therefore the 2016 merger of French regions in that very spirit. In the USA, [Oswald and Wu \(2010\)](#) showed that estimated state effects issued from subjective well-being equations were strongly correlated with objective measures of life quality, i.e., state rankings based on air quality, traffic, etc. As a result, subjective perceptions do a fair job when measuring quality of life. However, the concept of region used here refers to an administrative region, net of all amenities that may be attached to that area. Other papers have wondered whether life was sweeter in the countryside: according to [Easterlin et al. \(2011\)](#), there is no marked difference between rural and urban areas in developed countries, while in developing countries cities are more frequently associated with higher reported levels of life satisfaction. Finally, other geographic determinants matter, including the price of gasoline ([Boyd-Swan and Herbst, 2012](#)) and housing costs ([Ala-Mantila et al., 2018](#)).

At the confluence of these two strands of literature, [Frijters et al. \(2004\)](#) exploit a wide-scale natural experiment, the German reunification, as an exogenous variation of income between West and East Germany to identify its causal impact on individual happiness. Some papers have studied the relationship between (de)centralization and individual well-being, and they usually find some positive effect of decentralization on life satisfaction ([Frey and Stutzer, 2000](#); [Bjørnskov et al., 2008](#); [Voigt and Blume, 2012](#); [Diaz-Serrano and Rodríguez-Pose, 2012](#)). Most of these articles rely on cross-sectional data, which prevents them to isolate the pure effect of decentralization from other confounding factor. By contrast, the current paper exploits a quasi-natural experiment that is more likely to neutralize such factors, and disposes of longitudinal data. More recently, based on panel data, [Flèche \(2020\)](#) exploits an intertemporal variation of local centralization reforms in Switzerland, viewed as a quasi-natural experiment, to identify their effect on subjective well-being. In this federal state, she finds a negative relationship be-

tween the degree of centralization and life satisfaction, which she attributes to the corresponding loss of influence over political decisions: her results emphasize the role played by the channel related to the heterogeneity of preferences. Compared with this paper, the current study deals with a nationwide reform, i.e. which concerned each and any region in France. Also, the institutional setting may matter when looking at the causal relationship between (de)centralization and subjective well-being. Contrary to the federal Switzerland, France is not only a leading member of the EU, it is also a unitary state with deep Jacobin roots. Hence there are reasons to think that attitudes toward centralization differ from those in federal states, especially because of the lower power of the regional level, which suggests a limited role for heterogeneity costs *vis-à-vis* other institutional settings.

3 Institutional background

3.1 The administrative division of France

Contrary to the US, Germany or Switzerland, France is not a federation of states, Länder or cantons; it is unitary. Besides, it has always been a centralized country. The French territory is divided into metropolitan France (mainland and Corsica) and overseas.⁵ Metropolitan France is divided into several layers: regions, *départements* and municipalities -the latter may enter intermunicipal cooperation and gather into intermunicipal communities called EPCI. There are 96 *départements* in metropolitan France and more than 35,000 municipalities. Regions, *départements*, EPCI and municipalities constitute the administrative division of France, the so-called *mille-feuille*. This multi-level governance is often criticized due to its presumed inefficiency in the public debate.

Local governments share various responsibilities in terms of education, public welfare, public transportation, economic development, youth, sports, etc. Re-

⁵Overseas are composed of five regions: French Guiana, Guadeloupe, Martinique, Mayotte, and Réunion, which were not required to merge by the reform at stake.

gions' exclusive areas of jurisdiction include: i) public transportation, ii) upper secondary education, namely high-schools, iii) vocational training and apprenticeship, iv) land planning, equality of territories, and environmental issues, v) the promotion of economic development, and vi) the management of European funds. More precisely, regions are in charge of local trains called *Trains Express Régionaux* (TER), and they contract directly with the railroad monopoly, SNCF, in order to (re)shape the local train network; regions are also in charge of ports and some airports. As regards upper secondary education, regions do not only manage current high-schools (supporting therefore corresponding operating costs); they are also the ones deciding whether and how to build new high-schools (investment spending). Regions' prerogatives extend to vocational training and apprenticeship: since the NOTRe law (see below), they have included a complete control over local structures devoted to foster the insertion of young individuals into the labor market. As regards environment, they have a regulatory role that consists in defining policy objectives in terms of, say, air quality, water distribution, greenhouse gas emissions, which other local governments like municipalities have to attain. As far as economic development is concerned, regions are especially responsible for granting directly subsidies to firms in order to promote innovation.⁶ To sum up, French regions are in charge of local public goods, but admittedly, at a quite large scale. France is mostly a centralized country, which means that the regional level is more limited than in federal states, for instance. In such a context, heterogeneity costs, i.e. costs related to dealing with the heterogeneity of residents' preferences, are likely to be small. Asymmetries of information are presumably high at the regional level, and regional policies may not be finely tailored to residents' preferences -both before and after the merger. As a result, one may rather expect residents not to lose much from sharing those regional policies at a more aggregate level.

Since 40 years, nevertheless, France has been partly decentralized. The so-

⁶More details are provided below. Regions' involvement as regards the management of European funds is also described in next subsection.

called “first act” of decentralization in France dates back to the Deferre laws voted in 1982. From that date onwards, the central authority transferred the executive power to the local authorities, namely the *départements*. The second part of this process occurred at the beginning of the 2000s when local authorities gained financial autonomy; regions then became responsible for upper secondary education, vocational training, apprenticeship, and trains. The third act of decentralization is precisely a set of laws including the merger as well as the *Loi portant Nouvelle Organisation Territoriale de la République* (NOTRe), which aimed at enforcing the role played by regions: in particular, it increased the scope of their responsibilities. On the one hand, regions saw their tasks and powers widened, which tends to increase the degree of decentralization. On the other hand, regions were merged into larger entities, which can be interpreted as a trend toward centralization -especially in absorbed regions, as will be explained below.

3.2 The 2016 merger of regions

On January 14, 2014, President François Hollande announced a territorial reform that would eventually result in the creation of 13 new regions instead of the 22 existing ones. This substantial reduction in the number of regional jurisdictions deeply reshaped French subnational borders. In fact, the idea dated back to the *comité Balladur*, an administrative commission presided by former Prime Minister Edouard Balladur on the request of President Nicolas Sarkozy in 2008. At the time, the *comité* advocated for the creation of 15 “super regions” in metropolitan France so as to meet European standards in terms of size (German, Italian and Spanish regions being larger, on average). However, when Hollande made his announcement, it came out as a surprise since the proposal was not part of his 2012 presidential campaign program; the reform was unexpected in this regard. Hollande argued it would help simplify the complexity of administrative division, i.e., of the French *mille-feuille*. He wanted a swift legislative process: on June 3, 2014, he proposed the creation of 14 new regions, and two weeks later, the bill

was under consideration by the Senate. However, the law was only adopted by the National Assembly, namely the lower house of the French Parliament, on December 17, 2014, because of strong opposition to the project. The Constitutional Council nonetheless indicated that the law was conform to the constitution on January 15, 2015. Finally, the #2015-29 law, or *Loi relative à la délimitation des régions, aux élections régionales et départementales et modifiant le calendrier électoral*, which rules the current administrative division of France, was promulgated on January 16, 2015 and implemented from January 1st, 2016 onwards.

This reform is all the more unique as administrative borders had hardly changed over more than six decades in France, i.e., since their creation in 1956.⁷ There were many discussions from January to June 2014, a crucial phase during which those borders were still undetermined and when the government had to face many lobbyists. The public debate focused on the fear of losing one’s regional identity; it opposed somehow “conservatives” and “liberals” in this respect: see, for instance, the various discussions on the borders of new regional entities and the possible “reunification” of Brittany and Pays de la Loire called for by some, but rejected by others.⁸ According to many, citizens’ attachment toward their regions would be strong. Other issues were related to regionalism, including the teaching of regional languages and the autonomous status of Corsica. On the whole, this reform was well publicised: as an empirical evidence of its salience to French citizens, numerous demonstrations were organized against the reform and many press articles were devoted to this issue. In the end, 13 new regions were created, the borders of which coincide neither with the initial project, nor with the one announced on June 3, 2014. Table 10 in Appendix yields the correspondence between the 22 old regions (Figure 1a) and the 13 new regions (Figure 1b).

Importantly, the NOTRe law strengthened the role played by regions in eco-

⁷The creation of regions dates back to a proposal by Serge Antoine, a magistrate at the French Court of Auditors (*Cour des Comptes*), the highest jurisdiction to audit and adjudicate accounts made by public, management, and government accountants.

⁸“Le sentiment d’appartenance est plus fort en Bretagne qu’ailleurs”, interview in the French newspaper *Libération*, July 15, 2014.

conomic development by putting an end to the one played by *départements* in that domain. For instance, the priority has been given to promoting regional attractiveness through simplified administrative procedures for firms. It was therefore expected that the merger encouraged the promotion of local business development, and thus enhanced local economic performance. Following the NOTRe law, the regional share in local fiscal tax revenue increased (remember footnote 3), and the lump-sum transfer from the State decreased accordingly so as to keep regions' revenue nearly constant. It should be acknowledged, though, that the 2016 reform implying both higher economies of scale through the merger itself and a strengthening in regions' competencies, isolating the effect of each single channel is difficult, from an empirical perspective.

Last, the reform was designed to reduce interregional gaps by merging big, wealthy regions to small, poorer ones (Jouen, 2015). The boundaries of the new regions meet administrative proximity criteria, but the risk for merged regions to be excluded from the "transition region" category exists, especially in case of a change in the NUTS 2 nomenclature: the eligibility for European funds is tailored to that level.⁹ However, this status is unpopular with respect to other countries in the EU. On the one hand, since poorer regions are merged with wealthier regions, the economic situation of the former is expected to improve; on the other hand, this might lead precisely to lose eligibility to European Structural Funds (European Regional Development Fund or ERDF, and European Social Fund or ESF) based on convergence indicators at the EU-25 level. French regions, including overseas, received €12.5bn from the EU over the 2007-2013 period. Though the former trade-off results in an ambiguous overall effect, some economic improvement is expected, at least in the short run.

⁹Transition regions are regions whose GDP per capita lies between 75% and 90% of the EU average. NUTS is a geocode standard for referencing the subdivisions of countries for statistical purposes. NUTS 2 comprises areas with a population of 800,000 to 3 million people. For more details on that issue, see Antunez et al. (2017).

4 Data

Following the recommendation of the [Stiglitz et al. \(2009\)](#) commission, France has started to ask individuals directly how they felt about their lives. The French institute of statistics and economic studies (Insee) is in charge of the SRCV survey targeting about 10,000 households every year. From 2010 onwards, it has included several questions related to individual life satisfaction, job satisfaction, as well as satisfaction with family and friends. On top of these measures of subjective well-being, the data provides with usual information at the individual level: gender, age, education, occupation, family status, labor force status and geographic location. Income is measured at the household level; in what follows, I consider the logarithm of the CPI-deflated annual household income, i.e., the sum of real incomes from all members in the household divided by the number of units of consumption as defined by the OECD scale.¹⁰ As another interesting feature of SRCV, this survey enables the researcher to track individuals even when they move between two waves.

The comparability of the data related to subjective well-being before and after 2013 casts doubts, according to the very unit in charge of the SRCV survey at Insee. Though the survey started in 2010, the questionnaire was modified in 2013: questions relative to life satisfaction were placed *after* those relative to income, while the reverse held before. *De facto*, a break in the time series of life satisfaction can be observed at that date.¹¹ In what follows, I focus therefore on the 2013-2019 period.

Table 11 in Online Appendix contains some descriptive statistics related to the working sample, an unbalanced panel of 37,433 individuals (106,404 individual-year observations) followed from 2013 to 2019 for 2.8 years, on average, and

¹⁰According to this scale, the first adult in the household has weight 1, the other adults or children aged at least 14 have a weight equal to .5, and children aged less than 14 have a weight equal to .3.

¹¹See Figure 12 in Appendix.

whose annual standard of living exceeds €1.¹² Women and elders are slightly over-represented (58% of the sample aged 53.6 on average), which is usual in French household surveys. The average income amounts to almost €26,000 per year; besides, income exhibits sizable dispersion since its coefficient of variation is roughly 1.57, and the top 1% earns more than €85,000 a year.

A measure of subjective well-being is based on a question related to overall satisfaction with life, the answer being available on a discrete 0-10 scale. The average life satisfaction amounts to 7.2; the distribution is rather concentrated around levels 7 and 8, but has whole support over the Cantril scale (see Figure 10 in Appendix). The cross-sectional coefficient of variation is as small as .24. From 2013 to 2019, a trend toward higher life satisfaction can be observed: subjective well-being increased on average by .23.

5 Identification strategy

To identify the causal impact of regional mergers on individual subjective well-being, two options are available to the researcher: either she may restrict her attention to movers, that is, to individuals who move from one region to another; or she may exploit natural experiments involving a change in regional borders, focusing by contrast on stayers, i.e., on individuals who stay in the same region. The latter being *a priori* more numerous than movers, the former strategy looks fragile since it relies on a small sub-sample of individuals. On top of that, there are various, possibly endogenous reasons which make individuals move: endogenous spatial sorting might arise in the sense that such moves can be correlated with unobserved determinants of subjective well-being. Though more promising, the latter source of identification is extremely rare in practice; the current framework makes it plausible.

The identification strategy adopted in this paper consists in exploiting the

¹²Standard of living is issued from individual tax files: it includes both labor and non-labor income. Restricting attention to income above €1 is completely innocuous in that sense.

merger described above as a natural experiment.¹³ The reform provides therefore with a comparison group made up of individuals living in the six *non-merged regions* regions which remained unaffected by the merger: Brittany, Corsica, Île-de-France, Pays de la Loire, Provence-Alpes-Côte d’Azur, on top of the Centre region that had been renamed Centre-Val de Loire on January 17, 2015. Individuals in this comparison group represent 37% of the working sample.

Different treatment groups may be considered, depending on the research question: individuals living (i) in merged regions, (ii) in absorbed regions, or (iii) in absorbing regions. By definition, merged regions and non-merged regions form a partition of metropolitan France. A first approach relies thus on a comparison of the evolution of life satisfaction in merged regions with that of non-merged regions. There are reasons to believe that merged regions are heterogeneous from demographic, economic, geographic and social viewpoints; in particular, they are made up of absorbed and absorbing regions which form a partition of merged regions (when absorption is defined in a broad sense, see below). Merged regions differ from non-merged regions in that they were significantly poorer at onset: in 2015, individuals living in the latter report an annual income of €27,200 on average as opposed to €24,300 for residents of the former -the difference being statistically significant at 5%, allowing for unequal variances within the two groups.

Among the 16 merged regions forming 7 new regions, some are smaller from demographic, economic, geographic or political perspectives; these regions can be considered as *absorbed regions*. I define here absorption in a conservative fashion: it means that administrative issues and local politics are held in a prefecture that is located in another region (the absorbing one) after the merger. Put differently, the capital of (the) absorbed region(s)¹⁴ moved while the capital of the absorbing region did not: it is then fair to assume that absorbed regions have experienced increased centralization since their inhabitants have mechanically less control over local policy decisions. For this very same reason, it is also expected that the loss of

¹³Note that this approach does not require to select movers out of the working sample.

¹⁴Absorbing regions have absorbed either one or two regions, see Table 10.

regional identity (if any) would be more salient in these regions due to the transfer in local executive power. Absorbed regions in this conservative sense include Auvergne, Champagne-Ardenne, Limousin, Lorraine, Picardy and Poitou-Charentes; 17% of individuals lived there before the merger. Absorbing and absorbed regions look quite similar in terms of observable characteristics (see Table 1), except that absorbed regions are significantly poorer: €23,300 on average against €25,100 in 2015, the difference being statistically significant at 5%, allowing for unequal variances within the two groups. Remember that the reform intended to reduce intraregional differences. Equipped with a second treatment group definition, I rely on the comparison of the evolution of life satisfaction in regions that have been absorbed with the one that prevailed in regions that did not merge. In this exercise, the 26% of individuals living in an absorbing region (Alsace, Aquitaine, Nord-Pas-de-Calais, Rhône-Alpes) are excluded from the analysis; by definition, in such regions, not only has the former regional prefecture (or capital) remained a prefecture, but it has also become the one of the new regional entity. Last, I resort to a third treatment group composed of individuals living in those absorbing regions.

What about the other regions? Some did merge, but the governance of the new region has been shared between the former regions (Burgundy and Franche-Comté, Lower Normandy and Upper Normandy, Languedoc-Roussillon and Midi-Pyrénées). The leading regions are Burgundy, Upper Normandy and Midi-Pyrénées in the sense that the capitals of the new regional entities to which these former regions now belong to remained unchanged.¹⁵ In the conservative approach, I exclude such regions from the analysis. I provide a robustness check with respect to that methodological choice by including them as well in the treatment group, see section 8.1 on that issue.

Table 1 provides with summary statistics on individuals living in the different

¹⁵In a recent book, [Négrier and Simoulin \(2021\)](#) confirm that balancing executive powers between former Languedoc-Roussillon and Midi-Pyrénées within the new Occitanie has not been an easy task.

regions depending on their treatment status. Income aside, the four categories of regions (non-merged, merged, absorbed and absorbing) look close in terms of observable characteristics. As usual with difference-in-differences methods, the identifying assumption is that individuals would have experienced a similar evolution of subjective well-being in both comparison and treatment groups, had the merger not happened. This common trend assumption cannot be tested, but its plausibility can be assessed. Figure 2 depicts the evolution of life satisfaction in regions depending on their status towards the merger (non-merged, absorbed or absorbing). As far as pre-trends are concerned, it is not possible to disregard any of the empirical strategies presented above. The event study analyses presented in Figures 6 to 8 will also confirm that the joint null hypothesis cannot be rejected before 2015 for all treatment groups considered here, i.e. the absence of any pre-trend. Besides, Section 8.3 simulates placebo experiments to check the absence of pre-trend. Moreover, despite the break in well-being’s time series occurring in 2013, the common trend assumption remains in fact plausible from 2010 to 2015,¹⁶ which comforts the identifying assumption even on a longer period.¹⁷

Interestingly, while life satisfaction has remained rather stable in both merged and non-merged regions after 2016 (it has even decreased slightly in the latter group, from 7.2 to 7.18), a sharp rise in self-assessed subjective well-being can be observed in absorbed regions, from about 7.12 in 2015 to 7.26 in 2017. This empirical evidence suggests that the impact of merger on life satisfaction is small and not significant, but also that the impact of absorption is significantly positive. A simple, unadjusted computation leads to a causal, short-run impact of $(+0.14) - (-0.02) = +0.16$ of being absorbed on life satisfaction between those dates, not

¹⁶See Figure 12 in Appendix.

¹⁷On top of that, Figure 11 in Online Appendix displays coefficients issued from difference-in-difference estimations, the outcomes of which are standardized covariates: for two treatment group definitions, merging and being absorbed, composition effects -namely, differential changes in covariates which would be driven by the treatment itself- turn out to be mostly non significantly different from zero at usual levels. Hence, especially in a multivariate approach, it is reasonable to consider that there has been hardly any differential change over time in the relative characteristics of treatment and comparison groups consecutive to the policy change.

controlling for any observed characteristics at this stage. The next section provides with an econometric model that enables to check whether this finding holds *ceteris paribus*.

One might worry about anticipation effects which could induce individuals to move in order to avoid the reform; yet such a strategic behavior is hardly at stake. 569 individuals, i.e. about 1.5% of the sample, are observed living in at least two former regions from 2013 to 2019. I nevertheless provide a robustness check with respect to endogenous location choice (or endogenous sorting, or selective migration): see row (5) of Table 5 (top panel).

Last, even if the natural experiment at stake guarantees that the timing of sub-national border changes can be considered as exogenous, a remaining concern could be related to endogenous border drawing -namely the possibility that new borders were designed to minimize discontent. Non-merged regions like Brittany, Corsica, but also Île-de-France, Pays de la Loire or Provence-Alpes-Côte d'Azur to a smaller extent, would be precisely the ones in which regional attachment was higher. Put differently, one may worry about selection into treatment. Importantly, this would not threaten internal validity as long as the previous difference-in-differences identifying assumptions, i.e., the common trend assumptions, are valid. It must be acknowledged, though, that external validity would be more challenging, and that the results obtained in this particular setting would not generalize easily to other contexts.

6 Econometric specification

The difference-in-differences approach is now implemented based on a linear model. On top of clarity, linearity permits an easy inclusion of individual fixed-effects, which enables the researcher to better control for unobserved heterogeneity.¹⁸ There are serious reasons to believe that unobserved heterogeneity is a first-order

¹⁸Though it is possible to include fixed-effects in ordinal models, this is a more computationally demanding task. See the Appendix on this topic.

issue as far as subjective well-being is concerned, which claims rather for individual fixed-effects.

The estimating equation as regards the subjective well-being (SWB) of individual i living in region r on year t is:

$$\text{SWB}_{irt} = \beta \text{Treatment}_r \times \text{Post}_t + X'_{irt}\gamma + \alpha_i + \delta_t + \mu_r + \varepsilon_{irt}. \quad (1)$$

Explanatory covariates include a number of usual determinants of life satisfaction X_{irt} (income, age, education, gender, occupation, labor force status, family status) on top of individual fixed-effects α_i , year dummies δ_t and regional dummies μ_r .¹⁹ The selection of controls in the estimating equation can be dealt with in several ways. First, the literature devoted to the individual determinants of subjective well-being provides some guidance (see [Layard et al., 2015](#), on that topic). Second, statistical methods based either on the BIC, on the rigorous Lasso, or on a stepwise algorithm provide useful tools to pick up the most relevant variables. In practice, both the literature and statistical criteria suggest that relevant covariates here correspond to labor force status, family status, income and age; education, gender and occupation dummies are included for the sake of completeness.²⁰

The average treatment effect (ATE), β , is recovered by the coefficient corresponding to the interaction of the treatment dummy defined at the regional level with a dummy equal to 1 from 2016 onwards, i.e., during the post-reform period. Idiosyncratic shocks ε_{irt} follow a normal distribution, and I use robust standard errors with two-way clustering by individual and region (as in, e.g., [Allcott et al., 2019](#)) to take autocorrelation of residuals into account, among others; Section 8.4 provides robustness checks with respect to that level of clustering.²¹

The identification of the model is achieved by assuming strict exogeneity of

¹⁹Region FE could be replaced with municipality FE, which would not alter the results.

²⁰The results remain unchanged when allowing these control variables to have distinct trends before and after the merger, see row (6) of Table 5 (top panel).

²¹Region clusters do not absorb individual clusters because some individuals move across regions.

the covariates conditional to the individual effects. The exogeneity follows from the reform being a natural experiment. A concern has been raised by a recent literature devoted to treatment effects, and could apply here if treatment effects were heterogeneous across regions or over time (see below). In that case, the β coefficient of the linear regression above which includes two-way fixed-effects would estimate a weighted sum of the local average treatment effects (LATE) specific to each region and year. A problem would arise if some of these weights were negative, which occurs in many settings as shown by [De Chaisemartin and d’Haultfoeuille \(2020\)](#). However, the current analysis circumvents this problem thanks to the sharp design, namely to the fact that all concerned regions were treated after 2016.

On top of that, it is possible to allow the coefficient β to vary over time in an event study spirit. Regardless of the treatment group definition considered (merging, being absorbed or absorbing), the event occurs from $t = 2016$ onward, and the normalization adopted here is that the null arises in 2015, i.e. just one year before event. Instead of interacting the post-treatment dummy with the treatment group indicator, I replace that post-treatment dummy with all but 2015 year dummies: by construction, this method relaxes the assumption of a stable treatment effect over time.

7 Results

Tables [2](#), [3](#) and [4](#) show the results obtained from the specification [\(1\)](#) for the three treatments defined above: merging, absorbing, and being absorbed. For the sake of readability, only the average treatment effects (ATEs) are reported in these tables. The other estimates $\hat{\gamma}$ are available on [Appendix Table 12](#); it is worth emphasizing that they are completely in line with the huge empirical literature devoted to subjective well-being. For instance, becoming unemployed has a strong, depressing impact on life satisfaction: it tends to lower it by .8, on average, on

the 0-10 Cantril scale. By contrast, even though money can't buy happiness, it definitely contributes to it: the correlation between income and life satisfaction is strong and positive -though economically small. Increasing one's standard of living by 1% raises subjective well-being by roughly .0055. Having a partner increases life satisfaction by about .6. Gender has barely any effect at all. Education tends to increase slightly subjective well-being, and occupation plays the same role in the expected sense: white collars are significantly happier than blue collars while farmers report the lowest life satisfaction. Thanks to the large sample size, $\hat{\gamma}$ is precisely estimated, and there is little doubt that these well-known stylized facts hold in the data.

Turning now to the causal effect of the merger, one cannot reject the null hypothesis that the ATE is equal to zero at the 5% level (Table 2). An event study analysis, the results of which are displayed by Figure 6, confirms this diagnosis.

On top of that, both Table 3 and Figure 7 lead to conclude that individuals living in absorbing regions have not been hurt by the reform. The fact that there is no effect on life satisfaction in those regions is consistent with a minor role played by preference heterogeneity, hence with small costs of heterogeneity, if any. This empirical evidence suggests at least that the merger of regions has not hurt individuals, which brings me to state and test:

Prediction 1 (Heterogeneity of preferences / Taste for decentralization) Due to the creation of larger local government entities and to the presence of large heterogeneity costs, subjective well-being should have decreased. *Rejected on the data.*

More interestingly, the main insight from Table 4 is that being absorbed has significantly increased individual life satisfaction, at least in the short term. This result is obtained after including controls and after taking unobserved heterogeneity into account thanks to individual fixed-effects. The point estimates of the ATE, which are all positive and significantly different from 0, correspond to an increase in self-assessed life satisfaction that amounts nearly to .066 in the preferred spec-

ification from column (6) that contains both individual fixed-effects and controls. Everything happens, for instance, as if 6.6% of individuals reported a +1 change in their life satisfaction, the rest of individuals not reporting any change in this regard -or as if the standard of living of all individuals increased by .12%. This effect also amounts to 4% of a standard deviation, or equivalently to 28% of the coefficient of variation. Since subjective well-being has raised, on average, by .23 from 2013 to 2019 at the national level, absorption *per se* would account for 5% of this change -remembering that individuals living in absorbed regions constitute about 17% of the population. This finding suggests that absorption had positive effects which outweighed individuals' attachment to their former administrative region, despite the presumed fear of losing one's regional identity put forward in the public debate.

Prediction 2 (Loss of regional identity) Consecutive to the merger, subjective well-being should have diminished, especially in absorbed regions where the loss of regional identity is *a priori* more pronounced. *Strongly rejected on the data.*

The results displayed by Figure 8 suggest further that the treatment effect stems mostly from the first two years following the absorption, namely 2016 and 2017, consistently with Figure 2. In 2017, the point estimate is .15, in line with the unadjusted treatment effect computed above of .16, and it cannot be excluded that it is as high as .19, the upper bound of the confidence interval -hence a substantial effect. The null hypothesis cannot be rejected in 2018 and in 2019, as if the effect was short-lived. This empirical evidence of a transitory response to a persistent shock is consistent with the effect being driven by economic or professional reasons (namely, better job prospects, see section 9) and with scarring effects of unemployment on subjective well-being (in the long run, re-employment would not compensate for unemployment viewed as a bad experience with long-lasting consequences).²²

²²Another possibility could be due to unemployed individuals entering short-term employment. Unfortunately, I do not dispose of that information and I cannot test this hypothesis.

To sum up, there is no empirical evidence of any negative -either short-run or long-run- effect of the French merger of regions on life satisfaction: this finding contrasts with the case of Switzerland, for instance. If anything, life satisfaction has even increased consecutive to living in an absorbed region, at least in the short term. Moreover, the corresponding impact in richer, absorbing regions, turns out to be not significant. After proceeding to some robustness checks, I hereafter investigate possible mechanisms which help understand this empirical evidence, on top of limited roles played by heterogeneity of preferences and the loss of regional identity in this context.

8 Robustness checks

This section provides several robustness tests in order to check that previous results can truly have a causal interpretation, and do not stem from statistical artifacts. All the results presented here concern the second treatment group definition (being absorbed), the absence of any significant effect of merging and absorbing being robust to the various specifications considered here, too. First, I consider alternative treatment and comparison groups, which helps me to determine the sensitivity of estimates with respect to different common trend assumptions. Second, falsification tests are performed so as to guarantee the absence of pre-trend: I simulate placebo experiments, namely fake mergers that would have occurred before the actual one in 2016. Third, from a statistical viewpoint, the results seem to be driven neither by attrition, nor by survey sampling issues; they are also rather robust to the clustering level. Finally, I investigate the possibility of intermunicipal cooperation acting as a confounding factor.

8.1 Alternative treatment group

I now consider a less conservative definition of absorption, which includes former regions Franche-Comté, Lower Normandy and Languedoc-Roussillon that share

some governance with their respective absorbing region within new regional entities. This approach yields 9 absorbed regions defined in this broader sense instead of 6, which account for 26% of individuals. On top of providing with a sensitivity analysis, this empirical strategy relies thus on a larger sample size, which yields more precise estimates. The first row of Table 5 (top panel) shows that absorption has still a positive effect, and that it is of the same magnitude.

In the remainder of that section, an individual belongs to the treatment group if she lives in a region that has been absorbed in the conservative sense.

8.2 Alternative comparison groups

Another robustness check consists in verifying that the ATE does not depend too much on the definition of the comparison group. A potential concern is related to the effect being driven by the leading Île-de-France region which remained unaffected by the merger, and which looks like an outlier with respect to other regions: it is both the wealthiest and the most crowded region (Paris belongs to that region). To address this concern, I exclude Île-de-France from the comparison group. The results are displayed by row (2) of Table 5 (top panel): reassuringly, the estimated ATE remains very close to the one found in Table 4, despite the loss of statistical significance at 5% consecutive to a lower sample size.

Another concern could be that the comparison group is not perfectly comparable with the treatment group in the sense that both the outcome and its predictors are not the same before the reform. First, the descriptive statistics provided in Table 1 suggest that they are, in fact, pretty similar (income aside). Second, a standard solution to tackle this potential issue consists in resorting to a synthetic control approach (Abadie et al., 2010), i.e., in building a synthetic control group that mimics the treatment group in terms of both pre-treatment outcomes and observed characteristics. According to Figure 9 in Appendix, the short-run effect documented above would amount to .06 in 2016 and to .135 in 2017, but would vanish in 2018 and even become negative in 2019 (not significantly different from

zero, though). As in the event study analysis, this approach relaxes the stable treatment effect assumption.

8.3 Placebo experiments

I then simulate two placebo experiments, namely fake mergers in 2014 and 2015, that is, before the actual reform in 2016. If the common trend assumption holds, it should pass these falsification tests. The results are provided by rows (1) and (2) of Table 5 (bottom panel). No significant effect is found, which is consistent with the absence of any differential pre-trend in subjective well-being across comparison and treatment groups. Hence it gives further credit to the idea that the improvement in self-assessed life satisfaction reflects a causal effect of the absorption. If anything, the estimated ATE under a fake merger in 2015 is slightly higher than the one corresponding to a fake merger in 2014, none of these effects being significant at usual levels, though; this could be consistent with some anticipation effects arising in 2015.

8.4 Statistical issues

I investigate next whether my results are robust to statistical concerns, essentially: (i) endogenous attrition, (ii) panel balancing, and (iii) clustering.

To test for endogenous attrition, I resort to the method suggested by [Verbeek and Nijman \(1992\)](#) which consists in including a dummy indicating whether an individual belongs to the balanced panel as a supplementary explanatory covariate in the model, and in testing for its significance. Table 8 in Appendix shows that endogenous attrition is not too much of a concern here: this dummy is not significant at usual levels, and the corresponding null hypothesis cannot be rejected. In another vein, I restrict my estimation sample to individuals surveyed at least once in the pre and post treatment period, which does not alter the results either, in particular in the specification with individual fixed effects; corresponding

estimates are provided by Figure 13 in Appendix.

Row (3) of Table 5 (top panel) provides estimates on the balanced panel composed of a much smaller number of individuals (1,267 instead of 20,870) who are always present in the survey from 2013 to 2019. This approach removes any bias due to changes over time in the differences in unobserved characteristics of the treatment and comparison group. The treatment effect is identified from changes in life satisfaction over time in the treatment group with respect to the comparison group. The estimated ATE turns out to be even higher than the one estimated previously (.177 in the preferred specification), and more significant, too.

Last, I wonder whether the above empirical findings are robust to other levels of clustering than the two-way clustering approach used up to now. According to Bertrand et al. (2004), the ideal clustering level is the level of intervention, namely former regions. However, this choice is challenged in the current empirical setting since it would yield only a small number of clusters (22). Hence it would cast doubts as regards the consistent estimation of the asymptotic variance-covariance matrix: a rule of thumb suggests that at least 50 clusters are required (see, e.g., Cameron and Miller, 2015), which precludes the possibility of clustering at the regional level. Rather, I investigate hereafter whether significance remains when standard errors are clustered at the individual level. Table 9 in Appendix shows that the estimated standard error remains unchanged. I conclude that the significance of the estimated ATE at usual levels is verified empirically provided that the necessary condition of disposing of at least 50 clusters is fulfilled.

8.5 Intermunicipal cooperation as a confounding factor?

Finally, a remaining concern could be related to the gradual move toward intercommunality (Tricaud, 2021), for instance through an accrued importance of metropolis consecutive to the *Loi de Modernisation de l'Action Publique Territoriale et d’Affirmation des Métropoles* (the so-called MAPTAM law) implemented from 2014 onwards. Municipalities have indeed engaged into a cooperative process

which led to a substantial reduction in their number during the considered period: -3.3% on average (-3.1% in merged regions and -2.9% in absorbed regions). To check that this change does not act as a confounding factor in the above estimations, I control further for the annual number of municipalities within regions. As can be seen on row (4) of Table 5 (top panel), the results remain mostly unchanged when controlling for that factor, though.

9 Interpretation

Before turning to mechanisms *per se*, I wonder whether the effects documented above are heterogeneous across individuals. In a triple differences approach, I specify now $\beta \equiv \beta_0 + \beta_X X_{irt}$ in equation (1). The top panel of Table 6 tests whether some individual characteristics tend to amplify, or to attenuate previous effects.²³ Life satisfaction increased most for blue collars consecutive to an absorption: the estimated treatment effect for them amounts to slightly less than three times the ATE. For singles and for individuals holding a vocational degree, the point estimates are still at least twice the ATE. The fact that low-qualified workers with weaker family ties, who are likely more mobile on the job market, benefited the most from this reform is consistent with some economic explanation (see below). This empirical finding suggests that the economic dimension helps explain current results.²⁴

The rest of this section is devoted to an investigation of the mechanisms underlying previous results. In particular, I try to find out which regional attributes might have changed consecutive to the merger that help rationalize (i) why there is no negative impact, and (ii) why there is even an improvement in absorbed regions, as far as individual life satisfaction is concerned. A technical difficulty

²³Rejections of $H_0 : \beta_X = 0$ only are reported in those Tables.

²⁴To investigate further the possibility that the impact of the merger varies according to regional characteristics, I allow the treatment effect to depend on the population size and area, measured at the former region level, and to differ in rural and in urban areas; yet I do not find any significant differences along those dimensions.

arises due to data limitations: by construction, official statistics are available in former regions before the merger, in new regions after the merger, but not in former regions after the merger. An important exception is the unemployment rate: Insee provides with series available both at the *département* level and at the *zone d'emploi* level -a *zone d'emploi* stands literally for labor market area, there are 304 such areas in France, i.e., about 3 per *département*). Of course, these figures can easily be aggregated at the former region level. As far as other outcomes are concerned (e.g. public spending, local tax revenues), the absence of relevant data at the desired aggregation level prevents me from characterizing distinct changes in absorbed and absorbing regions; I am then forced to focus on the comparison between merged and non-merged regions only.

A first clue to understand the economic impact of that merger is provided by changes in local unemployment rates. Column (1) of Table 7 shows that the local unemployment rate has decreased by .2pp (-1.6%) more in merged regions than in non-merged regions after 2016. This decline is observed at various levels: new region, former region, *département*, and *zone d'emploi*. Estimation results at the latter level turn out to be remarkably similar (-.21pp), see Table 14. It is especially the case in absorbed regions: consecutive to the merger, the unemployment rate has decreased by .24pp more (-2.2%) in those regions than in non-merged regions (Figure 3 and column (2) of Table 7), and this figure amounts to .28pp (-2.4%) at the *zone d'emploi* level. In contrast, the impact is lower in absorbing regions, see column (3) of Table 7. This empirical evidence suggests that the merger has created new economic opportunities which led to better prospects on local job markets. Those better prospects have mostly benefited to women, prime-age and young individuals for whom the unemployment rate decreased by up to 3.5%, see Table 13. Remember in particular that following the NOTRe law, regions gained control over local structures in charge of fostering the insertion of young individuals into the labor market. The decline in the unemployment rate observed in France after a merger of local jurisdictions is consistent with [Wolfschuetz \(2020\)](#)

who also finds some improvement in local economic performance (as measured by the unemployment rate) after municipalities entered intermunicipal cooperation in Germany, which she relates to a fostering of local business development. Indeed, the above analysis demonstrates that the merger has favored poorer, absorbed regions, as if they had benefited from economic spillovers of the richer, absorbing regions; conversely, the smaller effects on unemployment in the latter regions suggests again that costs of heterogeneity are small.²⁵ This improvement of local economic climate has likely concerned mobile individuals like blue collars, singles, and individuals with a vocational degree who might be more prone to benefit from new job opportunities. As a plausible channel for this improvement in local labor market conditions, the new regional boundaries might have facilitated commuting within the new larger regional entities: remember that regions' scope includes trains, and that commuting could have been made easier thanks to synchronized rail transportation. Also, regions are bound to promote local economic performance, especially by simplifying administrative procedures for firms, which should have fostered local business development. Suggestive evidence is provided in this respect by Figure 15 in Online Appendix which shows that regional subsidies to firms have tended to increase consecutive to the merger in the concerned regions.²⁶ direct support to the private sector may be better tailored at the local level, rather than at the national level as before. Determining whether, and how exactly, such place-based policies have been successful at making local labour markets more efficient is an active area of current research; see, e.g. [Etzel et al. \(2020\)](#), in the case of the German reunification.

Another explanation could be precisely that there was some income convergence in the same vein as what occurred in Germany after the reunification ([Frijters et al., 2004](#)). However, consistent with the rationale, the current merger did not involve

²⁵If anything, such costs should be higher for richer, absorbing regions being “forced” to merge with poorer, absorbed ones.

²⁶Unfortunately, data is missing for 2013, in Aquitaine before 2016, in Brittany before 2015, and in Corsica in 2019; these regions are removed from the sample of Figure 15.

regions that were as heterogeneous in terms of GDP per capita as West and East Germany were. Figure 4 suggests that the common trend assumption would not hold for individual income, and that the corresponding effect (if any) would be small.

On the whole, these investigations lead to:

Prediction 3 (Economic spillovers) Following the merger, subjective well-being should have increased through an improvement of the overall economic climate. *Cannot be rejected on the data.*

A second point has to do with unintended effects of the merger on public spending. The French Supreme Court of Auditors, the Cour des Comptes, in charge of an audit of public funds, worries about pecuniary costs consecutive to the merger. According to Cour des Comptes (2019), efficiency gains have not been visible so far: on the contrary, and by comparison with non-merged regions, pecuniary costs have increased due to a convergence in civil servants' bonuses based on the rule of the most favorable situation, an update of IT systems, etc. Moreover, merged regions raised their investment spending while non-merged regions hardly increased them at all over the post-merger period. Data issued by the DGCL, the French directorate in charge of statistics on local authorities, yield to Figure 14 in Appendix, which replicates Figure 9 p133 of the report established by Cour des Comptes (2019) –except that the sample of non-merged regions does not include overseas here. Not only did the merger generate no economies of scale, but it resulted in an *increase* of local public spending, which is confirmed by both Figure 5 and column (4) of Table 7. To understand further where this supplementary spending comes from, I perform several analyses on different components of that spending, including schools and train, see columns (5) and (6). It turns out that investment in schools rose significantly consecutive to the merger: this result is consistent with scale effects preventing former regions²⁷ to invest further in education before the

²⁷presumably the poorest, absorbed ones; unfortunately, I do not dispose of the data at the relevant aggregation level to test this hypothesis.

merger, and that in contrast, the critical size reached by new regions has seemingly favored such investments. Hence this empirical evidence suggests that there was no loss of public goods in absorbed regions, i.e. that there was no rationalization of public services consecutive to that reform. In turn, this is consistent with both low costs of heterogeneity and no supplementary discontent that would have arisen in the case of public services' closures, for instance. The economic spillovers documented previously are thus consistent with the fact that residents value an extended provision of public goods consecutive to higher local public spending.

10 Conclusion

This paper has assessed the causal impact of the 2016 merger of French regions on individual subjective well-being. This wide-scale reform reduced the number of regions from 22 to 13, among others, and that reduction in the number of regions was synonymous of both stronger centralization in absorbed regions (i.e. higher economies of scale) and a strengthening of their competencies. Contrary to what the public debate suggested at the time by putting much emphasis on citizens' regional attachment, and contrary to other empirical findings on the relationship between centralization and life satisfaction, I find no significant depressing impact of that merger. In fact, the latter turned out to have a positive, short-run effect in smaller, poorer regions, which can be explained by an improvement of local economic conditions. In particular, the unemployment rate declined more rapidly in absorbed regions, which might have benefited mobile and low-qualified workers. Empirically disentangling among the two active ingredients of the reform remains, however, a difficult task.

The current empirical evidence suggests that economic spillovers help explain citizen's attitude towards changes in subnational borders, on top of the usual trade-off between economies of scale and heterogeneity of preferences. By contrast, the analysis has proved fruitful in answering concerns related to the presumed "loss of

regional identity”: the data does not favor such a hypothesis. Regional belonging might be oversold in the public debate: at the very least, economic outcomes likely outweigh cultural norms.

Given that the results obtained here look somehow different from those obtained in other settings, this research also emphasizes the role played by the institutional context, acknowledging yet that the latter is in fact endogenous to preferences. The taste for decentralization might be lower in a centralized country (like France) than in federal states, and act as the ultimate cause of the current form of institutions. This study also provides some guidance to policy makers when deciding to merge local authorities. However, further research is needed to document and quantify the redistributive effects between losers and winners of these changes within absorbed (and absorbing) regions. Such effects matter and they have been recently put forward by [Boyer et al. \(2020\)](#) and [Tricaud \(2021\)](#) as possible factors explaining the rise in protest movements like the Yellow Vests or populism.

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Figures



(a) Old regions (before the merger)



(b) New regions (after the merger)

Figure 1: Administrative division of metropolitan France

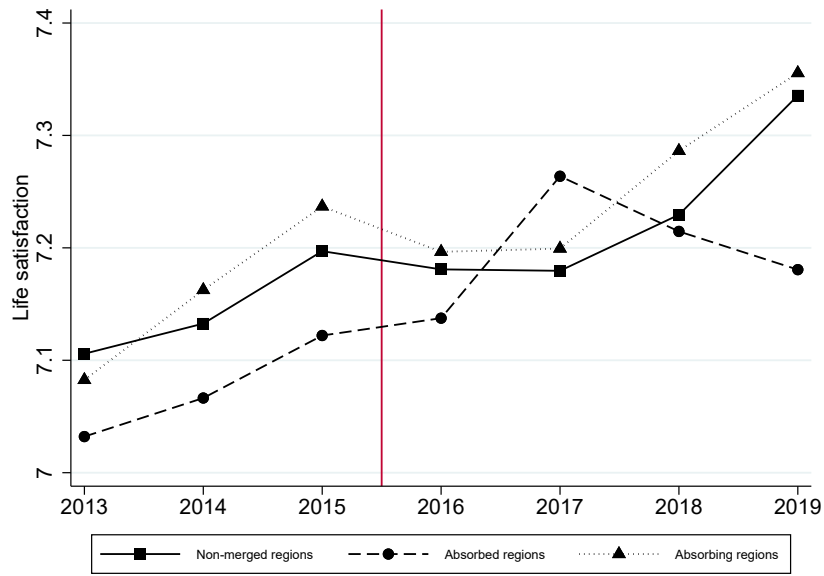


Figure 2: Evolution of life satisfaction across regions

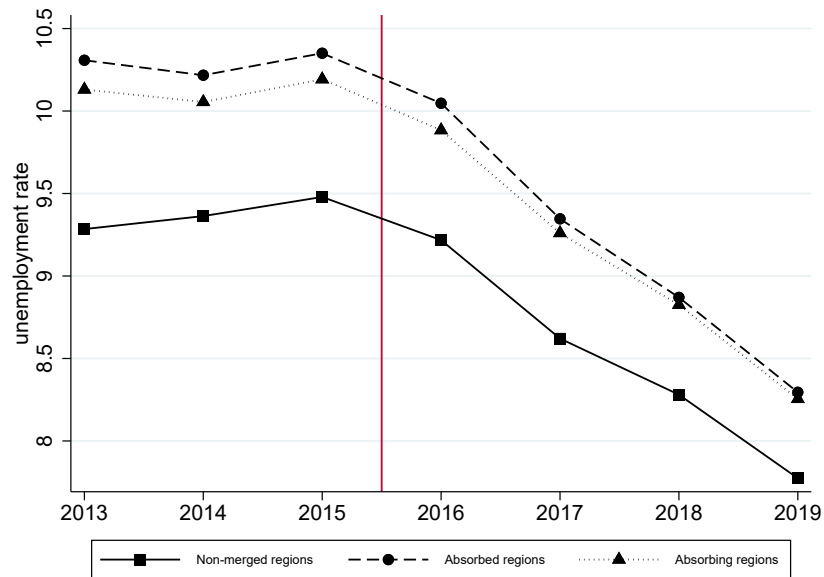


Figure 3: Evolution of unemployment rate across regions

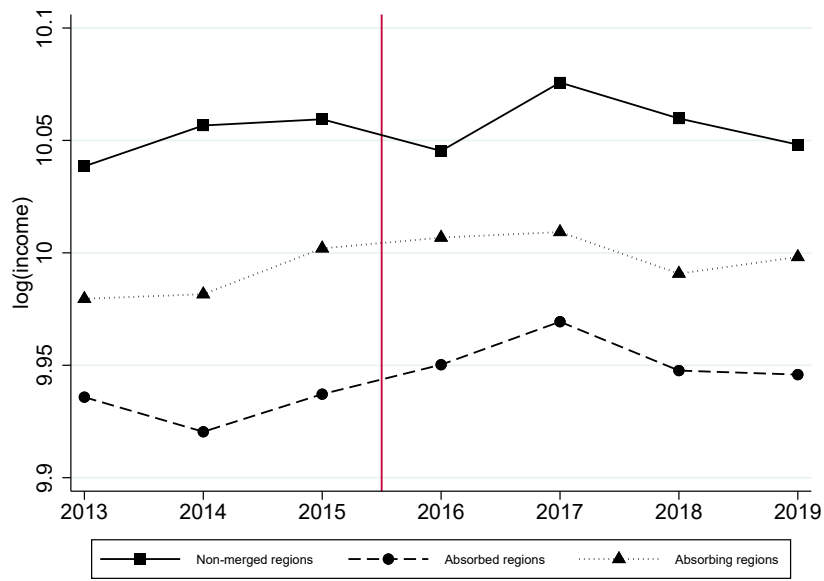


Figure 4: Evolution of income across regions

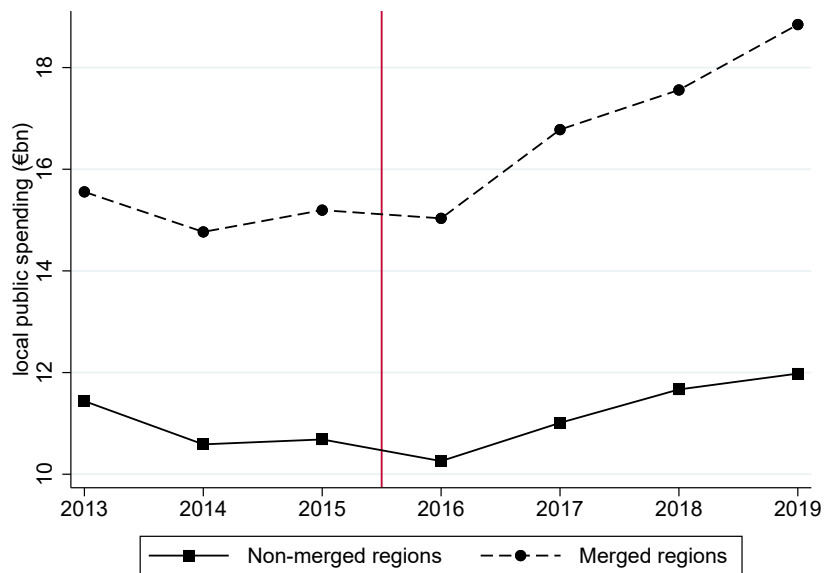


Figure 5: Evolution of local public spending across regions



Figure 6: Impact of merging on SWB

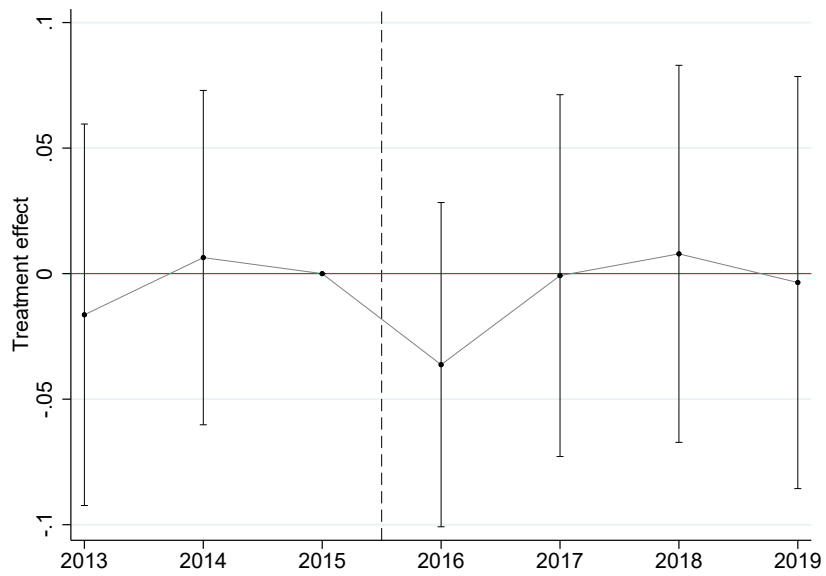


Figure 7: Impact of absorbing on SWB

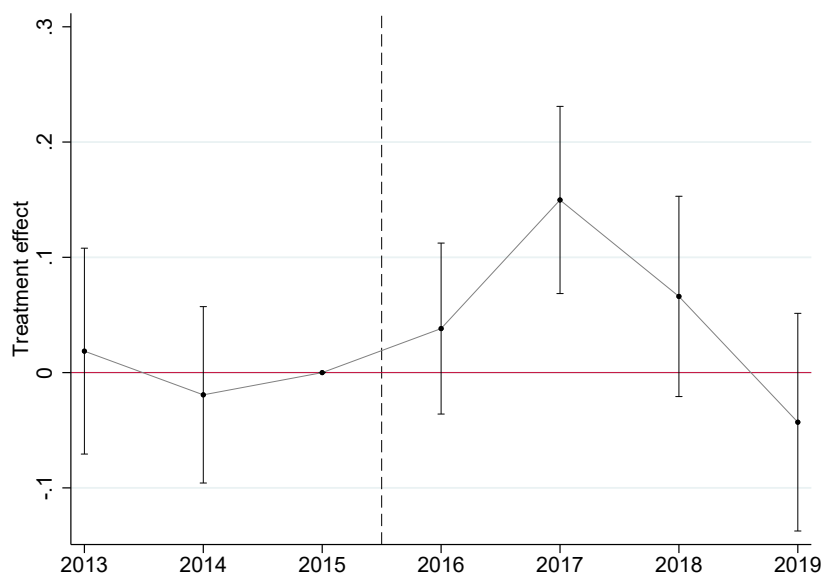


Figure 8: Impact of being absorbed on SWB

Tables

Table 1: Summary statistics (by treatment status, in 2015)

Treatment status	Non-merged	Merged	Absorbed	Absorbing
Life satisfaction (0-10)	7.20 (1.72)	7.23 (1.71)	7.12 (1.73)	7.24 (1.65)
Income (€)	27,184 (24,047)	24,301 (14,479)	23,257 (13,456)	25,132 (15,603)
Female	0.58 (0.49)	0.58 (0.49)	0.59 (0.49)	0.58 (0.49)
Age	53.47 (17.38)	54.20 (17.65)	53.45 (17.65)	52.64 (17.73)
Clerk	0.27 (0.44)	0.26 (0.44)	0.27 (0.44)	0.26 (0.44)
Farmer	0.02 (0.15)	0.03 (0.18)	0.04 (0.20)	0.02 (0.15)
White collar	0.16 (0.37)	0.12 (0.33)	0.09 (0.28)	0.12 (0.32)
Self-employed	0.06 (0.23)	0.06 (0.24)	0.05 (0.22)	0.05 (0.22)
Intermediate	0.22 (0.42)	0.21 (0.41)	0.21 (0.41)	0.23 (0.42)
Other	0.11 (0.31)	0.12 (0.32)	0.12 (0.32)	0.12 (0.33)
Undetermined	0.00 (0.06)	0.00 (0.06)	0.00 (0.05)	0.01 (0.08)
Blue collar	0.15 (0.36)	0.19 (0.39)	0.21 (0.41)	0.19 (0.39)
No degree	0.21 (0.41)	0.24 (0.43)	0.28 (0.45)	0.21 (0.41)
High-school	0.31 (0.46)	0.28 (0.45)	0.28 (0.45)	0.30 (0.46)
Vocational	0.29 (0.46)	0.33 (0.47)	0.34 (0.47)	0.32 (0.47)
College	0.19 (0.39)	0.15 (0.35)	0.11 (0.31)	0.16 (0.37)
Other degree	0.00 (0.05)	0.00 (0.05)	0.00 (0.05)	0.00 (0.06)
Employed	0.49 (0.50)	0.44 (0.50)	0.46 (0.50)	0.48 (0.50)
Unemployed	0.06 (0.24)	0.06 (0.24)	0.07 (0.26)	0.07 (0.25)
Student	0.03 (0.18)	0.03 (0.18)	0.03 (0.17)	0.03 (0.17)
Inactive	0.05 (0.23)	0.06 (0.24)	0.07 (0.25)	0.06 (0.24)
Retired	0.35 (0.48)	0.39 (0.49)	0.37 (0.48)	0.35 (0.48)
Undetermined	0.01 (0.09)	0.01 (0.11)	0.01 (0.09)	0.01 (0.10)
Single	0.22 (0.41)	0.21 (0.41)	0.21 (0.41)	0.22 (0.42)
Single parent	0.05 (0.21)	0.05 (0.21)	0.04 (0.20)	0.04 (0.20)
Two adults, no child	0.36 (0.48)	0.40 (0.49)	0.40 (0.49)	0.36 (0.48)
Two adults, one child	0.10 (0.30)	0.09 (0.29)	0.09 (0.29)	0.10 (0.30)
Two adults, two children	0.12 (0.32)	0.12 (0.33)	0.11 (0.31)	0.11 (0.31)
Two adults, three children or more	0.06 (0.23)	0.05 (0.22)	0.05 (0.22)	0.06 (0.24)
Others, no child	0.05 (0.22)	0.04 (0.19)	0.06 (0.24)	0.06 (0.23)
Others, with children	0.04 (0.19)	0.02 (0.15)	0.03 (0.17)	0.03 (0.18)
Undetermined	0.01 (0.09)	0.01 (0.11)	0.01 (0.10)	0.01 (0.09)

Source. French SRCV survey.

Lecture. The average life satisfaction in non-merged regions is 7.2, with a standard deviation of 1.72. 35% of individuals living in those regions are retired in the working sample.

Table 2: Effect of the merger on life satisfaction (Treatment: Merging)

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment \times Post	0.012 (0.024)	0.012 (0.022)	0.019 (0.019)	0.021 (0.018)	0.029 (0.021)	0.029 (0.021)
Mean (dependent)	7.14	7.14	7.14	7.14	7.14	7.14
Controls	No	Yes	No	Yes	No	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual effects	No	No	RE	RE	FE	FE
# of observations	106,404	106,404	106,404	106,404	106,404	106,404
# of individuals	37,433	37,433	37,433	37,433	37,433	37,433
R^2	0.004	0.127	0.004	0.124	0.002	0.010

Source. French SRCV survey, 2013-2019, unbalanced panel.

Model. Linear model estimated by OLS.

Dependent variable. Life satisfaction on a 0-10 Cantril scale.

Comparison group. Non-merged regions.

Controls. Income, age, gender, education, occupation, labor force status, family status.

Robust standard errors clustered by individual and region.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Effect of the merger on life satisfaction (Treatment: Absorbing)

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment \times Post	0.011 (0.029)	0.014 (0.027)	-0.013 (0.023)	-0.004 (0.023)	-0.013 (0.026)	-0.012 (0.026)
Mean (dependent)	7.16	7.16	7.16	7.16	7.16	7.16
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	No	Yes	No	Yes	No	Yes
Individual effects	No	No	RE	RE	FE	FE
# of observations	67,029	67,029	67,029	67,029	67,029	67,029
# of individuals	23,858	23,858	23,858	23,858	23,858	23,858
R^2	0.005	0.130	0.004	0.126	0.002	0.010

Same legend as Table 2.

Comparison group. Non-merged regions.

Table 4: Effect of the merger on life satisfaction (Treatment: Being absorbed)

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment \times Post	0.041 (0.033)	0.038 (0.031)	0.049* (0.027)	0.049* (0.026)	0.068** (0.030)	0.066** (0.029)
Mean (dependent)	7.07	7.07	7.07	7.07	7.07	7.07
Controls	No	Yes	No	Yes	No	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual effects	No	No	RE	RE	FE	FE
# of observations	57,591	57,591	57,591	57,591	57,591	57,591
# of individuals	20,669	20,669	20,669	20,669	20,669	20,669
R^2	0.004	0.134	0.004	0.131	0.002	0.010

Same legend as Table 2.

Comparison group. Non-merged regions.

Table 5: Robustness checks (Treatment: Being absorbed)

	ATE	S.E.	Mean (dependent)	# of obs.	R^2
(1) Alternative treatment (less conservative definition)	0.052**	(0.026)	7.13	66,958	0.009
(2) Alternative comparison group (excluding Île-de-France)	0.060*	(0.032)	7.07	44,594	0.010
(3) Balanced panel estimation	0.177***	(0.061)	7.01	7,398	0.013
(4) Intermunicipal cooperation as a confounding factor?	0.068**	(0.029)	7.07	57,591	0.010
(5) Endogenous residential sorting	0.069**	(0.029)	7.07	57,591	0.009
(6) Differential impact of controls after the merger	0.050*	(0.029)	7.07	57,591	0.013
(1) Placebo experiment (fake merger in 2014)	-0.001	(0.039)	7.03	57,591	0.010
(2) Placebo experiment (fake merger in 2015)	0.042	(0.032)	7.05	57,591	0.010

Same legend as Table 2. All specifications include controls, region FE, year FE, and individual FE.

Comparison group. Non-merged regions.

Table 6: Heterogeneity of treatment effects

Treatment	Being absorbed
(1) Treatment \times Post \times Vocational	0.180*** (0.042)
(2) Treatment \times Post \times Blue collar	0.200*** (0.060)
(3) Treatment \times Post \times Single	0.156*** (0.056)
Mean (dependent)	7.07
Controls	Yes
Time FE	Yes
Region FE	Yes
Individual FE	Yes
# of observations	57,591
# of individuals	20,669

Same legend as Table 2. Each specification in the top panel corresponds to a separate estimation. *Comparison group*. Non-merged regions.

Table 7: Effect of treatments on economic outcomes

	unemployment rate (in pp)			public spending (in €bn)	school spending (in €bn)	train spending (in €bn)
	(1)	(2)	(3)	(4)	(5)	(6)
Merging \times Post	-0.197*** (0.032)			0.215*** (0.067)	0.032*** (0.010)	0.030* (0.018)
Being absorbed \times Post		-0.243*** (0.044)				
Absorbing \times Post			-0.087** (0.043)			
Mean (dependent)	10.36	10.27	10.09	2.17	0.25	0.41
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Département FE	Yes	Yes	Yes	No	No	No
Region FE	No	No	No	Yes	Yes	Yes
# of départements	96	53	48			
# of new regions				13	13	13
Observations	672	371	336	91	91	91
R ²	0.990	0.989	0.990	0.982	0.966	0.954

Online Appendix

Synthetic control approach

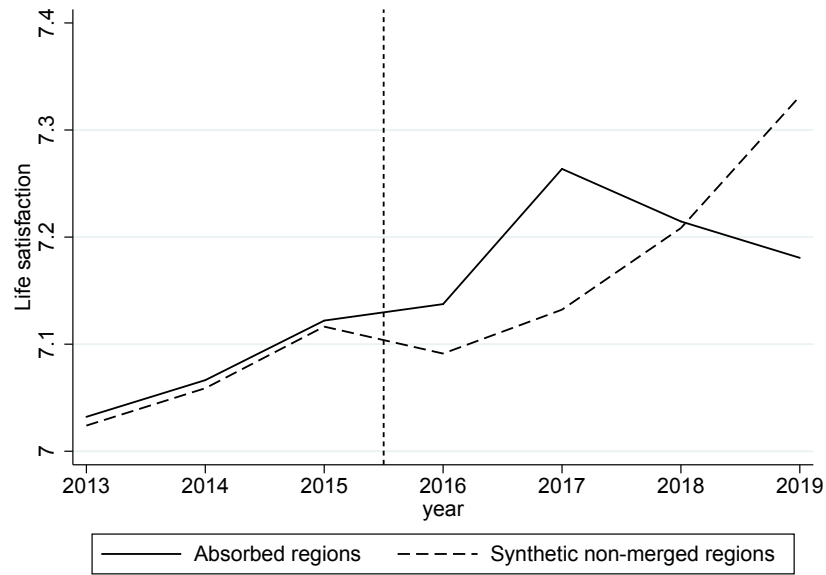


Figure 9: Synthetic control approach

Statistical issues

Table 8: Verbeek and Nijman tests for attrition (Treatment: Being absorbed)

	(1)	(2)	(3)	(4)	(5)	(6)
Belongs to balanced panel	0.074* (0.044)	0.049 (0.040)	0.058 (0.044)	0.033 (0.040)	. (.)	. (.)
Mean (dependent)	7.07	7.07	7.07	7.07	7.07	7.07
Controls	No	Yes	No	Yes	No	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual effects	No	No	RE	RE	FE	FE
# of observations	57,591	57,591	57,591	57,591	57,591	57,591
# of individuals	20,669	20,669	20,669	20,669	20,669	20,669
R^2	0.005	0.134	0.005	0.131	0.002	0.010

Same legend as Table 2.

Comparison group. Non-merged regions.

Table 9: Impact of the clustering level on the precision of the estimated ATE (Treatment: Being absorbed)

Level of clustering	individual
Treatment \times Post	0.066** (0.029)
Mean (dependent)	7.07
Controls	Yes
Time FE	Yes
Region FE	Yes
Individual FE	Yes
# of observations	57,591
# of individuals	20,669
# of clusters	20,669

Same legend as Table 2 (one-way clustering instead of two-way clustering).

Comparison group. Non-merged regions.

Supplementary figures

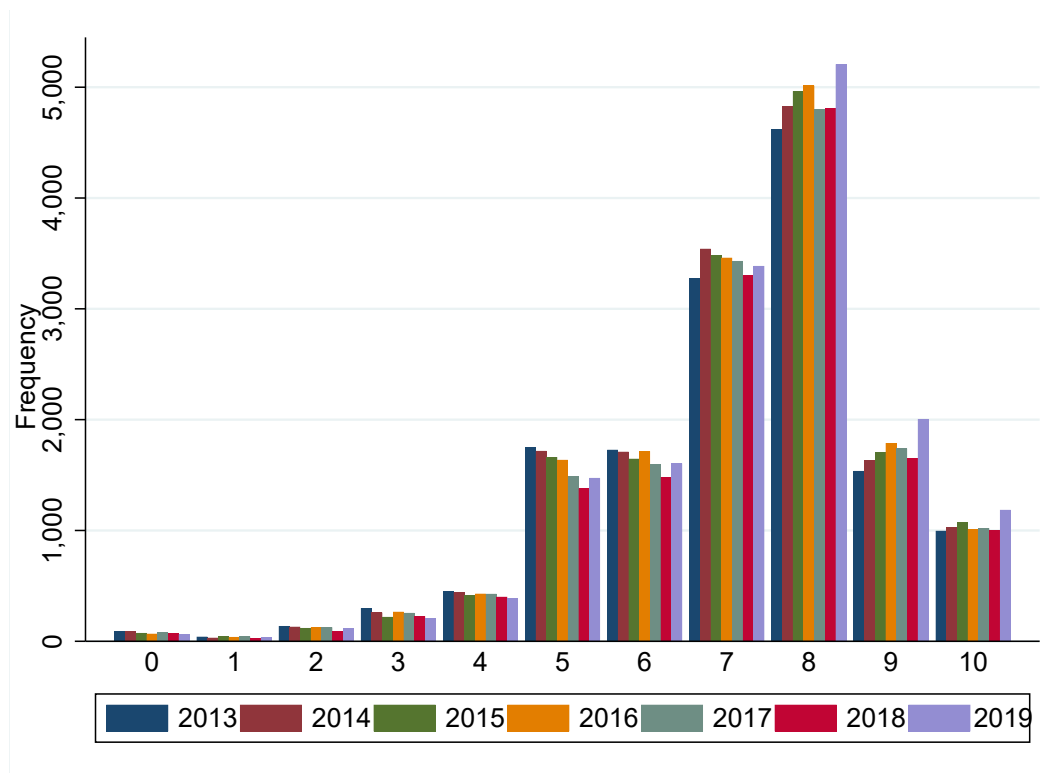
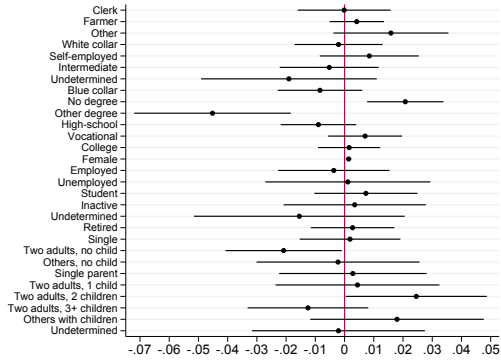
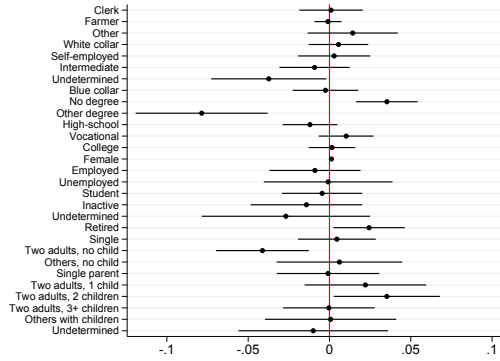


Figure 10: Evolution of life satisfaction



(a) Treatment: merged



(b) Treatment: being absorbed

Figure 11: Balancing checks (DinD estimates, outcomes: standardized covariates)

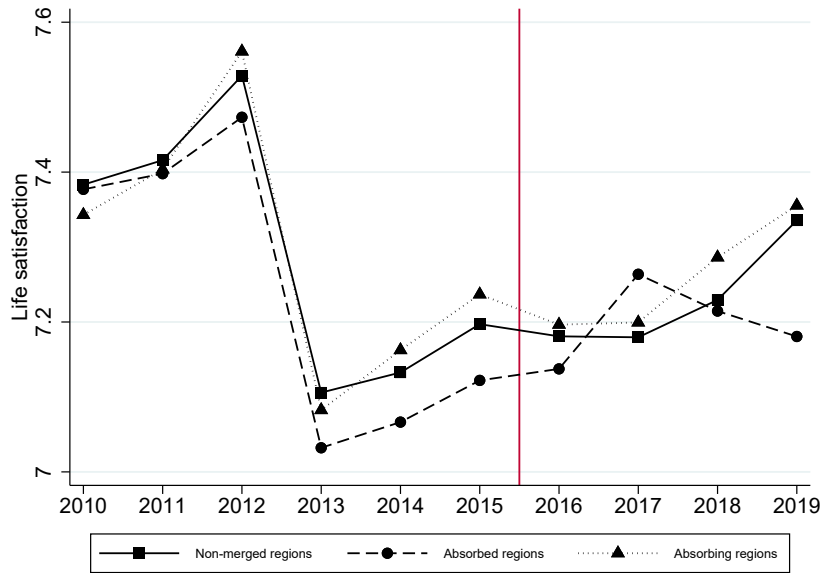


Figure 12: Evolution of life satisfaction across regions (2010-2019)

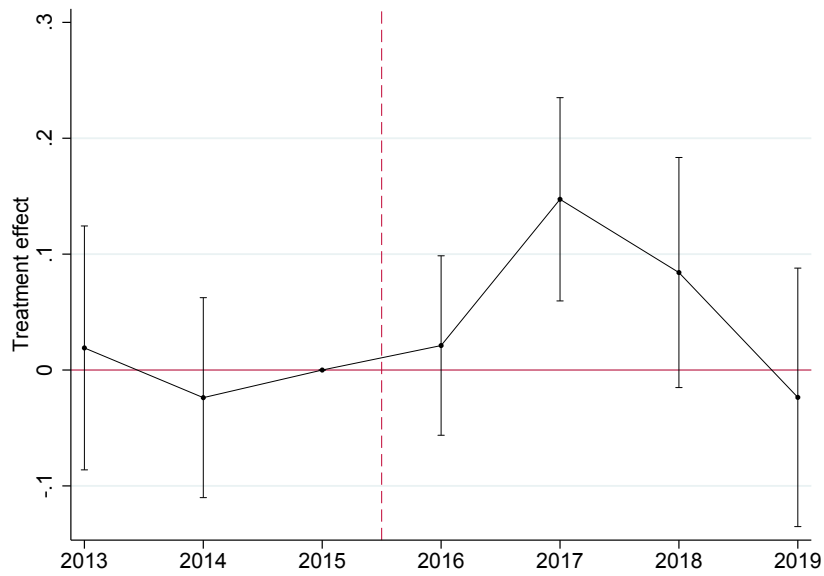


Figure 13: Impact of being absorbed on SWB (restriction to individuals observed at least once before and after the merger)

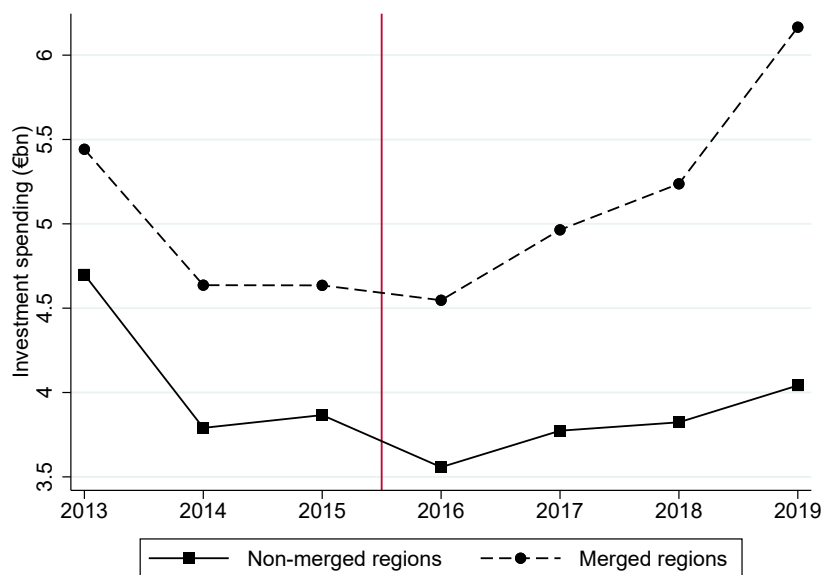


Figure 14: Evolution of investment spending across regions

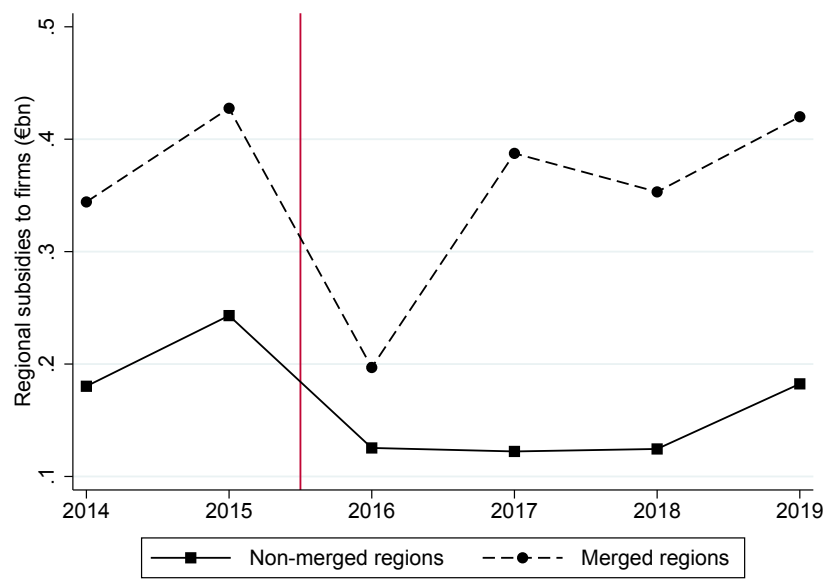


Figure 15: Evolution of regional subsidies to firms across regions

Supplementary tables

Table 10: Correspondence between old and new French regions

New region	Old region
Auvergne-Rhône-Alpes	Auvergne Rhône-Alpes (*)
Bourgogne-Franche-Comté	Burgundy (*) Franche-Comté
Brittany	Brittany
Centre-Val de Loire	Centre
Corsica	Corsica
Grand Est	Alsace (*) Champagne-Ardenne Lorraine
Hauts-de-France	Nord-Pas de Calais (*) Picardy
Normandy	Lower Normandy (*) Upper Normandy
Nouvelle-Aquitaine	Aquitaine (*) Limousin Poitou-Charentes
Île-de-France	Île-de-France
Occitanie	Languedoc-Roussillon (*) Midi-Pyrénées
Pays de la Loire	Pays de la Loire
Provence-Alpes-Côte d'Azur	Provence-Alpes-Côte d'Azur

Note. Old regions have a (*) when their capital became the capital of the new regional entity.

Table 11: Summary statistics - Working sample

	mean	sd	min	max
Life satisfaction	7.20	1.71	0	10
Female	0.58	0.49	0	1
Age	53.6	17.6	16	102
Income	25,565	40,193	3	5,896,390
Treatment status of region				
Being absorbed	0.26	0.44	0	1
Being absorbed (conservative)	0.17	0.38	0	1
Absorbing	0.37	0.48	0	1
Absorbing (conservative)	0.26	0.44	0	1
Non-merging	0.37	0.48	0	1
Education				
No degree	0.20	0.40	0	1
High-school	0.29	0.45	0	1
Vocational	0.31	0.46	0	1
College	0.16	0.37	0	1
Other degree	0.03	0.18	0	1
Labor force status				
Employed	0.47	0.50	0	1
Unemployed	0.06	0.24	0	1
Student	0.03	0.18	0	1
Inactive	0.05	0.23	0	1
Retired	0.36	0.48	0	1
Undetermined	0.01	0.12	0	1
Occupation				
Clerk	0.27	0.44	0	1
Farmer	0.03	0.16	0	1
White collar	0.13	0.34	0	1
Self-employed	0.06	0.23	0	1
Intermediate	0.22	0.41	0	1
Blue collar	0.18	0.38	0	1
Other	0.11	0.31	0	1
Undetermined	0.01	0.07	0	1
Family status				
Single	0.22	0.42	0	1
Two adults, w/o child	0.38	0.49	0	1
Two adults, 1 child	0.09	0.29	0	1
Two adults, 2 children	0.12	0.32	0	1
Two adults, 3+ children	0.05	0.23	0	1
Single parent	0.05	0.21	0	1
Others w/o child	0.05	0.22	0	1
Others with children	0.03	0.17	0	1
Undetermined	0.01	0.09	0	1
Observations			106,404	

Source. French SRCV survey, 2013-2019.

Sample. Unbalanced panel of 37,433 individuals.

Table 12: Estimated coefficients of explanatory variables (Table 4, column (2))

Log(Income)	0.548*** (0.023)
Age	-0.031*** (0.004)
Age ² /100	0.018*** (0.004)
Female	0.018 (0.023)
Occupation (ref. = Clerk)	
Farmer	-0.178*** (0.068)
White collar	0.217*** (0.036)
Self-employed	0.019 (0.050)
Intermediate	0.115*** (0.030)
Blue collar	-0.041 (0.035)
Other	-0.019 (0.050)
Undetermined	0.013 (0.152)
Education (ref. = No degree)	
High-school	0.173*** (0.036)
Vocational	0.072** (0.034)
College	0.212*** (0.043)
Other degree	0.122** (0.051)
Labor force status (ref. = Employed)	
Unemployed	-0.815*** (0.044)
Student	0.326*** (0.062)
Inactive	-0.376*** (0.060)
Retired	-0.008 (0.038)
Undetermined	-0.935*** (0.121)
Family status (ref. = Single)	
Two adults, w/o child	0.582*** (0.029)
Two adults, 1 child	0.512*** (0.038)
Two adults, 2 children	0.617*** (0.037)
Two adults, 3+ children	0.772*** (0.049)
Single parent	-0.168*** (0.055)
Others w/o child	0.398*** (0.050)
Others with children	0.532*** (0.052)
Undetermined	0.244** (0.100)

Note. End of Table 4.

Table 13: Heterogeneous effects of being absorbed on unemployment

	unemployment rate	
	(in pp)	Mean (%)
Being absorbed \times Post \times Female	-0.298*** (0.048)	10
Being absorbed \times Post \times Male	-0.186*** (0.048)	10.5
Being absorbed \times Post \times 15-29	-0.793*** (0.147)	26.2
Being absorbed \times Post \times 30-49	-0.238*** (0.048)	9.4
Being absorbed \times Post \times 50+	-0.125*** (0.038)	6.8
Time FE	Yes	
<i>Département</i> FE	Yes	
# of <i>départements</i>	53	
# of observations	371	

Table 14: Effect of treatments on unemployment at the *zone d'emploi* level

	unemployment rate		
	(in pp)		
	(1)	(2)	(3)
Merging \times Post	-0.208*** (0.026)		
Being absorbed \times Post		-0.278*** (0.033)	
Absorbing \times Post			-0.165*** (0.036)
Mean (dependent)	10.35	10.25	10.06
Time FE	Yes	Yes	Yes
<i>Zone d'emploi</i> FE	Yes	Yes	Yes
# of <i>zones d'emploi</i>	2,205	1,190	1,169
R^2	0.987	0.986	0.986