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## The economics of change and stability in social trust: Evidence from (and for) Catalan secession

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IFN Working Paper No. 1301, 2019

# **The Economics of Change and Stability in Social Trust: Evidence from (and for) Catalan Secession**

Christian Bjørnskov, Miguel Ángel Borrella-Mas  
and Martin Rode

# The Economics of Change and Stability in Social Trust: Evidence from (and for) Catalan secession\*

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## Abstract

Consequences of social trust are comparatively well studied, while its societal determinants are often subject to debate. This paper studies both in the context of Catalan attempts to secede from Spain: First, we test if Catalonia enjoys higher levels of social capital that it is prevented from capitalizing on. Second, the paper examines whether secessionist movements create animosity and political divisions within society that undermine trust. Employing the eight available waves of the European Social Survey for Spain, we show that social trust levels are not higher in Catalonia than in the rest of the country. However, we find indications of a significant regional increase after secession became a real option in 2014. We argue that this finding is a likely result of the mental process of nation building, indicating that the formation of social trust may best be thought of as a stable punctuated equilibrium.

JEL Classification: H77, R50, Z13

Keywords: Social trust, secession, social change, stability

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# 1 Introduction

Few issues have recently achieved a comparable international media attention to the Catalan secessionist conflict, which is currently dominated by the political and legal debate over a referendum of independence from Spain. Still, Catalan secession and the clash with Spanish nationalism is not a new phenomenon, but rather has a long tradition in Spanish politics.

With the 1938 victory of Francos nationalist forces in the Spanish Civil War, the autocratic regime would initiate a policy of heavy-handed suppression of Catalan autonomy and culture that would last for the next 37 years.<sup>1</sup> Catalonia would only regain its regional autonomy following the 1977-78 democratization of Spain, which established Spanish federalism as an essentially unfinished project. It was mutually recognized by all parties at the time that regional autonomy would be continuously expanded in the following decades (cf. [Guibernau \(2004\)](#); [Lago-Peñas \*et al.\* \(2017\)](#)). As a consequence, secession largely became a minority issue in Catalan society during the 1980s and 1990s. Yet, that situation has substantially changed during the last decade.

[Guibernau \(2013\)](#) identifies three main reasons for the current surge of Catalan secessionist sentiments: First, the increasing awareness of regions fiscal deficit, meaning the difference between regionally generated revenues and spending assigned by the central government in Madrid, which amounts to somewhere between 5 and 7,5 percent of total regional output. Second, the lack of willingness by the central government in Madrid to negotiate an increased fiscal autonomy for the region. Third, the 2010 constitutional court ruling against a new autonomy statute, which would have given Catalonia a comparable status to the asymmetric fiscal autonomy of the Basque Country and Navarre. According to [Lago-Peñas \*et al.\* \(2017\)](#), Catalonia has long sought a similar status, while parallel demands for a partial re-centralization have grown in other parts of the country, further accentuating the already diverse preferences.

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<sup>1</sup>Part of the background for this policy was vengeance for Catalan alignment with the Republican cause during the civil war while another, and probably more substantial element, was that Catalan and Basque nationalism were important sources of the underlying conflict that had led to the war itself. It should be noted, that despite the heavy suppression of their regional cultures, both regions were economically somewhat privileged by the regime's industrialization policies ([Molinero and Ysàs \(1992\)](#)).

Interestingly, the current conflict is partly dominated by scholarly arguments that bear a close relation to ongoing discussions of social capital and social trust: On the one hand, supporters of Catalan independence build on claims of the productivity and the uniqueness of Catalan culture to support the potential long-run economic benefits of separation (Solé (2012), Galí (2012), Sala i Martín (2014)). The comparatively higher social capital in Catalan society would potentially make an independent republic economically more successful, more democratic, and more equitable than a Catalonia under continued Spanish rule, it is argued. On the other hand, unionists argue that the secessionist political process fuels mutual animosity among opposing groups, given that (at least) a large minority of Catalan society is against separation, which creates a political divide in society that will hurt mutual trust. To a substantial degree, the two claims are mutually inconsistent, and in the literature the associated lines of thought are known as the *culturalist* and *institutionalist* schools, respectively (Bjørnskov and Sønderskov (2013)).

We test the underlying propositions of the two opposing camps of the Catalan discussion, and thus also provide new input to the discussion between culturalists and institutionalist, by employing data from all eight waves of the European Social Survey. On the one hand, our findings clearly show that, *ceteris paribus*, social trust levels are not higher in Catalonia than in the rest of Spain. On the other hand, we also do not find indications that Catalan social trust has declined as a result of the secessionist conflict. Much to the contrary, indications point to a small but significant increase in trust after secession became a real option in 2014, which could well be an outcome of increasing nationalist sentiments and expressions of a shared separate identity (cf. Reeskens and Wright (2013)).

The remainder of the paper is organized as follows: Section 2 reviews the arguments of Catalan secessionists and Spanish unionists in light of the relevant literature and develops our main research questions. Section 3 describes the data, variables, and the different estimation procedures employed. Section 4 describes the empirical results, while section 5 concludes.

## 2 Literature review and research questions

Ever since Robert Putnam's seminal contribution on the comparative functioning of Italian democracy across regions, social capital research has developed into a topic of major interest for academic literature on development (Putnam *et al.* (1993)). A large variety of empirical studies has subsequently established an empirical connection between different social capital concepts and the performance of formal institutions (e.g. Porta *et al.* (1996); Boix and Posner (1998)), economic growth (e.g. Knack and Keefer (1997); Zak and Knack (2001)), total factor productivity (Bjørnskov and Méon (2015)), and welfare state organization and economic inequality (e.g. Algan *et al.* (2016)). Overall, Horváth (2013) suggests that it is plausible to compare the economic significance of social capital to that of human capital.

The current secessionist conflict in Catalonia bears a clear relation to scholarly literature on social capital and social trust in two distinctive areas, each represented by a side in the political debate: First, academic supporters of Catalan independence build on the uniqueness of Catalan culture to argue that it presents higher levels of social capital than the rest of Spain (Solé (2012)). These social capital dividends could potentially lay the foundation for long-run economic benefits of separation, via the creation of Catalan institutions that are more in-line with facilitating entrepreneurship and sustained economic growth (Galí (2012), Sala i Martín (2014)).<sup>2</sup> Similar points have been made by a group of renown scholars, which has given itself the name of *Col·lectiu Wilson* (the *Wilson Initiative*). Interestingly, this claim seem to be somewhat generalized among the pro-secessionist academic literature, at least where authors argue for the independence of high-income regions in Europe (e.g. see Scharnagl (2012) for the case of Bavaria).

Arguments of the kind essentially go further than those that simply highlight the fiscal benefits of separation, where secession could be seen as a possibility to limit unjust taxation and achieve a more equitable tax treatment by a government closer to the regional electorate (cf. Buchanan

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<sup>2</sup>It should be noted explicitly, that not all of the scholars cited above have openly declared themselves in favor of Catalan independence, despite having made scholarly arguments that highlight the potential benefits of separation from Spain.

and Faith (1987); Vaubel (2013); Gutmann and Voigt (2017); Rode *et al.* (2018)).<sup>3</sup> Instead, they rely on a literature that interprets social capital as a path-dependent factor of economic success. Studies in this field, which count both Putnam *et al.* (1993) and more recent influential papers such as Nunn and Wantchekon (2011) and Guiso *et al.* (2016), all belong within what is sometimes known as the *culturalist school* in trust research.

According to studies in this school of thought, informal institutions of social capital are stable over long periods of time and underlie formal governmental structures, determining their relative success or failure in the present (Putnam *et al.* (1993); Putnam (2001); Boix and Posner (1998); Guiso *et al.* (2016)). Social capital is thus determined by history and, rather than being subject to current policies, it is a factor of economic success that is exogenous to current events. Yet, ever since the seminar study by Knack and Keefer (1997) questioned Putnam's central assumption that all elements of the concept reflect a unitary underlying phenomenon, the literature has been debating what really constitutes social capital.

The confusing state in the literature has both made the concept somewhat elusive on many occasions and made many empirical studies difficult to compare. Yet, it has also caused most scholars to abandon the concept of social capital as a topic of academic interest and instead focus specifically on either social trust or association related activity. Several empirical studies by Uslaner (2002), Bjørnskov (2019), and Bjørnskov and Sønderskov (2013) have attributed the positive effects of social capital largely to the underlying factor of social trust. This is also what we will focus on in the following.

The political idea, which may a priori be consistent with an understanding of trust in the culturalist school, is that Catalan society is historically and culturally distinct from the Castilian majority of Spain. That this is consistent with the facts is easily observable in the existence of a Catalan language, specific Catalan customs, etc. (cf. Guibernau (2004)), despite regular arguments against this position from Spanish unionists. What is not so straight forward is the idea that Catalan society should also present higher levels of social trust: It is true that Catalonia has an entrepreneurial

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<sup>3</sup>According to Hillman (2005), secessionist political movements could also be driven by a desire to create new rent-seeking opportunities for regional political elites.

tradition and culture that somewhat sets itself apart from most other parts of Spain (Sánchez (2000); Harrison (2012)), which could also be seen as an indication of the existence of unique informal institutions that facilitate economic exchange. Yet, whether this is a reflection of higher levels of social trust remains unknown. Interestingly, the question of whether Catalan social trust is somehow different from the rest of Spain has not been investigated empirically up to date. Our first research question is thus as follows:

**RQ1:** Compared to the rest of Spain, does Catalan society consistently demonstrate different levels of individual social trust?

Second, Spanish and Catalan unionists argue that the secessionist process fuels animosity among the opposing political groups. According to regular surveys conducted by the Catalan government, the share of independence supporters has risen sharply in recent years, although roughly 50 percent of Catalan society remains consistently against the option of secession.<sup>4</sup> This deepening political divide between large groups of society is further fuelled by the push for an independence referendum, it is argued. According to unionist organizations like *Societat Civil Catalana* and some moderate secessionist groups like *Colectivo Treva i Pau*, the corresponding conflict will erode mutual confidence and hurt social trust.<sup>5</sup>

Recent experimental evidence by Criado *et al.* (2018) lends support to these ideas, identifying a decline of social trust among members of different linguistic groups in Catalonia after the start of large-scale independence mobilization in 2012. Generally speaking, early evidence in the trust literature suggested that ethnically or linguistically diverse societies tend to have lower levels of social trust, where the low levels seem to be concentrated in minority (Knack and Keefer (1997); Alesina and Ferrara (2002)). More recently, García Albacete (2010) finds a very similar effect for the case of the Basque Country. Making such differences politically and socially salient, one could argue, would lead to an erosion of social trust in Catalonia as a consequence of the political drive towards independence. These results are nevertheless inconsistent with other studies finding that the apparent negative associations with diversity are spurious and instead

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<sup>4</sup>see Centre de Estudis de Opinió: <http://ceo.gencat.cat/ca/inici>

<sup>5</sup><http://www.lavanguardia.com/opinion/20180319/441667971038/catalunya-declive-social-definitivo.html>



reflect the specific history of certain minorities, such as Black Americans, and some form of positive joint historical tradition in the Nordic countries (e.g. [Berggren and Bjørnskov \(2011\)](#)).

Overall, these arguments bear a clear relation to literature within what is known as the *institutionalist* school of trust research, which contends that collective action can create (or destroy) social trust over relatively short periods of time ([Tendler et al. \(1997\)](#); [Goodhand et al. \(2000\)](#); [Rothstein \(2013\)](#)). The institutionalist perspective on trust thus stands in opposition to the interpretation of social trust as a path-dependent informal institution. [Herrerros and Criado \(2008\)](#) for example claim that the state can play an important role in the creation of social trust as a third party enforcer of private agreements, but that this will ultimately depend on the efficacy of its institutions. The authors also find that the positive effect will be different for the minority and majority ethnic group, where state efficacy mainly improves the social trust of the latter. According to this strand of arguments, lower social capital in the minority ethnic group could also lead to the development of strong particularized trust, or what [Putnam \(2001\)](#) has called bonding social capital. This would mean that there is a high degree of in-group trust, but low generalized trust between groups akin to the destructive phenomenon of amoral familism ([Banfield \(1967\)](#)).

However, it should also be mentioned that even if state institutions are efficient enforcers of contract, it is currently also not clear from the literature whether this will ultimately induce crowding-in or crowding-out of civic behaviour and trust (cf. [Lowe et al. \(2017\)](#)). If social trust is indeed a risk assessment, as implicitly assumed in the institutionalist school, good enforcement might crowd in trust ([Rothstein \(2013\)](#)). Yet, if social trust instead is a moral assessment of the motives and benevolence of other people, as argued by [Uslaner \(2002\)](#), enforcement institutions may be entirely irrelevant, or could even crowd out trust by destroying visible information on whether or not people are actually trustworthy ([Simpson and Eriksson \(2009\)](#)).

Finally, the literature leaves open a third option that, to the best of our knowledge, has not been brought up in the political debate about the consequences of Catalan session. The example of Estonia suggests that it may be possible to rekindle an identity, or the acceptance of a culture or

tradition, after decades of suppression. As one of the very few countries in the world, Estonia has seen increasing trust levels after the country regained its independence in the early 1990s. The population quickly began to distance itself from the decades of Soviet occupation, and rediscover and re-popularize Estonian culture and traditions. Trust levels have increased since the mid-1990s, but mostly among Estonian citizens who speak Estonian and consider themselves culturally Estonian, and much less so among ethnic Russians in Estonia. [Petro \(2001\)](#) tells a similar, although earlier, story of how the city of Novgorod in Russia attempted to do the same in the 1990s. The city council of Novgorod rid the city of Soviet street names and reverted to using the pre-communist names of streets, squares and the city itself. The idea behind these examples is that it may be possible that the Catalan secessionist movement allows many Catalans to (re)discover an emergent social order with different moral norms and traditions than the current one. If this is the case, and a sufficient number of Catalans do so to make it an evolutionary stable social belief, social trust levels may increase as a result of a popularized drive towards secession. Consistent with these arguments, research by [Reeskens and Wright \(2013\)](#) finds civic nationalism to be moderately linked with higher social trust levels in Europe, while ethnic nationalism is linked to lower trust. Yet, it logically requires that a substantial share of the Catalan population also believe that most people they consider part of their society (or moral community, using the specific concept of [Uslaner \(2002\)](#)), will reflect a traditional and more honest Catalan culture after secession, despite the very mixed cultural heritage that the region presents.

In sum, it remains an open and contested question in this literature, whether social trust is substantially altered by public policy and conflict in the short run, and what exactly the outcome of this process would look like. From the discussion outlined above, we formulate our second research question:

**RQ2:** Compared to the rest of Spain, has the secessionist process lead to a change in individual social trust levels within Catalan society?

## 3 Research strategy

### 3.1 Data and variables

The empirical analysis of our research questions is based on data from the European Social Survey (ESS), which is an academically driven cross-national survey that has been conducted across Europe since its establishment in 2001. Every two years, face-to-face interviews are conducted with newly selected, cross-sectional samples. Currently, eight ESS rounds are available, covering the years 2002 to 2016, where field interviews in Spain were conducted on a bi-annual base from 2002 to early 2017. In total, the survey for Spain contains about 15,500 individual interviews for all 17 regions of the country.

In all estimations, our dependent variable *social trust* is captured by the following survey question: "Most people can be trusted, or you can't be too careful?" Respondents answer on a 1 to 10 scale, where increasing values indicate higher levels of social trust. According to Bjørnskov (2019), the history of using this question in social science research is long and there is a broad consensus that it captures meaningful differences in beliefs at the individual and societal level. For example, it has been included in various US surveys since the late 1950s and has been asked in all waves of the World Values Survey beginning in 1981.

When asking this question, it is nonetheless not made clear to respondents whom to trust, in which situations, or under which circumstances (Bjørnskov (2019)). Potentially, this could mean that respondents don't distinguish between generalized trust or more particularized forms of trust at the moment of answering this question. However, several different tests suggest that the trust question quite exactly captures individuals' belief that strangers can be trusted. In-depth interviews reported in Uslaner (2002, 2007) and the analysis of questions about trust in a set of different actors implemented by Naef and Schupp (2009) in a large-scale German survey show that the simple question picks up trust in people, whom the respondent has no specific information on. Knack and Keefer (1997) also were the first to show that trust scores at the national level correlate highly with return rates in a wallet-drop experiment and thus cannot simply reflect the quality of enforcement institutions.

Figure 1 shows social trust averages for a selected group of representative European countries across the eight waves of the ESS to illustrate several important points: First, over time average social trust levels are remarkably stable at the country level. Fluctuations are low and not clearly subject to any easily distinguishable events during these 14 years. Second, there is a notable diversity in average social trust levels across Europe, with Scandinavia generally being at the high end of the distribution and most Mediterranean countries scoring rather low. Third, compared to other countries in Southern Europe, average social trust levels in Spain are actually quite decent, being comparable to those of Germany. The range that is set by these series therefore also constitutes the interesting sphere of comparison for our study of regional variation across Spain.

[Figure 1 about HERE]

In the following, we attempt to capture *Catalan culture* in two different ways: First, in a broader sense by simply employing a dummy variable that takes the value of one, if a respondent declares to be living in Catalonia; and second, with another more restrictive dummy variable that takes the value of one, if a respondent lives in Catalonia and declares Catalan to be his native language. We make this distinction because Catalonia is among Spain's regions that have attracted a high share of labor migration during the past 50 to 60 years, and we want to capture the effect on social trust of those whom we might expect to be *core Catalans*, rather than immigrants from other parts of Spain or abroad, as these might also systematically present different social trust levels (cf. Collier (2013); Bergh and Öhrvall (2018)).

All estimations further control for a number of individual-specific characteristics that have been previously shown to be significant determinants of social trust (cf. Albanese and de Blasio (2014); Alesina and Ferrara (2002); Berggren and Bjørnskov (2011)). In particular, we include the following : *gender* (dummy that equals one if male, zero if female), *age* and *age*<sup>2</sup> (in years), *income* (dummy that equals one if respondent declares income to be good or very good, zero otherwise), *education* (in years), *victim* (dummy that equals one if respondent declares to have been victim of an assault or burglary during the past five years, zero otherwise), *unemployment* (dummy that equals one if the respondent is currently unemployed,

zero otherwise), *religious* (self-declared degree of religiosity on a scale from 1 to 10, with higher levels indicating more religiosity), *urban* (dummy equal to one if respondents live in an urban area, zero otherwise) and *ideology* (self-declared ideology on a single-dimensional left-right scale from 1 to 10, where higher values indicate more right wing attitudes). Summary statistics for all variables are shown below in table 1.

[Table 1 about HERE]

### 3.2 Estimation procedures

First, in order to formally test our **RQ1**, whether social trust levels are higher in Catalonia than in the rest of Spain, we estimate the following linear equation:

$$STrust_{ijt} = \alpha_0 + \alpha_1 Catalonia_i + \quad (1) \\ + X'_{ijt}\delta + \alpha_j + \gamma_t + \epsilon_{ijt}$$

where  $STrust_{ijt}$  is self-reported social trust of individual  $i$  in region  $j$  in period  $t$ , and  $\epsilon_{ijt}$  is an error term clustered at the individual level to reflect the variation in social trust. The variable  $Catalonia_i$  specifies our two different measures of Catalan culture, which in the following we interchange for all estimations. All individual-level controls discussed above are also included in our estimation model. Finally, we also control for regional and time invariant factors by including both region fixed effects ( $\alpha_j$ ) and *ESSround* fixed effects ( $\gamma_t$ ).

In the following, we further study the determinants of social trust in Spain by estimating the heterogeneous effect of living in Catalonia. Doing so allows us to study whether the determinants of social trust in Spain differ structurally from those in Catalonia, as the interactions reveal any potentially heterogeneous effect of living in Catalonia relative to the rest of Spain. Specifically, we estimate the following model for each possible determinant of social trust:

$$STrust_{ijt} = \alpha_0 + \alpha_1 Catalonia_i + \quad (2) \\ + X'_{ijt}\delta + \alpha_3 Catalonia_i * X_{ijt}\alpha_j + \gamma_t + \epsilon_{ijt}$$

Additionally, a propensity matching score analysis is further conducted to confirm the robustness of our results from the OLS estimations. The methodology and findings are described in the online appendix

Second, in order to answer our **RQ2** - whether the secessionist process has undermined Catalan social trust - we cannot simply estimate general differences, but move to a quasi-experimental design. We do so by studying the impact of three exogenous events in the Catalan secessionist conflict, comparing individuals living in Catalonia (and those that declare Catalan to be their native language) with individuals who do not live in this region.

The causal effect of being Catalan on individual social trust is identified in the corresponding analysis by adopting a Difference-in-Differences strategy (*DiD* hereafter). The two key features we exploit are: First, the residence (and native language) of individuals that defines the treatment effect of being Catalan. Second, the time effect of several macro-events in the Catalan separatist conflict, namely the Spanish constitutional court rejection of the re-negotiated autonomy statute in 2010, the swing of Catalonia's major liberal/conservative party *Convergència i Unió* towards a clearly pro-secessionist stance in 2012, and the first self-determination consultation conducted by the regional government in 2014. In all three cases, we argue that these dates represent exogenous events that allow us to study, how the secessionist process in Catalonia impacts individual social trust levels.

Despite the fact that one might argue that all three instances could themselves be driven by regional trust related processes, this is only true at the aggregate level. For individual social trust, which is the outcome variable of interest in all of our estimations, all three events are clearly exogenous. Expressed in a different way, individual level trust in Catalonia obviously has, on average, no effect on whether the Spanish constitutional court rejects an autonomy statute, on whether a party leader decides to embrace secessionist stances, or whether and when exactly a regional government determines to hold a self-determination consultation.

Specifically, we estimate the following model:

$$STrust_{ijt} = \beta_1 Catalonia_i + \beta_2 Time_t + \beta_3 Catalonia_i * Time_t + \quad (3)$$

$$+ X'_{ijt} \delta + \alpha_j + \gamma_t + \epsilon_{ijt}$$

where  $STrust_{ijt}$  is self-reported social trust of individual  $i$  in region  $j$  in period  $t$ , and  $\epsilon_{ijt}$  is clustered at the individual level to reflect the variation in social trust.  $Catalonia_i$  is the treatment variable, which takes the value 1 for those individuals declaring living in Catalonia and zero otherwise. Again, we estimate the same model using our alternative definition of the treatment variable. Similarly,  $Time_t$  is another dummy equal to 1 for all observations after the noted events, corresponding to ESS rounds five, six, and seven.

Estimating equation (3) using only these three dummies would give us the basic DiD estimator. In addition, we estimate our preferred specification augmenting the basic model by successively including: *i*) region fixed effects  $\alpha_j$  that control for any time-invariant characteristic that may have an influence on both, the outcome and residence at the region level; *ii*) a *ESSround* fixed effect  $\gamma_t$ , controlling for the change in social trust common to all individuals due to common shocks, such as an economic crisis for example; and *iii*) a vector of our time-varying control variables  $X_{it}$ , which account for all individual-specific characteristics that are described above.

In this setting,  $\beta_3$  is our parameter of interest, measuring the causal effect on social trust in Spain of living in Catalonia after the noted events, thus delivering a direct test of our **RQ2**.

## 4 Results

### 4.1 The Catalan social trust dividend: actual advantage, or secessionist myth?

We start by simply showing average social trust across regions in Spain in Figure 2, and comparing them to the averages of Italian regions, a country that is well-known in the social capital literature for its large internal trust diversity (cf. Putnam *et al.* (1993)). Interestingly, the variation of social trust across regions seems to be much lower in Spain than it is in Italy, indicating that, in this aspect, the country is much more homogeneous than its Mediterranean neighbor. In addition, it is also notable that, at least on average, Catalonia does not stand out as a particularly high trusting region inside Spain either. Instead, the region is statistically no different

from the national average.

[Figure 2 about HERE]

Of course, these results could be driven by systematic differences at the individual level, which is why we show results for our estimations of equation (1) in the following. Findings from our baseline regressions are shown in Table 2, where we also display the full set of controls. For the sake of robustness, we also present OLS estimates in columns (1) and (4). There, we find a couple of noteworthy details regarding our control variables: Men present positive and statistically significant coefficients for social trust, indicating that they are significantly more trusting than women in Spain, although the size of the difference is relatively small. Individual age is neither statistically different from zero as a linear variable, nor does it present a non-linear association with social trust. The remaining controls are all significant and present the expected sign: Especially having a good income, more years of education, being a religious person, and residing in an urban area are all factors associated with higher levels of social trust. Conversely, having become a victim of a crime during the last five years, being unemployed, or having more right-wing political views are all factors that are significantly related to lower social trust. Numerically speaking, especially the variables income, victim, unemployment, and to some degree living in an urban area stand out in their relatively strong association with social trust.

[Table 2 about HERE]

Coming to our main variables of interest, it can be observed in the first row of Table 2 that living in Catalonia does not present a significant association with social trust, as shown in columns (1)-(3). When employing our more restrictive definition for Catalan identity in columns (4)-(6), we still do not find a significant effect, as shown in the second row of the table. Including region and time fixed effects estimates in columns (2)-(3) and (5)-(6) strongly support this finding. So taking into account the impact of living in Catalonia, or alternatively of living in this region and speaking Catalan as a native language, our results from using this simple model



suggest that individual social trust levels in Spain and in Catalonia are not systematically different from one another.

Table 3 presents the estimates for equation (2), showing across columns the interaction between the dummy *Catalonia* and each possible individual determinant of social trust. We also report the F-statistic and p-value of the test analyzing whether the total effect is different from zero at the bottom of the table.<sup>6</sup>

Coefficients are only significant and *i*) negative in column (1) for men; and *ii*) significantly positive in column (2) for age. Nonetheless, interaction coefficients at the bottom of the table show us that, of these two variables, only the effect of age is negative and also statistically significant at the 10 percent level for individuals living in Catalonia. In particular, this means that social trust is significantly lower for older individuals living in Catalonia, when compared to elderly in other parts of Spain. We can only speculate on the reasons for this, but believe it is very well possible that this coefficient captures the lagged effect of the Franco dictatorship, which was particularly repressive for Catalan culture and its institutions. Furthermore, we find that interaction effects are statistically significant and positive for the better educated Catalans, former crime victims and individuals living in urban areas of Catalonia, suggesting that these specific groups present significantly higher social trust levels than in the rest of the country. In all cases, coefficients indicate that the numerical effects are limited.

[Table 3 about HERE]

Overall, both Tables 2 and 3 thus strongly suggest that Catalan society at large does not consistently demonstrate different levels of individual social trust compared to the rest of the country, neither on average, nor when focusing on any particular individual characteristics. There is some social trust variation across groups, but these are not sufficiently consistent to suggest any systematic differences in society. A propensity matching score analysis in the online appendix further confirms the robustness of these results. The only possible answer to our **RQ1** can thus be, that

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<sup>6</sup>We did the test by setting as null hypothesis, for each possible determinant of social trust  $X$ , the linear restriction  $\alpha_1 + \alpha_3 * X = 0$  in equation (2) and by computing the p-value of the test.

there is no systematic Catalan social trust dividend. Catalan culture and society are singular in many aspects, but in the sphere of social trust, the region is actually not different from the overall Spanish average, even if we only consider native speakers of Catalan. One could thus also conclude that there is really no significant social trust advantage that the region could build on for the construction of its hypothetical post-independent institutions, always assuming of course that its current informal institutions would form the base of those formal arrangements.

## 4.2 Growing distrust in Catalan society: unionist fiction, or reality of separatist conflict?

Results from the corresponding equation (3) are presented in Table 4, showing the estimated effect of living in Catalonia on social trust, modifying the number of controls as we move from columns (1) to (4). We divide the table into three panels, each of them taking into account one of our three possible exogenous “treatment” events: First, the court decision on the *Estatut* (June 2010, before ESS round five). Second, the decision by the main Catalan liberal/conservative party *CiU* to openly support Catalan secession from Spain (September 2012, before ESS round six). Third, the mentioned self-determination consultation (November 2014, before ESS round seven). Mean values of the dependent variable for the subgroup of individuals not living in Catalonia is further reported at the bottom of each panel. The validity of our research design is confirmed by a series of tests described in the appendix.

[Table 4 about HERE]

Results in column (1) are based on the basic DiD estimator, in which we only include the treatment variable, the time variable, and their interaction effect. The first row in panel A shows that social trust rose significantly by 0.28 points or 5,6% around the time of the court decision on the *Estatut*. Column (2) includes time fixed effects, while the specification with region and time fixed effects is presented in column (3). Finally, column (4) reports the most complete specification, including the vector of control variables and region and time fixed effects. After the inclusion of all controls, the main result is practically unchanged.

Focusing on panel B, the first row shows that the estimated effect is slightly higher when taking the secessionist swing of *CiU* as a threshold event. After this instance, social trust significantly increases by almost 0.3 points or 6% in Catalonia, compared to the rest of Spain. This finding is again robust across our different model specifications. Finally, comparing social trust before and after the self-determination consultation of November 2014, we can observe in the first row of panel C that social trust is significantly higher in Catalonia by around 0.37 points or 7,4%. Hence, results shown in this table suggest that the secessionist process has not hurt Catalan social trust, but has rather increased it over time. Results are very similar if we use our more restrictive definition of *core Catalan.*, which can be found in Table 5. Interestingly, the coefficients of Catalan native speakers are somewhat bigger for the initial two secessionist events, while this is not the case for the self-determination consultation.

In the following, we attempt to distinguish whether the increase in Catalan social trust following the secessionist process can be ascribed to any societal group in particular. This is seriously complicated by the simple fact that we are not able to distinguish between pro- and anti-secessionist individuals in the survey. A priori, it could be expected that both of these conflict relevant societal groups are affected differently by the outlined events. Still, if we assume that these factions are imperfectly captured by whether individuals speak Catalan as a native language or not, we do not find any significantly different results for both groups.<sup>7</sup> In addition, there is also no specific group of individuals in the trust distribution that is more affected than others. Rather, the effect seems to shift the overall distribution of social trust of Catalan society. Contrasting this to the evolution of institutional trust, we clearly find that the same events substantially reduce trust in state institutions, but much more so for Catalan native speakers than Spanish native speakers in Catalonia. This evidence would indicate that the evolution of Catalan social trust is indeed not driven by any particular group, thus affecting it as a whole.<sup>8</sup>

Regarding our **RQ2**, we can conclude that also the unionist story of de-

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<sup>7</sup>An analysis with declared party affiliation/preferences unfortunately leaves us with too little variation for any halfway sensible analysis, as the corresponding questions are not asked (or coded) consistently across all waves.

<sup>8</sup>These results are not shown, but are all available from the authors upon request.

clining social trust in Catalonia is inconsistent with observable facts. Much to the contrary, our findings show that relative to the rest of Spain, Catalan social trust has actually increased since the secessionist movement has gained increasing traction after 2012. We can only speculate on the reasons for this a priori surprising result and discuss some potential explanations for our findings in the conclusions.

## 5 Conclusions

Catalan secession and the ensuing clash with the Spanish central government has produced a massive echo in the European media and abroad. The discussions have put an age-old topic of Spanish politics on the agenda once more, as it reflects similar tensions not only in Northern Italy, but also in Scotland, Flanders, and the Faeroe Islands that form part of the United Kingdom, Belgium and Denmark, respectively. Interestingly, the current conflict is partly dominated by scholarly arguments that bear a clear relation to social trust and central discussions within the trust literature. While secessionists claim that comparatively higher trust levels in Catalan society would make an independent republic economically more successful outside of Spain, unionists argue that the secessionist process fuels mutual animosity, thereby leading to a decline in generalized trust.

Employing data from all eight waves of the European Social Survey for Spain, we find that the contents of both claims are factually incorrect. First, social trust levels are not significantly higher in Catalonia than in the rest of Spain. While Catalan culture might set the region apart in many other visible aspects, it is not appreciably different in terms of social trust. This implies that we can also conclude that there is probably no substantial trust advantage that the region could build on for the construction of superior post-independent institutions. We cannot reject that there might be other advantages that we do not capture in this investigation, such as potentially lower corruption, or a more entrepreneurial culture, but these factors would be independent of any differences in social trust. To argue that Catalan society is in any way superior in this aspect is highly dubious, given the findings forwarded in this paper.

Second, Catalan social trust has not declined as a result of the seces-

sionist conflict, as argued by the unionist side of the discussion, but has rather increased significantly after 2014. In purely numerical terms, this increase is equivalent to the trust difference between the Netherlands and Sweden. Given the constant claim of unionists about the negative social dynamic of the secessionist conflict, these results may come as a rather big surprise. They also raise important questions on what might explain them?

One potential explanation might be that we are capturing increases in particularized trust of different conflict groups, as it is not clear from the question who respondents are thinking of when they answer (cf. Bjørnskov (2019)). In this case, the *bonding social capital* of smaller groups is increasing in a situation of growing conflict (Goodhand *et al.* (2000)). Still, given the relatively strong evidence that respondents interpret the trust question in a generalized manner (Knack and Keefer (1997); Uslaner (2002, 2007); Naef and Schupp (2009)), and that we are not able to pinpoint the increase to any specific linguistic (or ideological) group, this interpretation appears highly unlikely.

A somewhat different possibility is that we are actually seeing the mental process of nation building at work, where conflict is the cradle of a shared Catalan identity that facilitates in-group cooperation and the creation of formal institutions that facilitate it (cf. Bar-Tal *et al.* (2007); García Albacete (2010); Reeskens and Wright (2013)). Similar to the case of Estonia, we might be capturing an increase in social trust that is linked to the (re)discovery of a shared identity that is different from the rest of the country. This would also be supported by the fact that, at least initially, the coefficients of Catalan native speakers are somewhat bigger in the DiD results, while they seem to be generalized for Catalan society as the conflict accelerates.

Finally, a note of caution should highlight that we cannot possibly make any definite claims on the social trust outcome of the Catalan independence referendum organized by the regional authorities in October 2017, because our data series ends in the spring of that same year. As the referendum was dubbed illegal by the Spanish central government, leading to a temporal suspension of Catalan regional autonomy and an ensuing legal and political clash that is ongoing, this event was certainly singular in the sense that it initiated the most acrid round in this conflict. It is well possible that

these events, given their magnitude and polarizing effect, have produced a different outcome for Catalan social trust than the previous instances we are able to take into account. Only with the publication of more data, will it be possible to formally investigate this issue.

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## Tables

Table 1: Summary statistics by living in Catalonia

|                            | (1)     | (2)                 | (3)     | (4)     |
|----------------------------|---------|---------------------|---------|---------|
|                            | All     | Living in Catalonia |         |         |
|                            |         | Yes                 | No      | P-value |
| <i>Outcome variable</i>    |         |                     |         |         |
| Social Trust               | 5.00    | 5.05                | 4.99    | 0.22    |
| <i>Treatment variables</i> |         |                     |         |         |
| Region Cat.                | 0.16    | 1.00                | 0.00    |         |
| Region & Lang. Cat         | 0.06    | 0.37                | 0.00    | 0.00    |
| <i>Control variables</i>   |         |                     |         |         |
| =1 if male                 | 0.49    | 0.51                | 0.48    | 0.03    |
| Age                        | 46.55   | 46.76               | 46.51   | 0.56    |
| $Age^2$                    | 2514.06 | 2533.86             | 2510.36 | 0.59    |
| =1 if good income          | 0.31    | 0.27                | 0.31    | 0.00    |
| Education                  | 12.06   | 12.36               | 12.01   | 0.01    |
| Victim                     | 0.25    | 0.28                | 0.24    | 0.00    |
| Unemployment               | 0.07    | 0.06                | 0.07    | 0.01    |
| Religious                  | 4.41    | 3.98                | 4.48    | 0.00    |
| Urban                      | 0.27    | 0.37                | 0.26    | 0.00    |
| Ideology                   | 4.49    | 3.99                | 4.59    | 0.00    |
| N. Observations            | 15,442  | 2,332               | 13,110  |         |

Table 2: Determinants of social trust in Spain.

| Dep. Variable              | Social trust         |                      |                         |                      |                      |                         |
|----------------------------|----------------------|----------------------|-------------------------|----------------------|----------------------|-------------------------|
|                            | OLS<br>(1)           | Time<br>FE<br>(2)    | Time<br>& Reg FE<br>(3) | OLS<br>(4)           | Time<br>FE<br>(5)    | Time<br>& Reg FE<br>(6) |
| Methodology                |                      |                      |                         |                      |                      |                         |
| Region Cat.                | 0.059<br>(0.052)     | 0.056<br>(0.052)     | 0.135<br>(0.087)        |                      |                      |                         |
| Region & Lang. Cat         |                      |                      |                         | 0.113<br>(0.077)     | 0.121<br>(0.078)     | 0.105<br>(0.095)        |
| =1 if male                 | 0.096**<br>(0.038)   | 0.095**<br>(0.038)   | 0.095**<br>(0.038)      | 0.096**<br>(0.038)   | 0.095**<br>(0.038)   | 0.095**<br>(0.038)      |
| Age                        | -0.002<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)       | -0.002<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)       |
| $Age^2$                    | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)        | -0.000<br>(0.000)    | -0.000<br>(0.000)    | -0.000<br>(0.000)       |
| =1 if good income          | 0.309***<br>(0.043)  | 0.312***<br>(0.043)  | 0.308***<br>(0.043)     | 0.307***<br>(0.043)  | 0.310***<br>(0.043)  | 0.306***<br>(0.043)     |
| Education                  | 0.052***<br>(0.004)  | 0.053***<br>(0.004)  | 0.052***<br>(0.004)     | 0.052***<br>(0.004)  | 0.052***<br>(0.004)  | 0.052***<br>(0.004)     |
| Victim                     | -0.227***<br>(0.045) | -0.224***<br>(0.045) | -0.228***<br>(0.045)    | -0.227***<br>(0.045) | -0.225***<br>(0.045) | -0.228***<br>(0.045)    |
| Unemployment               | -0.279***<br>(0.077) | -0.277***<br>(0.078) | -0.262***<br>(0.078)    | -0.279***<br>(0.077) | -0.276***<br>(0.078) | -0.261***<br>(0.078)    |
| Religious                  | 0.048***<br>(0.008)  | 0.047***<br>(0.008)  | 0.049***<br>(0.008)     | 0.048***<br>(0.008)  | 0.047***<br>(0.008)  | 0.049***<br>(0.008)     |
| Urban                      | 0.116***<br>(0.043)  | 0.116***<br>(0.043)  | 0.086*<br>(0.047)       | 0.122***<br>(0.043)  | 0.122***<br>(0.043)  | 0.091*<br>(0.048)       |
| Ideology                   | -0.048***<br>(0.011) | -0.049***<br>(0.011) | -0.046***<br>(0.011)    | -0.048***<br>(0.011) | -0.048***<br>(0.011) | -0.046***<br>(0.011)    |
| Mean dep. var. non-treated | 4.975                |                      |                         | 4.969                |                      |                         |
| N. Observations            | 12,724               | 12,724               | 12,724                  | 12,724               | 12,724               | 12,724                  |

Standard errors in parentheses  
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 3: Heterogeneous effects on social trust.

| Dep. Variable             | Social trust         |                      |                      |                      |                      |                      |                      |                      |                      |
|---------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Methodology               | Time & Region FE     |                      |                      |                      |                      |                      |                      |                      |                      |
|                           | (1)                  | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  | (7)                  | (8)                  | (9)                  |
| Region Cat.               | 0.280***<br>(0.104)  | -0.279*<br>(0.155)   | 0.180*<br>(0.093)    | 0.266*<br>(0.153)    | 0.106<br>(0.091)     | 0.146*<br>(0.087)    | 0.070<br>(0.113)     | 0.083<br>(0.094)     | 0.196<br>(0.142)     |
| <i>Cat * Male</i>         | -0.286***<br>(0.105) |                      |                      |                      |                      |                      |                      |                      |                      |
| <i>Cat * Age</i>          |                      | 0.009***<br>(0.003)  |                      |                      |                      |                      |                      |                      |                      |
| <i>Cat * Income</i>       |                      |                      | -0.158<br>(0.109)    |                      |                      |                      |                      |                      |                      |
| <i>Cat * Education</i>    |                      |                      |                      | -0.011<br>(0.010)    |                      |                      |                      |                      |                      |
| <i>Cat * Victim</i>       |                      |                      |                      |                      | 0.106<br>(0.118)     |                      |                      |                      |                      |
| <i>Cat * Unemployment</i> |                      |                      |                      |                      |                      | -0.192<br>(0.235)    |                      |                      |                      |
| <i>Cat * Religious</i>    |                      |                      |                      |                      |                      |                      | 0.017<br>(0.018)     |                      |                      |
| <i>Cat * Urban</i>        |                      |                      |                      |                      |                      |                      |                      | 0.167<br>(0.113)     |                      |
| <i>Cat * Ideology</i>     |                      |                      |                      |                      |                      |                      |                      |                      | -0.015<br>(0.027)    |
| =1 if male                | 0.141***<br>(0.042)  | 0.096**<br>(0.038)   | 0.096**<br>(0.038)   | 0.096**<br>(0.038)   | 0.095**<br>(0.038)   | 0.095**<br>(0.038)   | 0.095**<br>(0.038)   | 0.096**<br>(0.038)   | 0.095**<br>(0.038)   |
| Age                       | -0.002<br>(0.006)    | -0.003<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)    | -0.002<br>(0.006)    |
| Age <sup>2</sup>          | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)     | 0.000<br>(0.000)     |
| =1 if good income         | 0.310***<br>(0.043)  | 0.308***<br>(0.043)  | 0.331***<br>(0.046)  | 0.307***<br>(0.043)  | 0.307***<br>(0.043)  | 0.308***<br>(0.043)  | 0.308***<br>(0.043)  | 0.309***<br>(0.043)  | 0.307***<br>(0.043)  |
| Education                 | 0.053***<br>(0.004)  | 0.052***<br>(0.004)  | 0.052***<br>(0.004)  | 0.054***<br>(0.004)  | 0.052***<br>(0.004)  | 0.052***<br>(0.004)  | 0.052***<br>(0.004)  | 0.052***<br>(0.004)  | 0.052***<br>(0.004)  |
| Victim                    | -0.226***<br>(0.045) | -0.226***<br>(0.045) | -0.228***<br>(0.045) | -0.227***<br>(0.045) | -0.247***<br>(0.051) | -0.227***<br>(0.045) | -0.227***<br>(0.045) | -0.228***<br>(0.045) | -0.228***<br>(0.045) |
| Unemployment              | -0.262***<br>(0.078) | -0.264***<br>(0.078) | -0.261***<br>(0.078) | -0.263***<br>(0.078) | -0.264***<br>(0.078) | -0.238***<br>(0.082) | -0.263***<br>(0.078) | -0.261***<br>(0.078) | -0.262***<br>(0.078) |
| Religious                 | 0.049***<br>(0.008)  | 0.049***<br>(0.008)  | 0.049***<br>(0.008)  | 0.049***<br>(0.008)  | 0.049***<br>(0.008)  | 0.049***<br>(0.008)  | 0.046***<br>(0.008)  | 0.049***<br>(0.008)  | 0.049***<br>(0.008)  |
| Urban                     | 0.083*<br>(0.047)    | 0.084*<br>(0.047)    | 0.085*<br>(0.047)    | 0.087*<br>(0.047)    | 0.085*<br>(0.047)    | 0.085*<br>(0.047)    | 0.085*<br>(0.047)    | 0.048<br>(0.054)     | 0.086*<br>(0.047)    |
| Ideology                  | -0.046***<br>(0.011) | -0.046***<br>(0.011) | -0.046***<br>(0.011) | -0.046***<br>(0.011) | -0.046***<br>(0.011) | -0.046***<br>(0.011) | -0.046***<br>(0.011) | -0.046***<br>(0.011) | -0.044***<br>(0.012) |
| <i>Cat + Cat.X</i>        | -0.006               | -0.270*              | 0.022                | 0.256*               | 0.213*               | -0.046               | 0.086                | 0.250**              | 0.181                |
| <i>P - value</i>          | 0.953                | 0.078                | 0.849                | 0.078                | 0.085                | 0.849                | 0.397                | 0.031                | 0.137                |
| N. Observations           | 12,724               | 12,724               | 12,724               | 12,724               | 12,724               | 12,724               | 12,724               | 12,724               | 12,724               |

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 4: Effect of living in Catalonia on social trust.

| Dep. Variable   | Social trust         |                     |                     |                     |
|---|----------------------|---------------------|---------------------|---------------------|
|   | DiD<br>(1)           | DiD<br>(2)          | DiD<br>(3)          | DiD<br>(4)          |
| Methodology   |                      |                     |                     |                     |
| <i>Panel A: After court decision on Estatut</i>       |                      |                     |                     |                     |
| DiD (Region)  | 0.276***<br>(0.094)  | 0.274***<br>(0.094) | 0.271***<br>(0.094) | 0.267***<br>(0.099) |
| Region Cat.   | -0.076<br>(0.068)    | -0.077<br>(0.068)   | 0.058<br>(0.095)    | -0.001<br>(0.103)   |
| After round 5   | 0.006<br>(0.040)     | 0.062<br>(0.084)    | 0.069<br>(0.083)    | -0.082<br>(0.092)   |
| Mean dep. var. non-treated                            | 4.959                |                     |                     |                     |
| <i>Panel B: After CIU secessionism</i>                |                      |                     |                     |                     |
| DiD (Region)  | 0.294***<br>(0.100)  | 0.291***<br>(0.100) | 0.288***<br>(0.100) | 0.294***<br>(0.103) |
| Region Cat.   | -0.049<br>(0.061)    | -0.050<br>(0.061)   | 0.084<br>(0.090)    | 0.023<br>(0.097)    |
| After round 6   | -0.045<br>(0.041)    | 0.059<br>(0.084)    | 0.067<br>(0.083)    | -0.085<br>(0.092)   |
| Mean dep. var. non-treated                            | 4.993                |                     |                     |                     |
| <i>Panel C: After self-determination consultation</i> |                      |                     |                     |                     |
| DiD (Region)  | 0.372***<br>(0.115)  | 0.374***<br>(0.115) | 0.368***<br>(0.115) | 0.366***<br>(0.116) |
| Region Cat.   | -0.032<br>(0.056)    | -0.033<br>(0.056)   | 0.101<br>(0.086)    | 0.045<br>(0.092)    |
| After round 7   | -0.150***<br>(0.045) | 0.047<br>(0.084)    | 0.055<br>(0.084)    | -0.095<br>(0.092)   |
| Mean dep. var. non-treated                            | 5.016                |                     |                     |                     |
| Time fixed effects                                    |                      | ✓                   | ✓                   | ✓                   |
| Region fixed effects                                  |                      |                     | ✓                   | ✓                   |
| Control vars.   |                      |                     |                     | ✓                   |
| N. Observations                                       | 15,442               | 15,442              | 15,442              | 12,724              |

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 5: Effect of living in Catalonia and speaking Catalan on social trust.

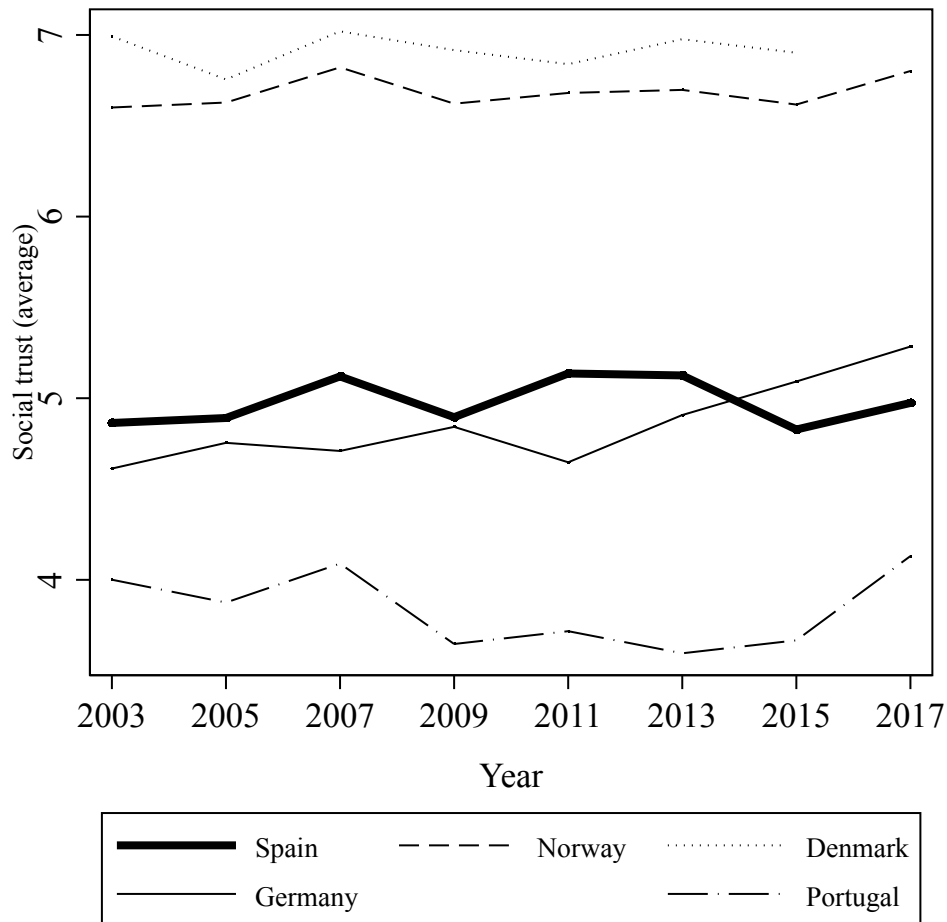
| Dep. Variable   | Social trust         |                     |                     |                    |
|---|----------------------|---------------------|---------------------|--------------------|
|   | DiD<br>(1)           | DiD<br>(2)          | DiD<br>(3)          | DiD<br>(4)         |
| <i>Panel A: After court decision on Estatut</i>       |                      |                     |                     |                    |
| Methodology   |                      |                     |                     |                    |
| DiD (Reg-Lang)  | 0.340**<br>(0.144)   | 0.328**<br>(0.144)  | 0.326**<br>(0.144)  | 0.306**<br>(0.154) |
| Reg & Lang Cat.                                       | 0.016<br>(0.109)     | 0.036<br>(0.109)    | 0.062<br>(0.118)    | -0.062<br>(0.132)  |
| After round 5   | 0.028<br>(0.037)     | 0.083<br>(0.083)    | 0.090<br>(0.083)    | -0.059<br>(0.091)  |
| Mean dep. var. non-treated                            | 4.942                |                     |                     |                    |
| <i>Panel B: After CIU secessionism</i>                |                      |                     |                     |                    |
| DiD (Reg-Lang)  | 0.415***<br>(0.144)  | 0.394***<br>(0.144) | 0.392***<br>(0.144) | 0.356**<br>(0.152) |
| Reg & Lang Cat.                                       | 0.017<br>(0.098)     | 0.038<br>(0.098)    | 0.064<br>(0.107)    | -0.055<br>(0.119)  |
| After round 6   | -0.027<br>(0.038)    | 0.079<br>(0.083)    | 0.086<br>(0.083)    | -0.062<br>(0.091)  |
| Mean dep. var. non-treated                            | 4.980                |                     |                     |                    |
| <i>Panel C: After self-determination consultation</i> |                      |                     |                     |                    |
| DiD (Reg-Lang)  | 0.365**<br>(0.159)   | 0.359**<br>(0.159)  | 0.354**<br>(0.159)  | 0.247<br>(0.166)   |
| Reg & Lang Cat.                                       | 0.094<br>(0.087)     | 0.105<br>(0.087)    | 0.131<br>(0.099)    | 0.033<br>(0.108)   |
| After round 7   | -0.119***<br>(0.043) | 0.082<br>(0.083)    | 0.089<br>(0.083)    | -0.054<br>(0.091)  |
| Mean dep. var. non-treated                            | 5.000                |                     |                     |                    |
| Time fixed effects                                    |                      | ✓                   | ✓                   | ✓                  |
| Region fixed effects                                  |                      |                     | ✓                   | ✓                  |
| Control vars.   |                      |                     |                     | ✓                  |
| N. Observations                                       | 15,442               | 15,442              | 15,442              | 12,724             |

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

# Figures

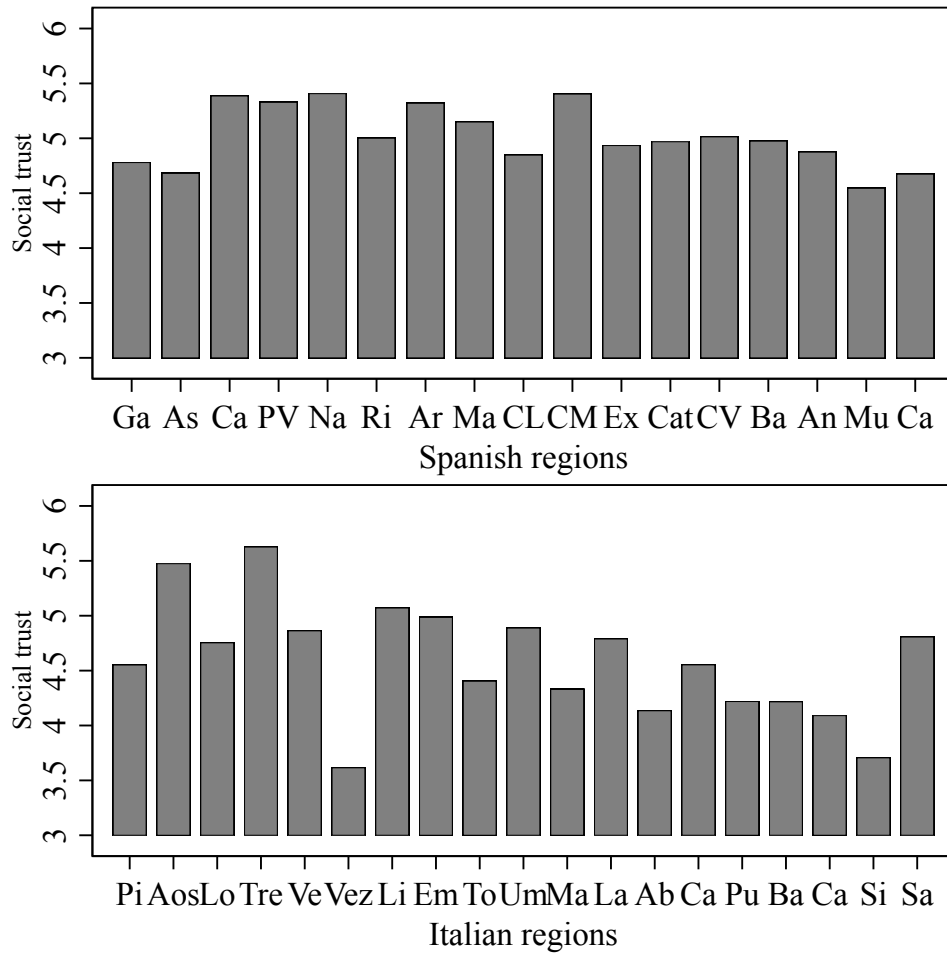
Figure 1: Evolution of social trust by country



**Note:** The figure shows the evolution of social trust for Spain, Norway, Denmark, Germany and Portugal.

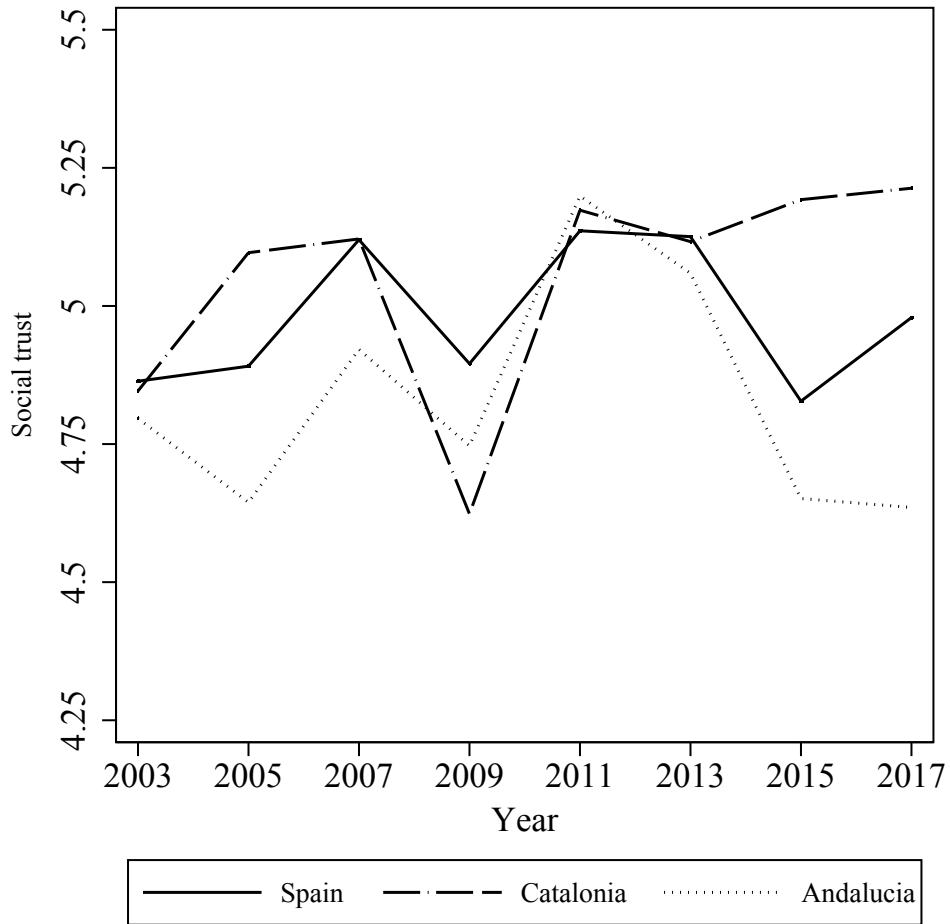


Figure 2: (Average) social trust by region in Spain and Italy



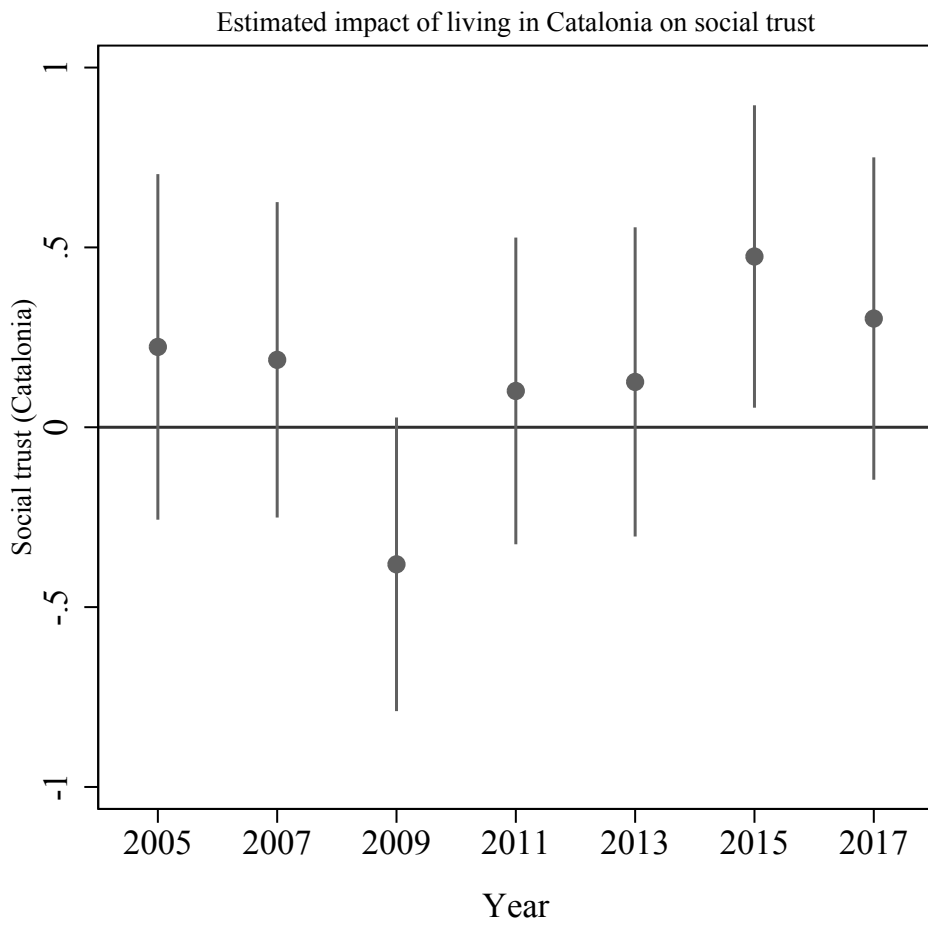
**Note:** The figure shows averages of social trust by region for Spain and Italy.

Figure 3: Evolution of social trust in Spain, Catalonia and Andalucia



**Note:** The figure shows the year by year evolution of the average social trust, distinguishing between Spain (continuous line) and two Spanish regions: Catalonia (dashed line) and Andalucia (dotted line).

Figure 4: Time passage relative to week of tax change



**Note:** The figure shows the estimated impact of living in Catalonia on social trust for up to five rounds before the self-determination consultation and for the relevant round after which it was held, using equation (7). Vertical bands represent  $\pm 1.96$  times the standard error of each point estimate.

## Appendix: Research design validity of DiD

Following the general outline for policy evaluation in any specific area, the effect of living in Catalonia for individual  $i$  is given by the difference between the outcome for this individual at time  $t$  –after the events in question– and the outcome for this same individual, had that person not been living in Catalonia:

$$\beta_{it} = Y_{it}^T - Y_{it}^{NT}, \quad (4)$$

where  $\beta_{it}$  denotes the individual-specific treatment effect,  $Y_{it}^T$  denotes the outcome in the treated group of individuals living in Catalonia; and  $Y_{it}^{NT}$  the outcome in the treated group of individuals, had they not lived in this region (Blundell and Dias (2009)).

However, we cannot simultaneously observe the event that this individual is living in Catalonia (treatment) and the counterfactual event in which she is not (control), due to the fundamental problem of causal inference. When experimental data is available, outcomes for the non-treated individuals can be used to approximate  $Y_{it}^{NT}$ . Although we do not have experimental data, we can instead use outcomes for individuals living outside Catalonia to estimate what would have happened with those residing in Catalonia, had they not been in this situation. By doing so, we are able to control for differences between individuals in terms of the non-observable characteristics that might determine the relationship between social trust and region of residence. If such differences were to exist, and we did not control for them, a non-zero correlation between the location variable and the error term in the outcome equation would appear, and our estimates of the impact of living in Catalonia would be affected by selection bias (Heckman *et al.* (1998)).

Following Blundell and Dias (2000), the *DiD* method allows us to control for such differences by decomposing the error term on the outcome equation into three elements: First, a region-specific fixed effect  $\alpha_j$ , including the unobservable, or non-measurable characteristics, of individuals that may have an influence on both, social trust and region of residence. Second, a common macro-economic effect  $\gamma_t$ , controlling for the temporary shocks that affect the outcomes of all individuals equally, such as for

example, changes in oil prices, terms of trade, etc. Third, a temporary individual-specific effect,  $\epsilon_{ijt}$ .

The only assumption that we need in order to identify the effect of interest,  $\beta_3$ , is that selection into treatment is independent of  $\epsilon_{ijt}$ . This ensures that the evolution of the outcome for non-treated individuals is the same as it would have been for treated ones, had the latter not been treated:

$$(Y_{i1}^T - Y_{i0}^T), (Y_{i1}^{NT} - Y_{i0}^{NT}) \perp T \quad (5)$$

If this assumption is valid, the estimation of equation (3) for the pooled sample of individuals living and not living in Catalonia leads to the Average Treatment Effect on the Treated (ATET), which can be represented as follows:

$$\beta_3 = (Y_{i1}^T - Y_{i0}^T) - (Y_{i1}^{NT} - Y_{i0}^{NT}), \quad (6)$$

where  $\beta_3$  denotes the ATET and  $(Y_{i1}^T, Y_{i0}^T)$  denote, respectively, the outcome for the treated group of individuals before and after the exogenous events in question. Finally,  $(Y_{i1}^{NT}, Y_{i0}^{NT})$  denote the same outcome for the control group of individuals for the same periods. Thus, the *DiD* estimator measures the excess outcome growth for the treated compared to the non-treated individuals.<sup>9</sup>

In any case, this assumption for any DiD strategy is commonly known as the parallel trend assumption, i.e., that outcomes in treatment and control groups would follow the same time trend in the absence of the treatment. Although it is not testable for us, because region of residence is obviously not the same for both groups of individuals, we can nonetheless implement several tests to confirm the validity of our identifying strategy. These are as follow: First, we can formally test the evolution of pre-trends by interacting

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<sup>9</sup>Note that the inclusion of control variables in DiD estimators does not affect the validity of estimates in general, but only increasing their precision, giving them a somewhat reduced importance (Blundell and Dias, 2000). Therefore, the assumption in expression (5) above continues to be valid, but only conditional on the observable characteristics of individuals included in the regression function,  $X$ :

$$(Y_{i1}^T - Y_{i0}^T), (Y_{i1}^{NT} - Y_{i0}^{NT}) \perp T \mid X$$

the treatment variable with time dummies (cf. Autor (2003)). To explore these dynamics, we estimate our main specification described by equation (3), augmented with leads (and lags) of living in Catalonia. Specifically, the estimated regression model is as follows:

$$STrust_{ijt} = \sum_{\tau=-5}^{-1} \beta_{\tau} Catalonia_i * ESSround_{\tau} + \beta_0 Catalonia_i * ESSround_0 + X'_{it} \delta + \alpha_j + \gamma_t + \epsilon_{ijt} \quad (7)$$

where the dependent variable is the same as before,  $\gamma_t$  are *ESSround* dummies and we include the interactions of the *ESSround* dummies and the treatment indicator for all minus one pre-treatment periods (leads) and the only one post-treatment period (lag).<sup>10</sup> If the outcome trends between treatment and control groups are the same, then all leads should be insignificant, i.e., the lead effects are informative regarding whether the estimated effect is stemming from a previously existing trend, instead of coming from the exogenous events in the Catalan secessionist conflict.

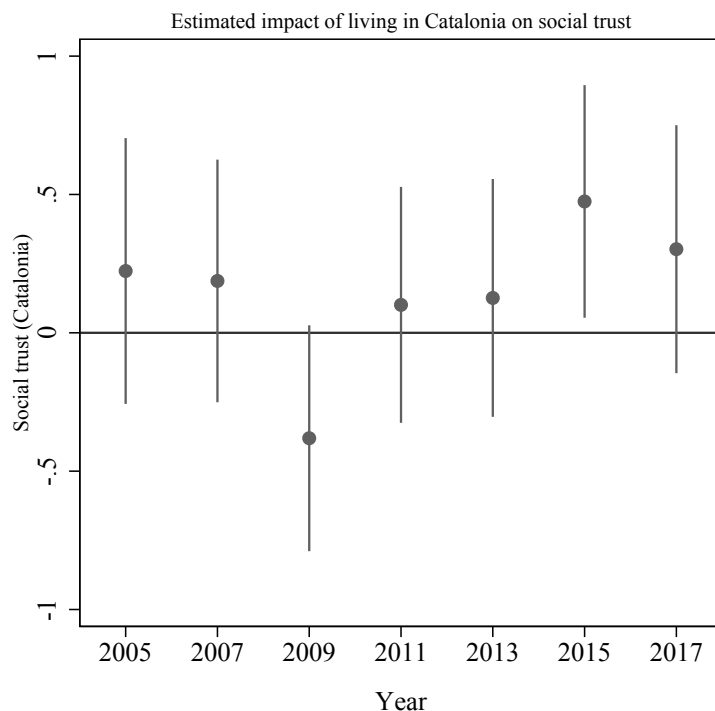
Figure A.1 shows the estimated impact of living in Catalonia on social trust for up to five *ESSrounds* before the self-determination consultation, and also for the relevant rounds after which it was conducted (2015). The intuition is as follows. If the outcome trends between treatment and control groups are the same, then all  $\beta_{\tau}$  should be insignificant, i.e., these coefficients should not be significantly different between both groups in pre-treatment periods. This is indeed the case, as all leads coefficients are close to 0 and not significant, thus ruling out anticipatory responses in social trust before the consultation. This also means that we do not find any significant effects for the court rejection of the autonomy statute (2011), and the swing of *CiU* towards open support of secession (2013), probably because these events simply affected a smaller amount of the total Catalan population.

Second, we can perform a sensitivity analysis by estimating a placebo DiD test. In particular, we use individuals living in Andalucia, a Spanish region far from Catalonia, to construct a “fake” treatment group of individuals that were not affected by the consultation in Catalonia. We do

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<sup>10</sup>Specifically, we include 5 out of 6 *ESSrounds* before the consultation.

Figure A.1: Time passage relative to week of tax change



**Note:** The figure shows the estimated impact of living in Catalonia on social trust for up to five rounds before the self-determination consultation and for the relevant round after which it was held, using equation (7). Vertical bands represent  $\pm 1.96$  times the standard error of each point estimate.

not expect a difference between individuals residing in this region, as none of them should be affected by the consultation. In this context, DiD estimates different from 0 would provide evidence against the parallel trend assumption, thus invalidating our research design.

Estimates obtained from equation (3) by using this “fake” treatment are shown in Table A.1. Across columns, we show four different specifications: basic DiD, DiD with time fixed effects, DiD with time and region fixed effects and, finally, our preferred specification: DiD with both fixed effects and control variables. As expected, the first row shows that no DiD estimate is significant, thus offering support to the validity of our research design. Very similar results are found, when repeating this exercise with the other large, non-secessionist regions of the country.

Table A.1: Placebo test of the effect of living in Andalusia on social trust

| Dep. Variable                 | Social trust         |                      |                   |                   |
|-------------------------------|----------------------|----------------------|-------------------|-------------------|
| Methodology                   | DiD<br>(1)           | DiD<br>(2)           | DiD<br>(3)        | DiD<br>(4)        |
| <i>Andalusia * Time</i>       | -0.071<br>(0.094)    | -0.072<br>(0.093)    | -0.074<br>(0.093) | -0.064<br>(0.098) |
| <i>Andalusia</i>              | -0.156***<br>(0.060) | -0.156***<br>(0.060) | 0.020<br>(0.088)  | 0.025<br>(0.095)  |
| <i>Time</i>                   | 0.015<br>(0.041)     | 0.117<br>(0.083)     | 0.124<br>(0.083)  | -0.027<br>(0.091) |
| Mean dep. var.<br>non-treated | 4.993                |                      |                   |                   |
| Time fixed effects            |                      |                      | ✓                 | ✓                 |
| Region fixed effects          |                      |                      | ✓                 | ✓                 |
| Control vars.                 |                      |                      |                   | ✓                 |
| N. Observations               | 15,442               | 15,442               | 15,442            | 12,724            |

**Note:** The table shows a placebo test of the effect of living in Catalonia on social trust in Spain. We obtained the estimates by using our DiD strategy but with the treatment being living in Andalusia. This region is far from Catalonia, so we can construct a “fake” treatment group of individuals that were not affected by the consultant, thus expecting no difference in this region. Across columns, we show four different specifications: basic DiD in column (1); DiD with time fixed effects in columns (2); DiD with time and region fixed effects in column (3); and finally, DiD with fixed effects and and control variables in column (4). We regressed the outcome on a dummy equal to 1 if an individual is living in Andalusia, on another dummy equal to 1 for observations in the 7th ESS round and on their interaction. Standard errors are clustered at the individual level. The significance levels are as follows: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



## Online Appendix: Propensity Matching Score

The basic problem in identifying a causal effect is that the variable of interest cannot be observed under the treatment and control regime at the same time. Taking the mean outcome of the control group as an approximation is not advisable, since individuals in the treatment and control group usually differ even in the absence of treatment (Caliendo and Kopeinig, 2008).

This well-known problem of selection bias can be solved, or at least mitigated, by using matching techniques. The basic idea behind is to choose, among the large groups of individuals in the control group, those who are similar to individuals in the treatment group in all relevant pre-treatment individual characteristics  $X$ . Matching procedures based on the propensity score, i.e. the probability of being treated given observed characteristics  $X$ , are known as propensity score matching (PSM).

Researchers are confronted with a lot of questions regarding its implementation. According to Dehejia and Wahba (2002), three issues arise in implementing matching. First, which matching model to choose and which variables to include within the model. Second, whether or not to match with replacement. Third, how many comparison units to match to each treated unit. Following the guidance provided in Caliendo and Kopeinig (2008), logit and probit models usually yield similar results when estimating the probability of being treated versus not being treated with a binary treatment. In addition, the literature is not clear enough when deciding how many variables to include in the propensity score model. Finally, among all the possible matching algorithms that can be used to estimate the difference in the outcome of treated and control individuals, it should be noted that PSM estimators differ in two aspects. First, in the way the neighbourhood for each treated individual is defined. Second, in how the weights are assigned to these neighbours.

Taking all this into account, we estimate the effect of living in Catalonia (i.e., the treatment) on social trust by matching every treated individual “i” with the closest control in terms of the estimated propensity score. In particular, we employ a the nearest neighbour (NN) matching with replacement routine. The propensity score (the probability of living in Catalonia) is estimated using a probit model and all individuals characteristics avail-

able.

Table A.2 shows summary statistics for the unmatched and matched samples for the whole period. After matching on the propensity score using a probit model, the means of individual characteristics look similar for both groups –columns (1) and (2). This observation is confirmed when comparing the standardised bias before and after matching –Rosenbaum and Rubin (1985), column (3); and also when reporting the standard t-test for the equality of means in column (4).

[Table A.2 about HERE]

In the unmatched sample, the value of the standardised bias is high for many important individual characteristics (for instance, for Urban is almost 24), and the difference between means is very often significantly different from zero. However, after implementing the matching routine, almost all of these differences disappear, thus satisfying the balancing property.

We next graphically check whether it holds the assumption of the common support, i.e., that there exists an overlap between treatment and control groups. Several ways are suggested in the literature, where the most straightforward one is a visual analysis of the density distribution of the propensity score in both groups (Caliendo and Kopeinig, 2008).

[Figure A.2 about HERE]

Two insights can be derived from the visual inspection of Figure A.2. First, the region of common support lies within the interval  $[0.045, 0.406]$ . Second, for each bin of the “propensity score”, there is a certain number of non treated individuals as well. Hence, we can assume that the common support assumption is satisfied.

Table A.3 shows the baseline estimates for social trust in column (1), as well as robustness checks of this main result in the rest of the columns. Across rows, we show PSM estimates the two definitions trying to capture the Catalan culture: *i*) *Region Cat.*, a dummy variable taking the value 1 if a respondent declares living in Catalonia and zero otherwise. And *ii*) *Region & Cat.*, another (more restrictive) dummy variable taking the value 1 if a respondent, in addition to live in Catalonia, declares Catalan to be his native language. Finally, we show the number of treated individuals

and the total number of observations used, depending on the algorithm chosen to estimate the model.

[Table [A.3](#) about HERE]

The first column in Table [A.3](#) shows that feeling Catalan actually reduces social trust, although this result is not significant. In the rest of the columns, we perform a sensitivity analysis by varying the algorithm chosen to estimate the model.

We use the NN matching without replacement routine in column (2) –notice the lower number of observations used, while radius matching, a variant of caliper, is performed in column (3). The basic idea here is to use not only the NN within each caliper but all of the comparison members within the caliper, obtaining the attractive feature of oversampling while avoiding the risk of bad matches ([Caliendo and Kopeinig, 2008](#)). In columns (4) and (5) we estimate the model using kernel and local linear matching, i.e., non-parametric matching estimators using weighted averages of almost all individuals in the control group to construct the counterfactual outcome. Finally, we show in column (6) direct NN matching, instead of estimating the propensity score equation first. Overall, although the sign and size of the coefficients of interest vary depending on the method used, no one is statistically significant, thereby underlining that the level of social trust in Catalonia is not particularly different than in the rest of the country.

## Tables and Figures

Table A.2: Quality of matching

| Variables         | Sample | (1) Mean<br>treated | (2) Mean<br>control | (3) Standardized<br>bias | (4) $p >  t $<br>(4) $p >  t $ |
|-------------------|--------|---------------------|---------------------|--------------------------|--------------------------------|
| =1 if male        | U      | .51547              | .49595              | 3.9                      | 0.137                          |
|                   | M      | .51547              | .51489              | 0.1                      | 0.973                          |
| Age               | U      | 47.388              | 46.404              | 5.4                      | 0.040**                        |
|                   | M      | 47.388              | 46.697              | 3.8                      | 0.266                          |
| =1 if good income | U      | .27145              | .32541              | -11.8                    | 0.000***                       |
|                   | M      | .27145              | .27963              | -1.8                     | 0.593                          |
| Education         | U      | 12.06               | 11.938              | 2.2                      | 0.409                          |
|                   | M      | 12.06               | 12.234              | -3.1                     | 0.362                          |
| Victim            | U      | .2878               | .2388               | 11.1                     | 0.000***                       |
|                   | M      | .2878               | .2627               | 5.7                      | 0.101                          |
| Unemployment      | U      | .05487              | .07189              | -7.0                     | 0.011**                        |
|                   | M      | .05487              | .05079              | 1.7                      | 0.593                          |
| Religious         | U      | 4.021               | 4.3907              | -12.7                    | 0.000***                       |
|                   | M      | 4.021               | 3.9142              | 3.7                      | 0.280                          |
| Urban             | U      | .37245              | .26269              | 23.7                     | 0.000***                       |
|                   | M      | .37245              | .36836              | 0.9                      | 0.804                          |
| Ideology          | U      | 4.035               | 4.5854              | -26.9                    | 0.000***                       |
|                   | M      | 4.035               | 3.9644              | 3.4                      | 0.312                          |

**Note:** U = unmatched sample; M = matched sample. These statistics are based on on the entire sample of respondents for all years available. The balancing property is satisfied.

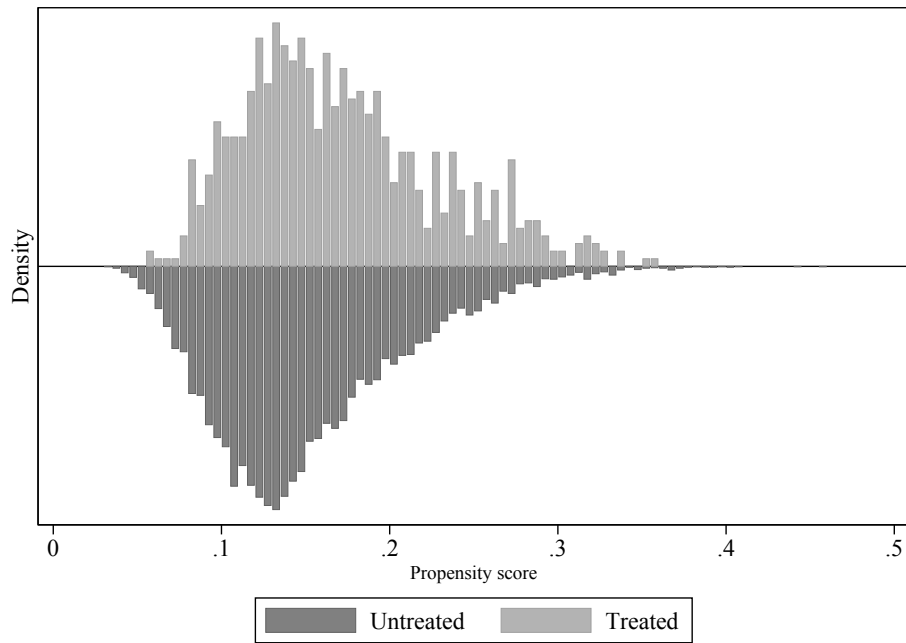
Table A.3: PSM estimates of the effect of living in Catalonia on social trust.

| Dep. Variable      | Social trust                  |                             |                  |                  |                   |                   |
|--------------------|-------------------------------|-----------------------------|------------------|------------------|-------------------|-------------------|
|                    | PSM<br>NN with<br>replacement | PSM<br>NN no<br>replacement | PSM<br>Radius    | PSM<br>Kernel    | PSM<br>LLM        | PSM<br>Direct     |
|                    | (1)                           | (2)                         | (3)              | (4)              | (5)               | (6)               |
| Region Cat.        | -0.074<br>(0.075)             | -0.065<br>(0.075)           | 0.036<br>(0.058) | 0.03<br>(0.054)  | -0.009<br>(0.075) | -0.070<br>(0.071) |
| N. Treated         | 1,713                         | 1,717                       | 1,425            | 1,713            | 1,713             | 1,713             |
| N. Observations    | 11,089                        | 3,213                       | 10,676           | 11,089           | 11,089            | 11,089            |
| Region & Lang. Cat | -0.042<br>(0.115)             | -0.008<br>(0.115)           | 0.079<br>(0.089) | 0.108<br>(0.080) | 0.089<br>(0.114)  | -0.057<br>(0.121) |
| N. Treated         | 622                           | 625                         | 508              | 622              | 622               | 622               |
| N. Observations    | 11,089                        | 1,229                       | 10,515           | 11,089           | 11,089            | 11,089            |

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figure A.2: Common support. Treated vs untreated samples



**Note:** The figure shows the density of the propensity score for matched and unmatched samples. Visual inspection of the figure suggests that the balancing of individual characteristics worked.