Reservoir-induced displacement and social participation: Evidence from the Spanish dictatorship

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19th April, 2021

Abstract

By 2018, 70.8 million people worldwide had been forced to flee from their home (UNHCR, 2019). This paper explores how variation in exposure to internally displaced population that happened in the past affect social participation in host municipalities during the last 40 years. To measure forced displacement, I exploit the construction of reservoirs during the Spanish dictatorship (1936-1975). Infrastructures that forced thousands of people to displacement. I rely on a newly collected historical dataset on forced displacement and social participation to then implement an instrumental variable approach. I find that exposure to internally displaced population inflows has a long-term and sizable benefit on social participation. Interestingly, the effects occurred right after the arrival of displaced population and persisted over 50 years. I propose two mechanisms for these results: social ties moving together with the population displaced and an upward shift in trust. Results are robust to potential co-founding effects of violence during the dictatorship.

*K*eywords: long-term effects, forced displacement, host, voter turnout, cooperatives, infrastructure projects

JEL: 01, N5, J1.

*I thank Nicola Mastrorocco for his guiding and our fruitful discussions. I thank Andrea Guariso, Alejandra Ramos, Davide Romelli, Gaia, Narciso, Martin Suesse, Nathan Nunn, Sascha Becker, Ekaterina Zhuravaskaya, Federico Frattini, Bryan Coyne and Eva Aizpurua for their comments and suggestions. I am very grateful to Trinity Research in Social Science (TRiSS) fellowship for the funding provided. I ought special gratitude to COAGRET, Fundación Cerezales, Ecologistas en Acción, *Los colonos de la España Verde de Franco*'s project and *Desplazados*' project for extremely helpful comments on the historical background. Special thanks to the staff of Zaragoza Historical Archive, Spanish Regional Associations and Cooperatives registers, CEDEX and Spanish Justice Ministry for the data provided. All errors and omissions remain fully my responsibility.

1 Introduction

By 2018, 70.8 million people worldwide had been forced to flee from their home (UNHCR 2019). Among them, 60% were internally displaced persons.[1] Furthermore, the largest forced dislocations of people worldwide have not occurred in conditions of armed conflict, but in routine, everyday evictions to make way for infrastructure projects (e.g. water, mining and transport).[2]

Even with a striking estimate of 15 million people displaced by infrastructure projects every year (IDMC 2017), we still have a limited understanding of its consequences (Cernea.M 1996). In particular, little is known about its effects on social participation. To investigate its impacts, we need a plausibly exogenous variation to capture displaced population flows. And, this is uncommon in many settings. This paper captures plausibly exogenous variation in displaced population flows measuring forced displacement as internal displacement associated with reservoir buildings.

Water infrastructure projects are public goods investments.[3] Nonetheless, even if a large population benefits from the water and energy services reservoirs provide, their development has come at a cost. In many parts of the world, the construction of reservoirs has led to the displacement of 40-80 million people (WCLD 2000).

In this paper, I study how changes in exposure to internally displaced population that happened in the past affect social participation in host municipalities during the last 40 years. I measure social participation with voter turnout, non-profit association and total agrarian cooperatives. To capture exogenous variation in internally displaced persons flows I exploit an unique historical setting- the construction of reservoirs during the Spanish dictatorship (1936 to 1975)- and I rely on a newly-collected historical dataset on internal displacement associated with reservoirs.

Empirically, I look at municipalities which received internally displaced persons. I call them

[1]Internally displaced persons (IDPs) are"persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized state border."(UN 1998)

[2]A global estimate of 6.9 million new internal displacements by conflict and violence in 2016. While an estimate of 15 million people a year displaced by infrastructure projects since the mid-2000s (IDMC 2017).

[3]In many cases the benefits of water infrastructure projects are both 'non-rival' and 'non-excludable'. For instance, when a reservoir is built, people cannot be prevented from benefiting from the reduced risk of flooding. Moreover, an increasing number of people who benefit from the reservoir does not affect resources availability.

host municipalities. Precisely, they are the adjacent municipalities to the municipalities (entirely or partially) destroyed by a reservoir building. To estimate the effects of reservoir-induced displacement, municipalities adjacent to municipalities with at least one reservoir (but, non destroying any village) function as my control group. Importantly, the presence of this counterfactual allow me to isolate my estimates from reservoir effects (Duflo.E and Pande.R 2007). Clearly, being exposed to displaced population may be correlated with unobservable variables that may affect social participation. These omitted variables may be endogenous to my outcome variable, which is social participation. To overcome potential endogeneity, I instrument displaced population inflows with reservoir size and distance to closest municipality destroyed by a reservoir.

The main results point out that exposure to internally displaced persons inflows has long-term and sizable benefits on social participation. Interestingly, the effects occurred right after the arrival of displaced population and persisted for more than 50 years.

In particular, I find that *host* municipalities exhibit a statistically significant increase in presidential voter turnout of 26 percentage points with respect to the bordering municipalities to those municipalities with a reservoir but never displaced. The effect is significant at the 5% level and economically important, corresponding to 35% of the outcome mean in 1976-2015. Total number of agrarian cooperative is also positively affected by displaced population inflow. *Receiving* municipalities are 2.1 (significant at 1%) more likely to hold an additional agrarian cooperative with respect to their counterfactual. The positive effects on agrarian cooperatives started with the arrival of displaced population, and persisted during the dictatorship (1936-1975) and the entire democracy (1976-2015). But, unsurprisingly, the magnitude of the effect decreases with the number of years after the arrival. Non-profit associations is statistically non-significant.

I discuss two mechanisms that could potentially explain the long-term effects of hosting internally displaced persons, and its persistence, on social participation. First, I test whether social ties may have moved together with the population displaced from municipalities of origin to municipalities of destination (*Coordinated Rhythmic Movement*, (Kelso.J 1981)). Second, in the long-run, the exposure to a large inflow of people from different backgrounds could increase trust towards different groups, leading to a beneficial impact on the social dynamics and civil engagement in the *host* communities. I find evidence mainly for the first mechanism. Contrary to *host* municipalities, municipalities of origin are less likely to have an additional agrarian cooperative after the year when its population fled, with respect to municipalities with a reservoir but non-destroyed. And, these effects have persisted throughout 50 years after displacement.

I finally address the concern that the estimates I uncover are driven by the high levels of violence that the dictatorship led to. Using historical data on mass graves erected in Spain during the dictatorship (1936-1975), I find no empirical support for this hypothesis. On top of that, my results are robust to a battery of robustness checks.

Although this project uses a historical setting, the research question remains relevant today. Internal displacement as a result of water infrastructures is a reality that affects a significant number of communities worldwide. Given the recent reservoir-induced in Son La Dam (Vietnam), Gilgel Gibe III Dam (Ethiopia and Kenya), or Ituango Dam (Colombia); the toll of infrastructure projects is still on the rise.

This paper contributes to three strands of the literature. First, it belongs to the growing literature of the economics of forced displacement studying the long-term effects of hosting forced displaced on economic ((Alix-Garcia.J and et.al 2018);(Murard.E and Sakalli.S.O 2018)) and on educational outcomes ((Bharadwaja.P and Mirzab.R.A 2019);(Morales.J.S 2018)) of the receiving population.[4] This strand of the literature also evaluates the long-term consequences of forced displacement for sending communities.[5] (Arbatli.C.E and Gokmen.G 2018) shows the long-term consequences of a mass expulsion on contemporary population density, urbanization, and economic activity. In this sense, the data on internally displaced persons are one of the most novel contributions of this paper: they provide the ability to characterize in detail the forced displacement shock, and therefore allow me to precisely identify *origin* and *receiving* municipalities.[6]

Second, it contributes to the literature focusing on the long-term determinants of social par-

[4](Miho.A and Zhuravskaya.E 2019),(Braun.S.T and Dwenger.N 2017)),(Chevalier.A. and et.al 2018),(Depetris-Chauvin.E and Santos.R.J 2018).

[5](Huber.K and Waldinger.F 2019),(Testa.P 2018),(Akbulut-Yuksel.M and Yuksel.M 2015) and(Acemoglu.D and et.al 2011), among others.

[6]Along the economics of forced displacement literature there is a large work on trying to understand the long-term consequences of forced displacement for migrants themselves. For instance,(Nakamura.E and et.al 2019) has studied the long-term benefits of moving away, together with its unequal distribution within the family, after a devastating environmental disaster. While (Sarvimäki.M and al 2019) studies the long-term impact of forced migration in Finland after World War II. They estimate large positive long-run effects of displacement on earnings of men working in agriculture prior to displacement. (Abel.M 2019) are among other examples

ticipation. (Levy.M 2018) shows how mass migration reduces community organizational life and community volunteerism. (Cagé.J and Rueda.V 2016) finds that the proximity to a printing press in the 19th century has long- term effects on today's social participation in sub-Saharan Africa. I contribute to this literature by shedding new light of an unexplored angle of research, the long-term consequences of forced displacement on social participation.

Finally, this paper adds to the literature studying the consequences of infrastructure projects. Among the earlier attempts are the work from (Duflo.E and Pande.R 2007) and (Bao.X 2012). I contribute to this literature by quantifying the negative externality of public goods provision.[7]

The rest of the paper is organized as follows. Section 2 provides an overview of the historical background. Section 3 presents the data used. Section 4 explains the empirical strategy. Section 5 shows my identification strategy. Section 6 and 7 discuss the main results and their robustness, respectively. Section 8 evaluates the mechanisms. And section 9 presents the conclusions.

2 Historical Background

Although displacements associated with reservoir buildings persisted during the Democracy (1976-2015), the number of dislocations after 1975 (end of the Spanish dictatorship) were very few.[8] This to say that, it is not accidental the fact that this paper's setting falls into the Spanish dictatorship. In Spain, only under an authoritarian regime is conceivable the existence of a setting capturing different dislocations of communities as a result of multiple reservoir buildings. In this section, I provide some historical accounts to explain what made this singular displacement setting possible.

2.1 The Spanish dictatorship

In July 1936, the Spanish military initiated a coup d'état against the left-wing government of the Second Spanish Republic (1931-1936). The military's coup led to the beginning of the Spanish

[7](Duflo.E and Pande.R 2007) analyses the unequal cost-benefit and regional distribution of dams and reservoir construction.(Bao.X 2012) finds that the negative revenue impacts in upstream counties are mitigated by inter-governmental transfers from the central government. Nevertheless, no significant revenue and transfer impacts are found in downstream counties, except counties far downstream.

[8]In Ebro's four reservoirs (Alba, Itoiz, Pajaras and Rialb) displaced population after 1975.

Civil War (1936-1939) which drove Spain to the outset of the Spanish dictatorship.[9] From 1936 to 1975, a fascist dictatorship ruled Spain until Franco's death in November 1975. And after Franco's death, a Democracy (1976-today) was established. See Figure 2 for a historical timeline.

2.2 Water Policy in Spain: Reservoirs' construction

Spain has today the second highest number of dams per km^2 in the world, 0.23, and it is the fifth country with more dams and reservoirs worldwide[10]. This figures were due to the fact of going by a period of a gigantic projection of water infrastructures during the Second Republic (1931-1936), and, a quick and colossal reservoirs construction during the dictatorship (1936-1975). See Figure 1 for a time-series description on dams and reservoirs construction in Spain.

It is the Second Spanish Republic which forges the planning tool, 1933 Plan (*Plan Nacional de Obras Hidraúlicas*), that projects the water infrastructure buildings of the decades to come.[11] A large number of infrastructures projected in 1933 Plan had to wait until Franco's regime to be built (Moral.L 2009). Namely, 32% of reservoirs built during the dictatorship were already planned in 1933 Plan.[12]

The use of low-priced labour and prisoners, a total coverage of infrastructure costs by the Government, the lack of environmental laws, and the nonexistence of mechanism of defense for the population affected facilitated the boost in reservoirs construction during the dictatorship. Through the construction of reservoirs, the dictatorship aspired to meet the growing urban water supply, increase the productive capacity of the agrarian sector; as well as to consolidate Franco's reputation in the rural Spain after the Civil War (1936-1939) (Romero.L 2013).

[9] In the Civil War, Republicans loyal to the left-leaning Popular Front government of the Second Spanish Republic fought against a revolt by the Nationalists.

[10] With 1,200 reservoirs of at least 15 m height, behind China, U.S.A, India and Japan (Romero.L 2013)

[11] Although reservoir construction started in the first century with the Romans, the key water infrastructure ideology in Spain began in 1820. Beyond that, there were previous attempts of water infrastructure projects. For instance the Gasset Plan (1902) that projected 300 water infrastructures (but only 30 were executed before 1933).

[12] Reservoirs projected in 1933's Plan but built during the dictatorship: El Grado, Ribaroja, Fayón, Os de Balaguer, Yesa, La Tranquera, Las Torcas, Santolea, Santa Ana, Mediano, Mansilla, Ebro, La GrajeraLa Peña, Talarn, Foradada, Barasona, Arguis, Almochuel, Alloz, Puente La Reina, Sariñena, Casbas, Ortigosa, Calahorra, Camarasa, Vadiello, De Pena, Pajares, Oliana, Navas, Monteagudo, Moneva, Mezalocha, Gallipuen, Estanca de Alcañiz y Flix

Case Study: The Ebro's river catchment area. The case study I propose takes place in the Ebro's river catchment area, the biggest Spanish catchment area (17 % of the national territory).[13] The region was specially affected by reservoirs' constructions during the 1936-1975 period. See map of Figure 3 for further details.

2.3 Reservoir-induced Displacement during the Spanish dictatorship

Reservoirs' construction during the 20th century has submerged at least 500 villages in Spain, with an estimate of 50,000 internally displaced persons (EiA 2018). Just in the Ebro's area, reservoirs displaced at least 21,561 people. Importantly for my identification, 67% of the reservoirs that generated forced displacement during the dictatorship were already projected by 1933 Plan.

During the Spanish dictatorship, the displacement process disregarded internally displaced persons' rights (as stated by Fundación Cerezales and Desplazados' project during my interviews). Although, there was occasional cash compensation for the population affected, it was miserly and suffered from delays and fraud. Figure 4 illustrates one example of dislocation by a reservoir in Ebro's region. In particular, it presents the displacement of the population of Fayón (a village, in Zaragoza province) due to the increase of water level created by Ribaroja reservoir in 1967.

Figure 5 shows the extensive destruction of Artozki (Navarra). A village, completely destroyed, in 2003, for the construction of Itoiz reservoir. Artozki example illustrates my definition of submerged villages and the subsequent forced displacement of its inhabitants.

In a nutshell, in this paper I profit from a Republican plan (1933 plan) to design my identification strategy, the Spanish dictatorship (1936-1975) as treatment period, and the democratic period (1976-2018) as my outcome period. See timeline in Figure 2 for a visual summary.

3 Data

I assemble a novel dataset at municipal level that combines historical data on internal displacement with historical and contemporary social participation outcomes.

[13]The Ebro's catchment area is on the North-East of the Iberian Peninsula, with a total area of 85,534 Km2. Its natural border are: On the North by the Cantabrian Mountains and the Pyrenees; on the South-East by the Iberian Mountain System; and on the East by the Catalan Coastal Range chain.

3.1 Dams and reservoir data

I obtain data on reservoirs in Spain from the inventory of dams and reservoir dataset from the Spanish Ministry for Ecological Transition. It contains geo-coded information on reservoir location, finalization year, reservoir size, reservoir´s primary goal and other features.

In history, 131 reservoirs have been raised in Ebro's catchment area. With 52 of them (40% of the total) erected during the dictatorship (1936-1975). It exists a concentration in the Northern province of Huesca (38%), Lleida (17%) and Zaragoza (8%). The blue and red polygons in Figure 3 represent the reservoirs built in history in Ebro's region.

3.2 Reservoir-Induced Displacement data

I build and geo-code an unique historical dataset on flows (outflows and inflows) of internally displaced persons induced by reservoirs' construction from qualitative information in text or excel format from old local organizations, community associations (created after a village extinction by reservoirs' construction) and digitized local newspapers. This dataset cover the whole universe of 2,249 municipalities that existed in Ebro's river catchment area during the dictatorship.

Furthermore, this dataset captures municipalities of origin, reservoirs generating displacement, displacement year, estimated displaced population, severity of village destruction (entirely or partially destroyed), actions implemented (new village reconstruction, re-settlements, etc) and adjacent municipalities. See database construction section in Appendix for further details.

94 villages were affected by the construction of reservoirs during the dictatorship in Ebro's river catchment area. Generating 21,561 estimated internally displaced persons.[14] The red polygons in Figure 3 shows the (19) reservoirs generating displacement during the dictatorship.[15]

The primary contribution of this paper is to identify for the first time the municipalities demolished and the population displaced by reservoirs' buildings in Ebro's region. Given that one of the main constraints to study the effect of reservoir-induced displacement in Spain is the lack

[14]These figures do not include people displaced by other aspects of the projects such as canals, powerhouses and other direct or indirect reservoir elements. Neither those displaced years after a reservoir completion.

[15]Búbal, Canelles, Ebro, Escales, Gónzalez Lacasa, El Grado, Lanuza, Mansilla, Mediano, Marboré, Ribaroja, Santa Ana, La Tranquera, Ullivarri, Yesa, Jánovas, Las Torcas, Cueva Foradada and Perdiguero (the last three by massive reforestation related to reservoirs)

of official statistics and consistent estimates.[16]

3.3 Social participation data

I use four different measures of social participation. My two first measures are voter turnout in presidential and local elections from 1977 to 2015 from the Spanish Ministry of Interior. This is in line with (Cagé.J and Rueda.V 2016) and (Bellows.J and Miguel.E 2009).

My third measure is yearly number of cooperatives in the agricultural sector from 1977 to 2015. I also use number of non-profit associations registered yearly from 1977 to 2015 to measure social participation. They come from sixteen Spanish regional registries of cooperatives and associations.

3.4 Other municipal level data

I include administrative data on counties, provinces and regions (or Autonomous Communities) from the Ebro basin's Hydrographic Confederation (ChE).

The geographic data (rainfall and temperatures, 1929-2010) are from the Meteorology Spanish National Agency; from the National Center of Geographic Information (elevation data); and daily river flow data from 1929 to 2010 from the Centre of Studies and Experimentation of Public Infrastructures (CEDEX from its acronyms in Spanish).

Population data comes from the Spanish Population Census (1920-2010) from the Spanish National Statistics Institute (INE). Demographic characteristics (gender, education and civil status) are from the self-digitized 1940's Spanish Population Census; and from the 1991's and 2011's census (gender, education, civil status, age and nationality).

Based on (Tur-Prats.A and Valencia-Caicedo.F 2020), I use geo-located data on mass graves erected during the dictatorship (1936-1975) from the Spanish Ministry of Justice. This dataset includes data on mass graves location, number of bodies exhumed and its political affiliation.

Table A.1 on the appendix displays the descriptive statistics for the main variables.

[16] (Romero.L 2013) estimates 25,000 people displaced in Spain due to reservoirs. (EiA 2018) counts for at least 500 villages devastated in Spain as a result of reservoirs during the 20th century, displaying 50,000 people. Whereas Ebro river's Hydraulic Confederation (which is responsible for reservoirs construction in Ebro's region) estimates only 13,000 displaced by all reservoirs built throughout history in Ebro's, the Commission of Population Affected by Large Reservoirs (COAGRET) estimates 12,000 displaced only in Aragon region (50% of Ebro's region).

4 Empirical Strategy

4.1 Spatial treatment: Receiving municipalities

The treatment, the inflows of internally displaced population, is induced by the proximity to demolished municipalities by reservoir constructions during the dictatorship. Hence, I, first, identify the municipalities destroyed by reservoirs, to later on, determine their neighbouring municipalities.

The construction of reservoirs destroyed entirely (64% of municipalities in the sample) or partially 94 villages. As a result, its population (or a share) was forced to displacement and to a self-relocation into nearby municipalities. I compute the exact location of municipalities displaced boundaries by matching demolished villages with modern geo-referenced locations. As in (Saldarriaga.J.F and Hua.Y 2019), *host* municipalities are the bordering municipalities to the modern municipalities demolished by a reservoir.[17] See Figure 6 for a design of the treatment and Figure A.1 for its spatial distribution.

Moreover, the definition of my treatment relies on historical evidences and on the negative population change (outflow) that the destroyed municipalities experienced after the displacement year; and on the positive population change (inflow) that the bordering municipalities (or *receiving* municipalities) encountered after the displacement year. Figure 8 shows the population change using the example of Santa Ana reservoir (in Huesca and Lérida provinces).

4.2 Counterfactual induced by reservoir location

To ensure that the effects this paper estimates are due to internally displaced population inflows, rather than merely due to the existence of a reservoir nearby, I design a counterfactual induced by the location of reservoirs. Specifically, to design the control group, I exploit the existence of reservoirs built before the outcome year that did not destroy any villages.

Adjacent municipalities to municipalities which have at least one reservoir built before the outcome year, but, did not destroyed a village function as my control group for *host* municipalities. On top of that, to separate the effects from displacement after 1975, I restrict my counterfactual to non-destroyed municipalities and to those municipalities adjacent to municipalities far enough

[17](Saldarriaga.J.F and Hua.Y 2019) finds that destination municipalities closer to places of origin attract more displaced people.

from modern destructions. Figure 9 illustrates the counterfactual.

Reservoir location and extension. A concern with this counterfactual is that during the dictatorship the location of reservoirs and their size may not be random. Because, their location and size could have replied to political reasons in favor of Franco's government. As presented in the historical background, a large majority of reservoirs built during the dictatorship were already projected before the dictatorship, in the 1933's Plan. This plan was the water infrastructure planning tool for the decades to come. Plan that projected reservoir's location based on five physical factors: (i) Soil; (ii) Rainfall; (iii) Temperature; (iv) Altitude; and (v) River flow.

Table 1 shows that the location of reservoirs and their size respond to the physical determinants echoed in 1933 Plan. Precisely, average annual rainfall, average annual temperature and altitude determine the location and extension of reservoirs during the Dictatorship.

Political factors, in Column (3) and (4) of Table 1, decrease the likelihood of having a reservoir within a municipality territory, as well as its extension. I proxy political factors with data on violence during the dictatorship. Municipalities that hold at least one mass grave within its territory, *Mass grave*, exhibit a statistically significant decrease in the extension of a reservoir of 238 meter square. Estimates are statistically significant at the 1% level. Assuming that insurgent municipalities are those that experience violence during the dictatorship (proxied by the existence of mass graves) and that municipalities with larger reservoirs are more likely to be destroyed by it (as presented in section 8). It may be reasonable to say that during the dictatorship the decision on reservoir location and extension was not employed as a political instrument against those not in favor of Franco.

4.3 Empirical Specification

The goal of this paper is to estimate the long-term effects of internally displaced population inflows, associated with reservoirs construction during the dictatorship, on the social participation during the Democratic period. The relation of interest is captured by the following equation,

$$Y_{mcpt} = \beta_0 + \beta_1 IDPinflow_{mcp(t-n)} + \beta_2(IDPinflow_{mcp(t-n)} * Destroyed_{mcp(t-n)}) + \alpha_c + \theta_{pt} + X_m + \epsilon_{mt} + \quad (1)$$

Where Y_{mcpt} denotes social participation at time t (t= 1976-2015) for municipality m county c and province p. Social participation is measured as voter turnout (in presidential and local elections), non-profit associations created and existent agrarian cooperatives. $IDPinflow_{mcp(t-n)}$ is equal to 1 if the municipality m county c and province p at time *(t-n)* was a *host* municipality of internally displaced population (0 otherwise). Being n, the number of years from the arrival of displaced population (and treatment) to time t.

Moreover, the effects may differ if a village is entirely or partially destroyed. Due to this fact, I add an interaction term to a entirely destroyed variable, $Destroyed_{mcp(t-n)}$. $Destroyed_{mcp(t-n)}$ is equal to 1 if the municipality m was totally demolished by a reservoir at time *(t-n)* (0 otherwise).

X_m is a vector for pre-treatment characteristics of municipality m. It includes demographic characteristics such as gender population share, civil status, population share, and literacy rate; a proxy for violence during the dictatorship; and geographic variables such as (rainfall, elevation and temperature). It also includes post-treatment characteristics, including women population share, aging population share, foreigner population share and tertiary educated population share.

I control, as well, for county fixed effects, α_c, and province-year fixed effects, $\theta_p t$. County fixed effects control for time-invariant characteristics that affect the likelihood of being a *host* municipality. Province-year interactions account for annual shocks which are common across counties in a province. Hence, I only exploit cross-county variation in displaced population in a province for identification. Finally, the error term, ϵ_{jt}, summarises all determinants of social participation not captured by the regressors. Standard errors are clustered by county.

4.4 OLS results

The OLS estimates of Table 3 suggest that being a *host* municipality of displaced population has a long-standing effect on social participation. Column (1) and (2) present that being a *host* municipality during the dictatorship reduces presidential and local voter turnout by roughly 2 percentage points with respect to the adjacent municipalities to municipalities which have a reservoir but they were never destroyed. The effect is statistically significant at the 1% and 5% level, respectively. Opposite to these results, Column (4) shows that *receiving* municipalities are 0.19 points more likely to host an additional agrarian cooperative with respect their control group (significant at the 1% level). The number of associations created yearly, in Column(3), is statistically non-significant.

5 Identification Strategy

OLS estimates are unlikely to be consistent. Since it can not be tested that displaced population inflow is uncorrelated with variables that might affect social participation. Moreover, for OLS estimates to be consistent requires that displacement variation across counties within a province is uncorrelated with other county-specific shocks. However, this assumption may be violated. To address this challenge, I develop an instrumental variable strategy based on the physical and reservoir characteristics, as in (Duflo.E and Pande.R 2007).

5.1 Instrumental Variable Strategy

My identification strategy relies on the exogenous nature of the size of a reservoir. As described on section 4.2, during the dictatorship, the extension of a reservoir was not driven by political attitudes against Franco. In fact, reservoir location and its size respond to physical factors. Namely, municipalities with lowest average rainfall, temperature and altitude host largest reservoirs.

Intuitively, larger reservoirs (that expropriate bigger extensions of land) have a higher likelihood to destroy a village and force its population to displacement as a result. Therefore, being closest to a larger reservoir increase the likelihood to host displaced population. I exploit reservoir-area (reservoir's extension in meter squared) of the closest demolished modern municipality and its distance to create an instrument. The non-monotonic relationship between reservoir-area of the nearest demolished modern municipality interacted to its distance and the likelihood of hosting internally displaced population form the basis of this paper's identification. Also, I use only distance to the nearest demolished modern municipality as an alternative instrument.

As in (Sarsons.H 2015) and (Duflo.E and Pande.R 2007), I construct a measure of normalize deviation of reservoir-area from its average. This method assumes that there is only one reservoir within a destroyed municipality. I believe that this is a reasonable assumption given the relatively small size of the municipalities. When more than one reservoir are located within a municipality (23% of the sample) a reservoir-area average is calculated. I build, as well, a measure of normalize deviation of distance to the nearest demolished modern municipality from its average.[18]

[18] Normalize deviation of reservoir-area and normalize deviation of distance to the nearest *origin* municipality from its average level are calculated as: $(Variable_{mcp}$- $AveVariable_{ebro})/SdVariable_{ebro}$

The "first-stage" regression in my IV strategy is then given by

$$IDPinflow_{mcp(t-n)} = \delta_c + \phi_1 ReservoirArea_{mcp} x Distance_{mcp} + \alpha_c + \theta_{pt} + X_m + \eta_{mt} \quad (2)$$

where $ReservoirArea_{mcp}$ x $Distance_{mcp}$, is an interaction term of reservoir-area in the nearest demolished modern municipality to its distance. My regression includes county fixed effects, year-province fixed effects, normalize deviation of temperature and rainfall and pre-treatment characteristics as controls. My identification strategy, therefore, relies on within-county differences in reservoir-induced displaced population inflow.

Panel A in Table 4 proves that my instrument, with an F-statistics of 31.85, has sufficient power. Moreover, it is strong and statistically significant at the 1% level. As expected, being further from a destroyed municipality decrease the likelihood of hosting internally displaced population.

5.2 Pre-treatment characteristics

A threat to identification are unbalanced samples on demographic characteristics between treated and control municipalities. Table 2 shows that the sample is balanced between *host* (treated) and *non-host* (control) municipalities in pre-treatment socio-economic characteristics (in 1940).

6 Results

Table 5 provides the two-stage least square (2SLS) estimates of displaced population inflows (from 1936 to 1975) on social participation outcomes (from 1976 to 2015), as specify in equation (1).

Voter turnout. I start by examining how the inflows of internally displaced population have affected the participation on presidential and local elections from 1976 to 2015. I report the reduced form, in columns (1) and (3), and the 2SLS estimates, in columns (2) and (4), for presidential and local voter turnout (normalize, from 0 to 1). The 2SLS estimates indicate a statistically significant increase in presidential voter turnout in *host* municipalities. Being a municipality that receives reservoir-induced displaced population increases the presidential voter turnout by 26 percentage points with respect to the adjacent municipalities to municipalities which have a reservoir (their control group). The effect is significant at the 5% level and it is sizable in economic magnitude, corresponding to 35% of the baseline mean. Local voter turnout is non statistically significant.

Agrarian cooperatives. Whereas the number of agrarian cooperatives existent in the *receiving* municipalities from 1976 to 2015 is not significant when inflow of displaced population is instrumented by the interacted term, it is statistically significant at 1% level when instrumented only by distance to the nearest demolished municipality. See these results in Table 6. In line with voter turnout estimates, *receiving* municipalities are 2.1 more likely to have an additional agrarian cooperative during the Democracy, with respect to their control group. Number of non-profit associations created yearly is non significant.

Persistence. To learn about the persistence of the effects, I use agrarian cooperatives. Since, there is not data available on voter turnout before the Democracy. And, I restrict my sample to the last 30 years of the dictatorship (1945-1975).[19] Furthermore, I restrict the sample to the years after the arrival of displaced population (my treatment). For instance, if the treatment year for municipality m was 1952, I restrict the sample for the municipality m to the years between 1953 and 1975. If the hosting effects started after the dictatorship, we would expect to find no effect. If, on the other hand, effects started in the dictatorship and persisted after, we would expect to find significant increases in social participation in *host* communities right after the arrival.

It seems that the effects existed since the arrival of displaced population and persisted not only during the dictatorship (as presented in Table A.2), but also during the democracy, from 1976 to 2015 (as presented in Table 6). Table A.2 finds that agrarian cooperative estimates during the dictatorship are also statistically significant at 1% level when instrumented by distance to nearest demolished modern municipality. *Receiving* municipalities are 1.4 more likely to have an additional agrarian cooperative during the last decades of the dictatorship (1945-1975), compared to the adjacent municipalities to municipalities having a reservoir. The reduction in the sample size, may affect the decrease in the magnitude.[20]

To illustrates the persistence of the effects across time, Figure 10 plots the 2SLS coefficients of different regressions of equation (1) restricting the sample to n years after the arrival of displaced population. n goes from 5 to 50 years and treatment year goes from 1946 to 1967. All estimates are statistically significant (at 1% level) and positive. These results suggest that the effects persisted

[19]Table 2 shows that the sample is balanced between *receiving* and *non-receiving* municipalities in the number of associations and agrarian cooperatives in 1945. There is not data available before 1945.

[20]Number of associations created during from 1945 to 1975 is non statistically significant

over 50 years after treatment. Unsurprisingly, the magnitude of the effect decreases with n.

A plausible reason of the high differences between OLS and 2SLS estimates is the fact of estimating the effect of displaced population flows purged by the instrumental variables.

It is important to underline that my data only allow me to obtain estimates of an intent-to-treat effect and, therefore, one caveat for the interpretation of results is that the data does not allow me to distinguish between people displaced and those already living in the area before displacement. I cannot identify the sub-population group that is driving these results. The longstanding effects on social participation could be stimulated by the behavior of the native population or their descendants. Or it could be driven by the displaced population or their offspring.

6.1 Heterogeneity

Although, I can't differentiate between people displaced and those already living in the area before displacement. I can explore whether there is heterogeneity in the effect by the population share of alive individuals that lived the displacement either as displaced or as native. I call them *survivors*. I profit from population data by age from the population census from 1991 to 2011 to identify the population share that were born when the displaced population arrived to the municipality. Table 7 shows that 2SLS results by sub-samples of *survivors* population share remain unchanged, with the exception of presidential voter turnout. It becomes statistically non-significant when restricted the sample to the municipalities with a *survivor* population share above the mean (30%). This result could be driven either by the decrease in the sample size or by the fact that presidential turnout effects were not stimulated by the behavior of *survivors*, but by their offspring.

I also evaluate whether the effects differ between the inflows that happened during the first half (1936-1954) o second half (1955-1975) of the dictatorship. Table 7 displaces that agrarian cooperatives estimates do not change. Only 17% of treatments happened in the second half, it could be one of the reasons why presidential voter turnout becomes non-significant.

7 Robustness Checks

In this section, I show that my results are robust to a battery of robustness checks.

Robustness to unobservable variables. The identification and findings of this paper rely on exogenous changes in internally displaced population inflows across municipalities. As a result, my findings are reliable as long as I can rule out the possibility of hidden bias. In the Table A.3, I undertake a falsification test using the number of agrarian cooperatives before treatment which seems to confirm that it is indeed the case. There is not available data on social participation before 1945. As a result, I estimate the impact of number of agrarian cooperatives from 1945 to 1949 measured before a restricted treatment from 1950 to 1975. The obtained coefficients are all non significant. This suggests that changes in social participation are not driven by unobservable variables and brings confidence in interpreting the estimates of Table 5 and Table 6 as causal.

Robustness to Potential-Cofounding Effects. As opposed to (Tur-Prats.A and Valencia-Caicedo.F 2020) findings, I begin by showing no cofounding effects of violence during the dictatorship (1936-1975) on social participation during the democratic period (1976-2015).[21] In particular, Table A.4 demonstrates no linear relationship between violence intensity during the dictatorship (measured with number of victims buried in mass graves within a municipality) and social participation after dictatorship. Furthermore, it presents statistically insignificant linear results between violence against republican (measured with a dummy variable equal to 1 if it exists a Mass Grave within a municipality and its victims are affiliated to the Republican party)[22]

My results are robust to potential cofounding effects of depopulation during the second half of XXs century. During the 50s, in Spain took place large transfers of population from backward regions to the leading regions, with rural families heading for urban areas (Pinilla.V and Sáez.L.A 2016). See Table A.5 for further details.

Robustness to Sample restrictions. In the baseline analysis, I restrict displaced population flows to those running during the dictatorship. Table A.6 shows that the effects of displaced population inflows on social participation remains when restricting the sample to the inflows that happened during the Democracy (1975-2018). Although the direction of the effect changes, this insight add evidence to the fact that cofounding effects related to the dictatorship is not driven my results. This shift in direction can be explained by the small sample of *receiving* municipalities, as well as, by the implementation of new compensation measures that the Democracy brought (i.e

[21]It is important to remark that these estimates are correlations and they do not account for causal effects.

[22]The Republican party was a leftist party that fought against Franco during the Spanish dictatorship.

cash compensations, re-settlements, houses reconstructions outside the reservoir, civil rights, etc).

Robustness to Treatment Definition. Finally, Table A.7 shows no effects when I relax my definition of *host* municipalities. In particular, in Panel B of Table A.7, I expand *receiving* municipalities sample to the municipalities adjacent to *host* municipalities in the baseline analysis. See Figure 6 for more details. Additionally, in Panel C of Table A.7, I restrict the sample to the adjacent municipalities to *receiving* municipalities of my baseline analysis.

8 Mechanism

I now explore why It exists a long-term effect of internally displaced population inflows on social participation, measured as presidential voter turnout and agrarian cooperatives. The increase in social participation in the *host* communities could be due to either (i) a movement of social ties from the municipalities of origin to the municipalities of destination after the year of displacement, with a persistence in time, or/and (ii) a construction of new social ties in the *host* municipalities after the arrival of internally displaced population, with a subsequent persistence in time.

8.1 *Coordinated Rhythmic Movement*

In line with the *Coordinated Rhythmic Movement* theory, (Kelso.J 1981), social ties may have moved together with the population displaced from municipalities of origin (demolished by a reservoir) to municipalities of destination, ties that may have persisted in time. Meaning that, displaced population may have moved to their *host* municipalities bringing with them their social ties. The intuition is that whereas social networks in *host* municipalities may have boosted after the inflow of displaced population and may have persisted until today, social networks in municipalities of origin may have dropped after the outflow of displaced population.

Disentangling the causal effects of the outflows of internally displaced population on social participation may present higher identification challenges than the inflows and its estimates need to be interpreted carefully. Municipalities of origin may have been exposed to endless changes that my data can not capture. Nonetheless, looking at the outflows estimates may be worthy to test if there was, indeed, a decrease on social participation in the municipalities destroyed by a reservoir with respect to the municipalities that have a reservoir, but they were not destroyed.

Therefore, to test if the municipalities destroyed experienced a decrease on social ties, I estimate the effect of internally displaced population outflows on the number of agrarian cooperatives right after displacement. Thus, I restrict the sample to n years after displacement (n goes from 5 to 50 years and year of displacement goes from 1946 to 1967) and I use the following regression:

$$Y_{mcpt} = \beta_0 + \beta_1 IDPoutflow_{mcp(t-n)} + \beta_2 (IDPoutflow_{mcp(t-n)} * Destroyed_{mcp(t-n)}) + \alpha_c + \theta_{pt} + X_m + \epsilon_{mt} + \quad (3)$$

Where Y_{mcpt} denotes number of agrarian cooperatives at time t (t= 1945-2015) for municipality m county c and province p. $IDPoutflow_{mcp(t-n)}$ is equal to 1 if the municipality m county c and province p at time *(t-n)* experienced an outflow of displaced population (0 otherwise). Being n, the number of years from the displacement year to time t. Same controls than equation (1)

Table 8, Columns (1) and (3), presents the OLS estimates. Nonetheless, OLS estimates are unlikely to be consistent. To overcome this problem, I develop a second instrumental variable strategy similar to that one presented in section 5. For this strategy, I profit only from reservoir-area (reservoir's extension in meter squared) in the municipality m.

The "first-stage" regression in my IV strategy for displaced population outflow is given by

$$IDPoutflow_{mcp(t-n)} = \delta_c + \phi_1 ReservoirArea_{mcp} + \alpha_c + \theta_{pt} + X_m + \eta_{mt} \quad (4)$$

where $ReservoirArea_{mcp}$, is the normalize deviation of reservoir-area from its average level. It includes county fixed effects, year-province fixed effects, normalize deviation of temperature and rainfall and pre-treatment characteristics as controls. This identification strategy, therefore, relies on within-county differences in reservoir-induced displaced population outflow.

Panel B of Table 4 shows that a bigger reservoir-area within a municipality raises the probability of destroying a village by 6%. First-stage results are strong and statistically significant at the 1% level. The F-statistics (equal to 104.14) demonstrate that the instrument has sufficient power.

Figure 10 plots the 2SLS estimates of different regressions of equation (3) restricting the sample to n years after displacement year. Municipalities of origin (or destroyed by a reservoir) are less likely to have an additional agrarian cooperative, with respect to the municipalities which have a reservoir but were not disrupted. The effects started right after displacement and persisted over 50 years (all significant at 1% level). On top of that, at n equal to 30 the magnitude of the effect decreases. Point in time that corresponds with the beginning of the Democracy.

These findings are consistent with the literature ((Testa.P 2018); (Pascali.L 2016); (Waldinger.F 2010)) and in line with the hypothesis that social ties may have moved together with the population displaced from origin to destination municipalities.

8.2 Setting-up new social ties: upward shift in trust

Furthermore, new social ties may be built in the *host* municipalities during the years after the arrival of displaced population. I propose level of trust as a potential mechanism.

The literature suggest that in the long-run, the exposure to a large inflow of people from different backgrounds increased understanding and trust towards different groups in *host* communities, despite potential short-term conflict over resources ((Sequeira.S and et.al 2020), (Abel.M 2019)). The rise on trust may reinforce voter turnout ((Casey.A and et.al 2013), (Verba.S and et.al 1995)) and enhance civic participation ((Cárdenas.J.C and et.al 2013), (Brehm.J and Rahn.W 1997)).

There are different interpretations consistent with these arguments. One interpretation is that the removal experience changed the values that parents passed on to their children ((Tabellini.G 2008), (Nunn.N and Wantchekon.L 2011)). A second interpretation is that the adoption of a shared identity as displaced people may explain why receiving communities have higher levels of social capital despite potential short-term conflict over resources ((Abel.M 2019)).

A third interpretation is in line with Putnam's concept of 'bridging social capital' (Putnam.R.D 1993). Experiences with dissimilar individuals (people from different socio-economic, religious, ethnic, or racial background) can create generalized trust whereas interactions with similar people builds 'bonding' social capital or in-group trust. The act of forced relocation may have had the effect of uprooting traditional networks of relatively homogenous members and replacing them with more randomly formed networks in the hosting communities ((Abel.M 2019)).

Whereas the arguments remains partially inconclusive due to the lack of accessible data during the Covid-19 pandemic, this mechanism may provide guidance for future research.[23]

[23] Data from *Centro de Investigaciones Sociológicas* on trusting toward people in general and institutions from 1999 to 2015 are not currently accessible.

9 Conclusion

In this paper, I study how changes in exposure to internally displaced population that happened in the past affect social participation (voter turnout, non-profit association and total agrarian cooperatives) in host municipalities during the last 40 years.

To capture exogenous variation in displaced population flows I exploit the construction of reservoirs during the Spanish dictatorship (1936-1975). Infrastructures that forced thousands of people to displacement. Moreover, this paper's identification strategy rely on a newly-collected historical dataset and profits from cross-sectional variation in reservoir size and distance to closest demolish municipality to instrument internally displaced population inflows.

Importantly, I find a very significant and sizable effect that points out that exposure to internally displaced population inflows has a long-term benefit on social participation. Interestingly, the effects occurred right after the arrival of displaced population and persisted over 50 years.

Receiving municipalities display an increase in presidential voter turnout of about 35% of the outcome mean in 1977-2015, and they are 2.1 more likely to hold an additional agrarian cooperative with respect to their counterfactual. Even if, the positive effects on agrarian cooperatives persisted during the dictatorship (1936-1975), and the entire democracy (1976-2015), the magnitude of the effect decreases with the number of years after the arrival of displaced population.

The social gains brought by the internally displaced persons in *host* municipalities could have arisen from two potential channels:(i) social ties may have moved together with the population displaced from origin to *host* municipalities; or (ii) the potential gains on level of institutional and general trust that inflows of displaced population from different backgrounds may transfer.

Although infrastructure projects can result in considerable benefits, their toll is still on the rise. Internal displacement as a result of water infrastructures is a reality that affects a significant number of communities worldwide (e.g. Vietnam, Ethiopia and Kenya, or Colombia). Therefore, my findings may have broader implications for the understanding of the consequences of involuntary dislocation of communities to make way for infrastructure projects. These results highlight that internally displaced persons change the cultural and social composition of *host* communities. Taken together, my findings show that hosting displaced population induced by public infrastructure projects has long-lasting benefits on the social dynamics of the communities they join.

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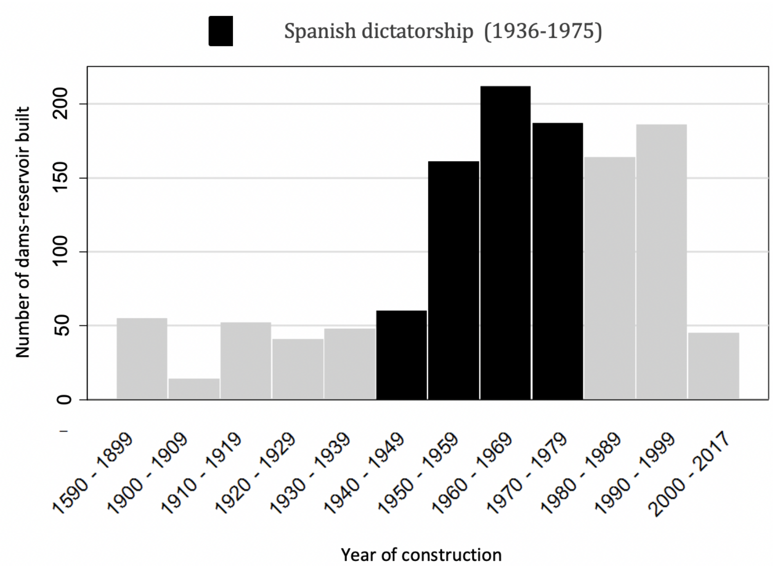
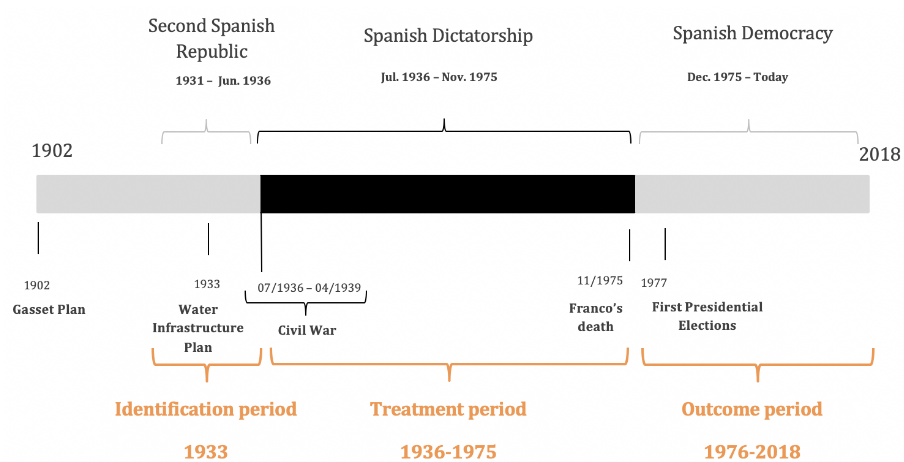
Figures

Figure 1: Construction of dams-reservoirs in Spain



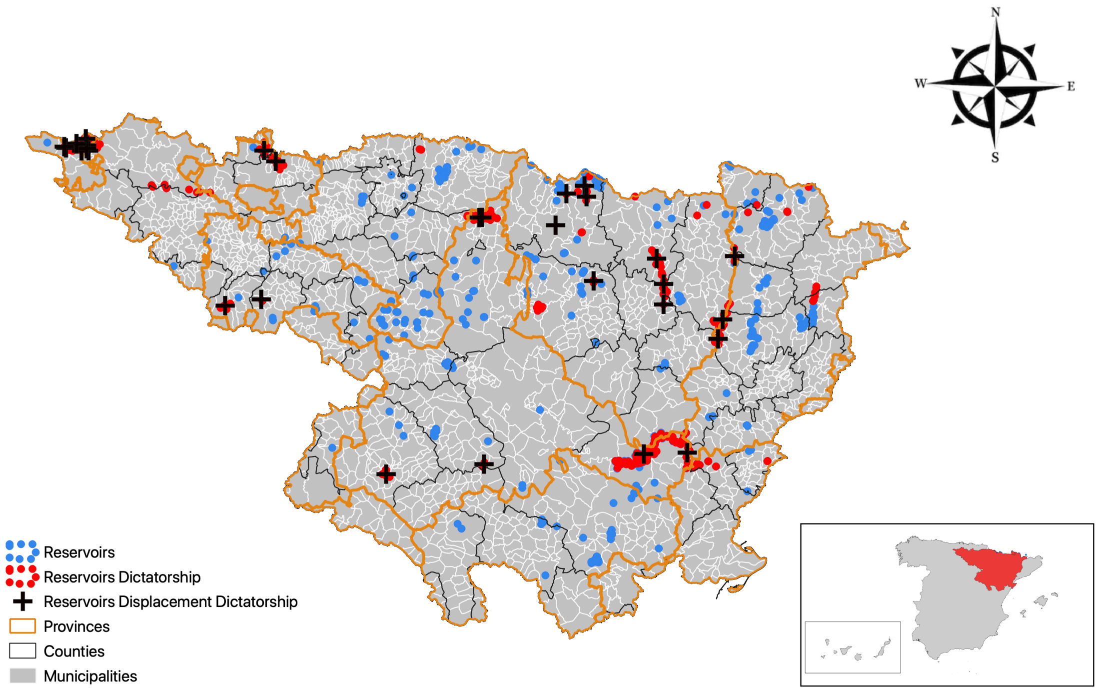
Note: This figure describes number of dams (with their reservoirs) built from 1590 to 2017. Darker colors correspond to the Spanish dictatorship (after the Spanish Civil War (1936-1939). It shows a boost at the beginnng of the Spanish dictatorship, in 1940. Source: Inventory of Dams and reservoir dataset. Spanish Ministry for Ecological Transition.

Figure 2: Spanish Historical Timeline, 1900- 2018



Note: This figure shows an historical timeline of Spain from 1900 to 2018. Darker colors correspond to the Spanish dictatorship (1936-1975). In orange, I illustrate the timing exploited by this paper.

Figure 3: Reservoirs in Ebro's river Catchment area (My Case Study)



Note: This map shows reservoirs location in Spain. Red polygons correspond to reservoirs built during the Spanish dictatorship (1936-1975). Black crosses illustrate the reservoirs that generated displacement during the dictatorship. Blue polygons correspond to reservoirs built before 1936 or after 1975. The smaller map on the right bottom side of the figure shows Ebro's region placement within Spain. Source: Inventory of Dams and reservoir dataset. Spanish Ministry for Ecological Transition

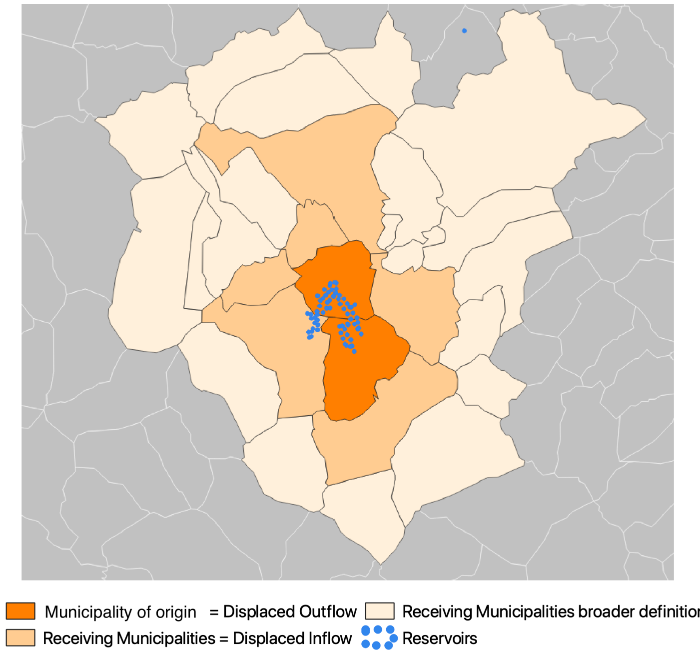
Figure 4: Displacement process in Fayón (Zaragoza), 1967, by Ribaroja Reservoir

Note: This picture illustrates the displacement process due to the increasing water level created by Ribaroja reservoir in 1967 in Fayón. Fayón is a municipality in Zaragoza province. Source: Aragon TV, 2017.

Figure 5: Displacement consequences in Artozki (Navarra), 2003, by Itoiz Reservoir

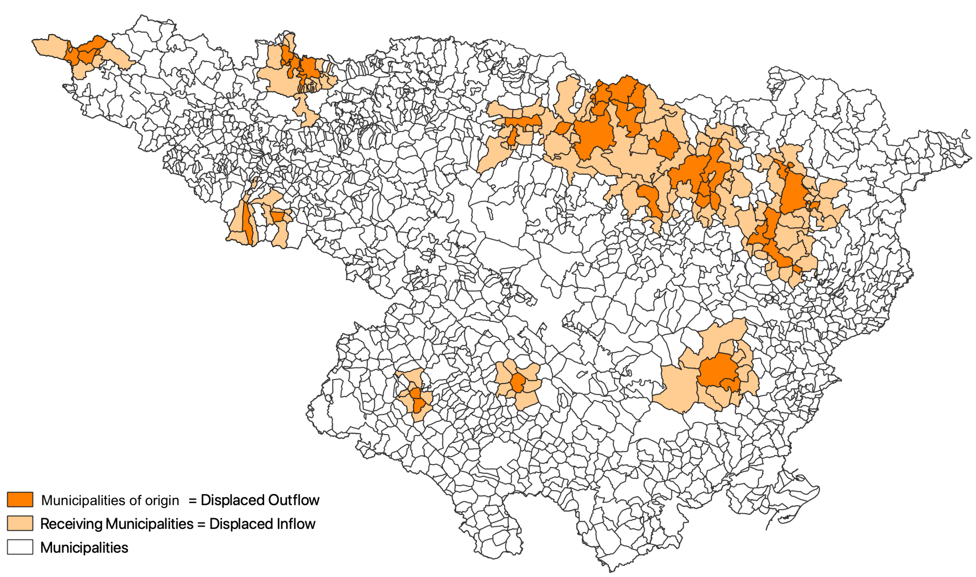
Note: These pictures illustrate the destruction of Artozki (Navarra), as a result of a Itoiz reservoir in 2003. Source: Valle de Arce-Artzibar website.

Figure 6: Spatial Treatments Construction



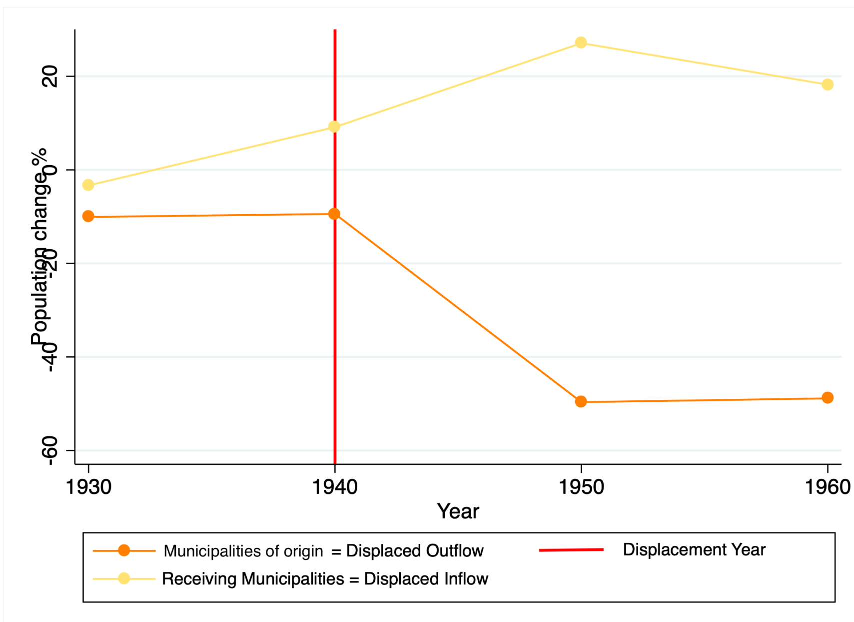
Note: This figure shows how the treatments are designed. Darker color correspond to the municipalities of origin. In other words, the exact location of the municipalities where a reservoir was built, and, exposing its population to an outflow of displaced population. Medium intensity orange are the *receiving municipalities*, the municipalities adjacent to demolished municipalities by a reservoir. Lighter orange is a broader definition of *receiving* municipalities (placebo treatment).

Figure 7: Receiving Municipalities of displaced population from 1936 to 1975



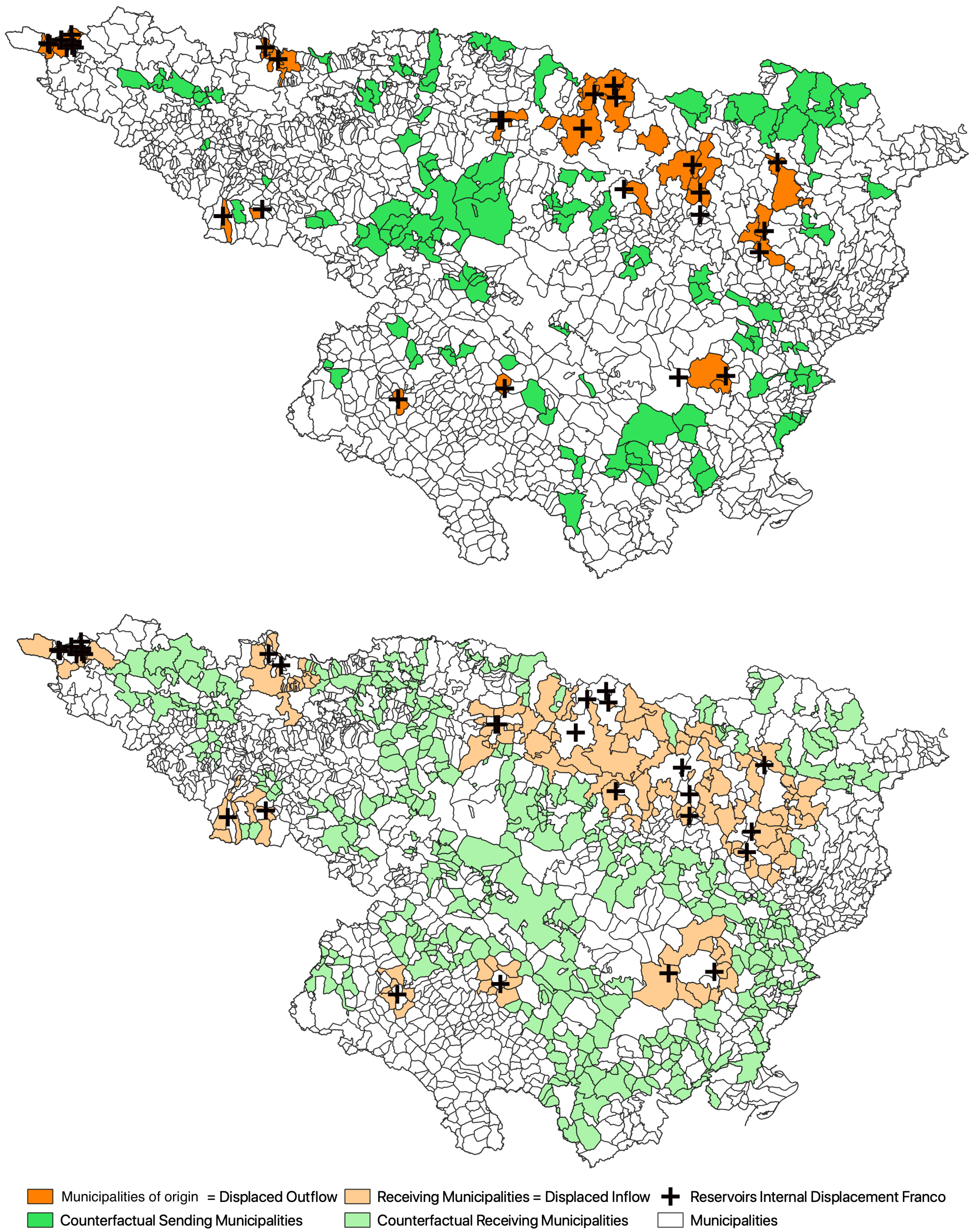
Note: This map presents destroyed and *receiving* municipalities across the municipalities in Ebro's river catchment area. Darker colors correspond to destroyed municipalities (or municipalities of origin). And lighter colors to *receiving* municipalities.

Figure 8: Population change in Origin and Receiving Municipalities after displacement



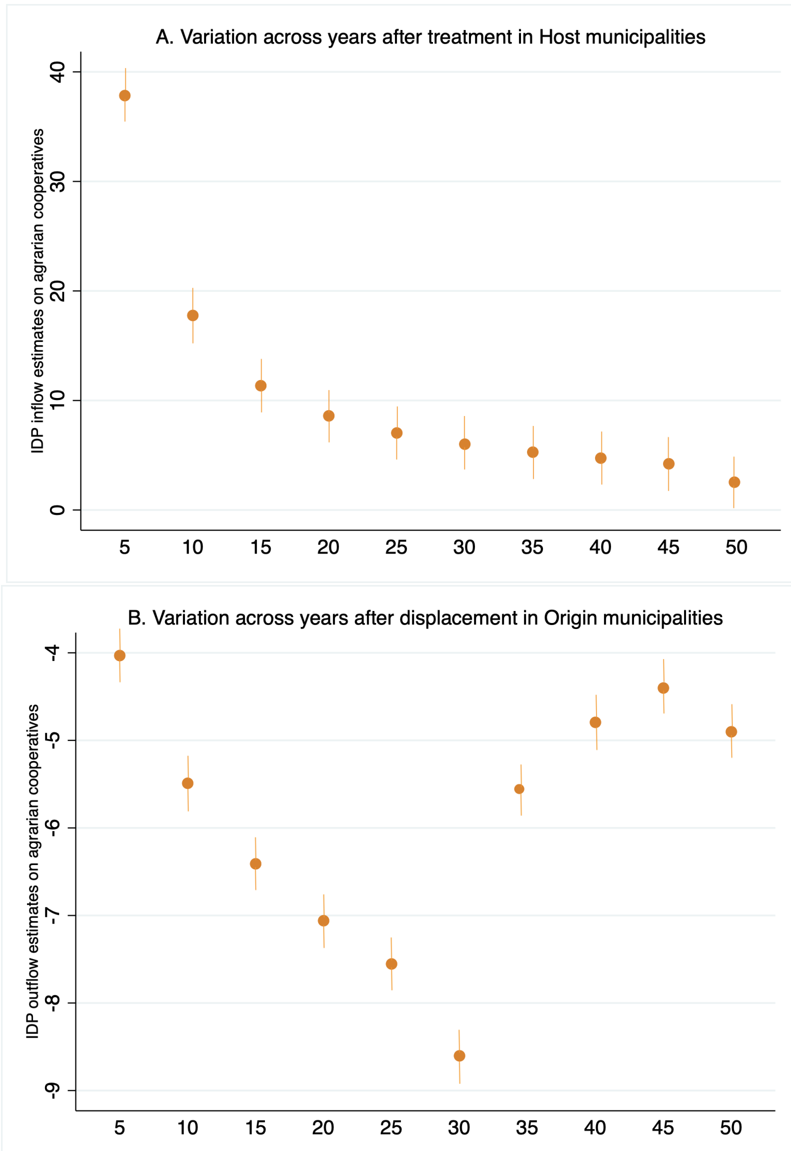
Note: This figure uses the example of Santa Ana Reservoir (in Huesca-Lleida Province) to show the population decrease in the origin municipalities and the population increase in the *receiving* municipalities after displacement. Darker color line corresponds to origin municipalities. And lighter colors line to *receiving* municipalities. Source: Spanish Census 1920-1970

Figure 9: Counterfactual for origin and receiving municipalities



Note: These maps illustrate the control group of *receiving* and origin (or destroyed) municipalities. Darker green corresponds to the counterfactual for origin municipalities. Municipalities that host a reservoir built before the outcome year and far enough from displacements dated after the dictatorship. Lighter green correspond to *receiving* municipalities' control group. The adjacent municipalities to origin municipalities' counterfactual. It is restricted to non-destroyed/non-hosting municipalities and with no modern displacement nearby.

Figure 10: Persistence effects of internally displaced population flows on agrarian cooperatives



Note: This figure illustrates the variation of the 2SLS estimates of internally displaced population flows (inflows and outflows) on the total number of existent agrarian cooperatives across n years after treatment (in graph A) or displacement year (in graph B). Each estimate represents one regression restricting the the sample to n years after treatment (in graph A) or displacement year (in graph B). Graph A shows on the x-axis the years after the arrival of IDPs in *host* municipalities (or treatment). Graph B shows on the x-axis the years after the year of displacement from origin municipalities. The number of years (n) goes from 5 to 50 years. The treatment year goes from 1946 to 1967. Y-axis represents the magnitude of the effect. Estimates are all statistically significant at 1% level. n= 30 corresponds with the beginning of the Democracy (1976).

Tables

Table 1: **Reservoir location and size factors**

	(1)	(2)	(3)	(4)
VARIABLES	Reservoir	Reservoir-area	Reservoir	Reservoir-area
Average annual rainfall (1936-1975)	-0.036***	-86.284***	-0.034***	-87.924***
	(0.005)	(20.653)	(0.005)	(20.539)
Average annual temperature (1936-1975)	0.013***	-98.300***	0.014***	-109.241***
	(0.005)	(15.022)	(0.005)	(15.310)
Altitude	0.000***	-0.342***	0.000**	-0.376***
	(0.000)	(0.110)	(0.000)	(0.109)
Mass grave			-0.083***	-238.421***
			(0.016)	(64.669)
Victims number buried			0.000	-0.174
			(0.000)	(0.516)
Mass grave x Pro-Republican victims			-0.047*	163.181
			(0.026)	(99.583)
Observations	2,962	687	1,296	687
Number of counties	76	31	49	31

Note: This table shows the OLS effect of physical variables on reservoir location and reservoir-area (reservoir's extension in meter square). In Column (1) and (2) I regress reservoir (1 if a reservoir was built with the municipality from 1936 to 1975, 0 otherwise) and reservoir-area, respectively, on an indicator variable for average rainfall (from 1936 to 1975), average temperature (from 1936 to 1975), altitude, county fixed effects and province-year interactions fixed effects. Standard errors are clustered at the county level. In Column (3) and (4), I include variables such as mass grave number, number of victims buried in ass Graves and the existence of at least one mass grave within the municipality (*Mass grave*. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 2: **Differences in Socio-Economic Characteristics Between Receiving (Origin) and Non-Receiving (Non-Origin) Municipalities**

	Mean	**Mean**	**Diff (2) - (1)**
	Non-Receiving	Receiving	
PANEL A: Host municipalities - IDP inflow			
Population	2,106.732	1,732.762	126.401
	(12,495.199)	(4,764.839)	(305.790)
Women Share (%)	0.492	0.456	-0.026
	(0.077)	(0.109)	(0.026)
Illiterate Share (%)	0.707	0.669	-0.029
	(0.129)	(0.175)	(0.041)
Married Share (%)	0.364	0.335	-0.005
	(0.075)	(0.092)	(0.021)
Widowed (all) Share (%)	0.079	0.075	-0.002
	(0.023)	(0.024)	(0.006)
Associations number (in 1945)	0.325	0.180	-0.045
	(3.415)	(0.962)	(0.076)
Agrarian Coop. (in 1945)	0.062	0.041	0.011
	(0.242)	(0.199)	(0.026)
Observations	400	122	522
	Non-Origin	Origin	
PANEL B: Origin municipalities - IDP outflow			
Population	2,247.295	1,814.972	1,003.841
	(4,373.793)	(1,964.356)	(692.982)
Women Share (%)	0.494	0.392	-0.098*
	(0.071)	(0.129)	(0.054)
Illiterate Share (%)	0.699	0.608	-0.119*
	(0.132)	(0.198)	(0.060)
Married Share (%)	0.363	0.278	-0.080***
	(0.062)	(0.097)	(0.029)
Widowed (all) Share (%)	0.077	0.059	-0.020**
	(0.020)	(0.020)	(0.009)
Associations number (in 1945)	0.274	0.083	0.042
	(1.046)	(0.280)	(0.087)
Agrarian Coop. (in 1945)	0.056	0.000	0.000
	(0.232)	(0.000)	(0.000)
Observations	124	36	160

Note: This table shows along which dimensions *host (origin)* and *non-host (non-origin)* municipalities differ. I report coefficient estimates together with 95% confidence intervals from a regression of an indicator variable for a *hosting (origin)* municipality at baseline on socio-economic characteristics in 1940 of the municipality and county fixed effects. Standard errors are clustered at the county level. *** p<0.01, ** p<0.05, * p<0.1

Table 3: **OLS results: Effect of Displaced population flows on Social Participation**

	(1)	(2)	(3)	(4)
VARIABLES	Pres. Turnout	Local Turnout	Associations	Agrarian Coop.
PANEL A: Host municipalities - IDP inflow				
IDP inflow	-0.023***	-0.022**	-0.187	0.198***
	(0.006)	(0.011)	(0.402)	(0.055)
IDP inflow x Full Destroyed	0.023***	0.040***	0.230	-0.351***
	(0.007)	(0.012)	(0.458)	(0.061)
Observations	3,440	2,751	11,360	11,321
R-squared	0.320	0.101	0.321	0.151
Number of counties	80	80	80	80
PANEL B: Origin municipalities - IDP outflow				
IDP outflow	-0.014	-0.037**	0.863***	-0.684***
	(0.012)	(0.018)	(0.332)	(0.094)
IDP outflow x Full Destroyed	0.038***	0.056***	-0.509	0.240**
	(0.011)	(0.019)	(0.337)	(0.093)
Observations	1,140	868	4,258	4,258
R-squared	0.389	0.190	0.364	0.412
Number of counties	57	57	58	58

Note: This table shows the OLS effect of displaced population flows on social participation. Municipalities exposed to displaced population inflow (*IDP inflow*) are the *receiving municipalities*. Municipalities exposed to displaced population outflow (*IDP outflow*) are the *(origin municipalities)*. I regress social participation as "presidential voter turnout" (column (1)), "local voter turnout" (column (2)), "number of associations created" (column (3)) and "number of cooperatives in the agrarian sector ongoing" (column (4)) on an indicator variable for displaced population flow, baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, violence against Republican (against dictatorship), rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4: **IV First Stage Regression: Reservoir area (km^2)**

PANEL A: Host municipalities - IDP inflow		
	(1)	(2)
VARIABLES	IDP inflow	IDP inflow
Reservoir area (m^2)$xDist.Destroyed.Mun.$	-0.022***	-0.040***
	(0.005)	(0.009)
F-statistics	17.76	31.85
Observations	6,229	2,760
R-squared	0.003	0.090
Number of counties	85	37

PANEL B: Origin municipalities - IDP outflow		
	(1)	(2)
VARIABLES	IDP outflow	IDP outflow
Reservoir area (m^2)	0.043***	0.060*
	(0.014)	(0.033)
F-statistics	9.35	104.14
Observations	1,272	648
R-squared	0.035	0.441
Number of counties	51	26

Note: The table reports the first stage of my instrumental variable design. I regress the instrument, reservoir-area (reservoir's extension in meter squared) and an interaction term of reservoir-area to distance to the nearest destroyed municipality, on displaced population flow from 1936 to 1975. Panel A corresponds to displaced population inflow and Panel B to displaced population outflow. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: **Effect of Displaced Population flow on Social Participation**

	Reduced Form	**2SLS**	**Reduced Form**	**2SLS**	**Reduced Form**	**2SLS**	**Reduced Form**	**2SLS**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Pres. Turnout	Pres. Turnout	Local Turnout	Local Turnout	Associations	Associations	Agrarian Coop.	Agrarian Coop.
PANEL A: Host municipalities - IDP inflow								
Reservoir area x Dist	-0.009***		-0.001		-0.119		0.035*	
	(0.002)		(0.003)		(0.123)		(0.021)	
IDP inflow		0.261**		0.012		6.677		0.350
		(0.109)		(0.099)		(7.020)		(1.066)
IDP inflow x Full Destroyed	0.002	-0.220**	0.018	0.007	-0.239	-6.105	-0.019	-0.461
	(0.006)	(0.096)	(0.014)	(0.087)	(0.285)	(6.166)	(0.047)	(0.913)
Observations	1,714	1,795	1,398	1,398	11,700	11,700	6,340	11,244
Number of counties	37	37	37	37	79	79	37	79
Outcome mean in 1976-2015		0.75		0.76		0.86		0.49
PANEL B: Origin municipalities - IDP outflow								
Reservoir area (m^2)	-0.018***		-0.004		-0.065*		-0.133***	
	(0.003)		(0.006)		(0.037)		(0.023)	
IDP outflow		-0.278***		-0.074		-1.394*		-2.611***
		(0.082)		(0.110)		(0.800)		(0.517)
IDP outflow x Full Destroyed	0.059***	0.120***	0.039*	0.063	-0.522***	-0.086	-1.154***	1.064***
	(0.016)	(0.030)	(0.020)	(0.042)	(0.142)	(0.323)	(0.210)	(0.193)
Observations	402	447	336	336	2,480	2,480	1,580	1,580
Number of counties	26	26	26	26	48	48	26	26
Outcome mean in 1976-2015		0.74		0.76		0.89		0.59

Note: This table displays the estimation results for the effect of displaced population flow from 1936-1975 on social participation. Municipalities exposed to displaced population inflow (*IDP inflow*) are the *receiving municipalities*. Municipalities exposed to displaced population outflow (*IDP outflow*) are the *(origin municipalities)*. I use reservoir-area (reservoir's extension in meter squared) and an interaction term of reservoir-area to distance to the nearest (origin municipality as an instrument for displaced population outflow and inflow, respectively, from 1936 to 1975. I regress social participation as "presidential voter turnout" (column (1) and (2)), "local voter turnout" (column (3) and (4)), "number of associations created" (column (5) and (6)) and "number of cooperatives in the agrarian sector ongoing" (column (7) and (8)) on an indicator variable for displaced population flow, baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, violence against Republican (against dictatorship), rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: **Effect of Displaced Population inflow on Social Participation: Distance to Nearest Destroyed Muni.**

	Reduced Form	**2SLS**	**Reduced Form**	**2SLS**	**Reduced Form**	**2SLS**	**Reduced Form**	**2SLS**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Pres. Turnout	Pres. Turnout	Local Turnout	Local Turnout	Associations	Associations	Agrarian Coop.	Agrarian Coop.
Distance to *Destroyed Muni.* (m)	0.000		0.004		0.080		-0.448***	
	(0.004)		(0.007)		(0.161)		(0.031)	
IDP inflow		0.002		-0.042		-0.764		2.126***
		(0.039)		(0.069)		(1.550)		(0.252)
IDP inflow x Full Submerged	0.002	0.006	0.021*	0.055	-0.189	0.425	-0.375***	-1.981***
	(0.006)	(0.034)	(0.012)	(0.062)	(0.307)	(1.390)	(0.053)	(0.220)
First Stage		-0.294***		-0.294***		-0.294***		-0.294***
		(0.010)		(0.010)		(0.010)		(0.010)
F-statistics		1589.15		1589.15		1589.15		1589.15
Observations	1,714	1,795	1,398	1,398	11,700	11,700	6,340	11,244
R-squared	0.372		0.108		0.338		0.209	
Number of counties	37	37	37	37	79	79	37	79
Outcome mean in 1976-2015		0.74		0.76		0.89		0.59

Note: This table displays the estimation results for the effect of displaced population inflow from 1936-1975 on social participation using distance to the nearest *destroyed municipality* as an instrument for displaced population inflow from 1936 to 1975. Municipalities exposed to displaced population inflow (*IDP inflow*) are the *receiving municipalities*. I regress social participation as "presidential voter turnout" (column (1) and (2)), "local voter turnout" (column (3) and (4)), "number of associations created" (column (5) and (6)) and "number of cooperatives in the agrarian sector ongoing" (column (7) and (8)) on an indicator variable for displaced population flow, baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, violence against Republican (against dictatorship), rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: **Heterogeneity in social participation effects**

	(1)	(2)	(3)	(4)
VARIABLES	Pres. Turnout	Local Turnout	Associations	Agrarian Coop.
PANEL A: *Survivors* share below or equal to the mean (30%)				
IDP inflow	0.283**	0.018	6.910	3.077***
	(0.112)	(0.146)	(10.374)	(0.372)
IDP inflow x Full Destroyed	-0.226**	-0.005	-6.097	-2.798***
	(0.093)	(0.124)	(8.722)	(0.313)
Observations	1,057	957	6,667	6,298
Number of counties	34	34	75	75
PANEL B: *Survivors* share above the mean (30%)				
IDP inflow	0.096	-0.056	2.747*	1.190***
	(0.066)	(0.111)	(1.547)	(0.383)
IDP inflow x Full Destroyed	-0.094	0.105	-2.584*	-1.122***
	(0.065)	(0.108)	(1.464)	(0.354)
Observations	738	441	5,033	4,946
Number of counties	37	35	79	79
PANEL C: Treatment during first half of the dictatorship (1936-1954)				
IDP inflow	0.348***	-0.018	7.563	2.963***
	(0.121)	(0.132)	(11.976)	(0.336)
IDP inflow x Full Destroyed	-0.288***	0.044	-7.053	-2.760***
	(0.103)	(0.114)	(10.275)	(0.286)
Observations	1,617	1,264	10,880	10,840
Number of counties	37	37	79	79
PANEL D: Treatment during second half of the dictatorship (1955-1975)				
IDP inflow	-0.529	1.287	-104.756	15.580***
	(0.494)	(1.691)	(151.023)	(2.176)
IDP inflow x Full Destroyed	0.526	-1.269	104.356	-15.551***
	(0.483)	(1.641)	(150.184)	(2.159)
Observations	1,337	1,038	9,540	9,500
Number of counties	32	32	72	72

Note: This table displays the 2SLS estimation results for the effect of displaced population flows on social participation by sub-samples of levels of population share of *survivors* and the moment of the inflows. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, violence against Republican (against dictatorship), rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8: **Mechanism: Social ties movement with IDPs**

VARIABLES	(1) Agrarian Coop.	(2) Agrarian Coop.	(3) Agrarian Coop.	(4) Agrarian Coop.
n= 5			**n= 30**	
IDP outflow	-1.587***	-4.031***	-1.262***	-8.603***
	(0.360)	(1.167)	(0.190)	(1.239)
IDP outfow x Full Destroyed	0.664*	1.851***	0.790***	3.394***
	(0.343)	(0.656)	(0.150)	(0.492)
Observations	2,747	1,653	2,972	1,878
Number of counties	26	24	26	24
n= 10			**n= 35**	
IDP outflow	-1.479***	-5.490***	-1.000***	-5.602***
	(0.271)	(1.099)	(0.167)	(0.802)
IDP outfow x Full Destroyed	0.723***	2.498***	0.689***	2.216***
	(0.244)	(0.547)	(0.136)	(0.318)
Observations	2,792	1,698	3,022	1,928
Number of counties	26	24	26	24
n= 15			**n= 40**	
IDP outflow	-1.415***	-6.410***	-0.934***	-4.794***
	(0.235)	(1.111)	(0.153)	(0.858)
IDP outfow x Full Destroyed	0.748***	2.794***	0.620***	1.896***
	(0.203)	(0.512)	(0.126)	(0.340)
Observations	2,837	1,743	3,082	1,988
Number of counties	26	24	27	25
n= 20			**n= 45**	
IDP outflow	-1.364***	-7.060***	-0.896***	-4.402***
	(0.214)	(1.136)	(0.143)	(0.933)
IDP outfow x Full Destroyed	0.761***	2.954***	0.563***	1.721***
	(0.178)	(0.493)	(0.119)	(0.367)
Observations	2,882	1,788	3,143	2,049
Number of counties	26	24	27	25
n= 25			**n= 50**	
IDP outflow	-1.315***	-7.554***	-0.822***	-4.902***
	(0.200)	(1.162)	(0.135)	(1.087)
IDP outfow x Full Destroyed	0.766***	3.047***	0.486***	1.886***
	(0.162)	(0.481)	(0.111)	(0.421)
Observations	2,927	1,833	3,213	2,119
Number of counties	26	24	27	25

Note: This table displays the OLS (Columns (1) and (3)) and 2SLS (Columns (2) and (4)) estimation results for the effect of internally displaced population outflows on number of agrarian cooperatives restricting the sample to n years after displacement (n goes from 5 to 50 years and year of displacement goes from 1946 to 1967. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, violence against Republican (against dictatorship), rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendices

A Data appendix

A.1 Database construction

This section describes in further details the construction of my newly collected database.

A.1.1 Displacement data

I gather information on villages fully or partially destroyed by reservoirs' buildings in the Ebro's river catchment area. This information comes from qualitative information in text or excel format from regional and national organizations (The Commission of Population Affected by Large Reservoirs-COAGRET, Ecologist in Action and Desplazados.org), local and regional institutions (Ayuntamiento de Mansilla de la Sierra, Agencia Catalana del Agua, Ayuntamiento de Mequinenza, Pajares de Cameros website, Turismo Zaragoza), civil society groups (Fundación Cerezales, Calatayud.org, Janovas.org), community associations created after a village disruption by a reservoir (Asociación Río Aragón contra el recrecimiento del embalse de Yesa, Colectivo 7 Villas del Alto Najerilla, Despoblados Huesca website, Caminos de Barbastro website, Geografía Infinita, among others) and digitized old local newspapers (El Periódico de Aragón, El diario.es, El País, ABC Aragón, La Vanguardia Lleida, El Correo, Vive Campoo).

I conduct a search process at reservoir level to identify if its construction led to the destruction of one or more villages. And if so, I identify the villages affected. I am also able to identify the municipalities expropriated due to reforestation targets. [24]

I include as follow a description of the main variables designed:

Displacement Year. I benefit from estimated expropriation years at reservoir level to proxy the year of displacement. The identification of an accurate year of displacement is very unlikely and almost impossible. In other words, finding out the precise year when the population affected moved away is not always possible. First, because the population was displaced in a staggered

[24]During the Spanish dictatorship, riverine plots, located on the reservoir bank, were expropriated to reduce erosion through a reforestation process (Daumas.M 1976)

way. Second, because the year of displacement is not documented for every case. Therefore, I proxy the year of displacement to the expropriation year, when the data are available. Capturing the expropriation year is not a straight forward process. Legally speaking, an expropriation process (with the owners names and expropriation year) should be published on the Gazette. Nonetheless, we can not forget that from 1936 to 1975 Spain lived an authoritarian regime. So, very few processes were published. In line with these facts, I am able to identify on the Gazette the expropriation announcement year for only a 58% of cases (11 over 19 reservoirs generating displacement). Thus, when the expropriation year is non available, I calculate and assign them the average number of years between the expropriation and construction. Nine years are the average years lag from the expropriation announcement year to the last year of construction (given the availability of this features). I apply this average to estimate the year of displacement .i.e displacement year is estimated as reservoir's construction final year discounted nine years.

Estimated Population displaced. I estimate the population displaced exploiting the displacement year and 1900-2010 Spanish Population Census data. Namely, I use the population data before and after year of displacement to estimate the population displaced or IDPs. This paper differentiates three excluding scenarios. First, when a town is fully submerged and destroyed by a reservoir. In this case, the estimated IDPs are the population from the existent census before the estimated displacement year. Second, when a village is partially flooded and destroyed. In this scenario, the estimated population displaced is calculated as the variation between the population in the census before the estimated displacement year and the population recorded on the next census (10 years later). For instance, if the year of construction is 1971, the estimated year of displacement is 1962 (equal to 1971-9). So the estimated IDPs is the variation between the population in 1960 Census (existent census before the estimated displacement year, 1962) and the population in 1970 Census (the next census). Third, reconstruction of a village destroyed by a reservoir outside the affected area. In this case, similar method to the second scenario is applied to estimate the population displaced. In those municipalities identified as fully affected by the reforestation induced by a reservoir construction, similar calculation is applied to estimate total IDPs. Anticipation can not be excluded since people could anticipate the displacement some years before the expropriation year. Thus, I believe that my estimates are sub-estimated.

Severity of damage. I am able to identify which municipalities were fully and partially destroyed by the construction of a reservoir.

Actions implemented. Furthermore, my data allow me to identify which sort of measures were implemented ones the village was fully or partially destroyed. Some of the actions implemented were: new village reconstruction, partial reconstruction of the village, not fully destroyed but neglected, the reservoir was never built but village entirely expropriated, not fully destroyed but fully expropriated, village deserted but repopulated decades after.

Modern geo-referenced locations. I compute the exact location of municipalities displaced boundaries by matching displaced villages with modern geo-referenced locations.

A.1.2 Associations and Cooperative data

I also gather historical and contemporary data on total number of associations and cooperatives from 1945 to 2018 with information at municipal and yearly level. It includes registration year, name, address, expiration year and sector. This information comes from the Regional Registry of Associations (Registro Autonómico de Asociaciones) and Regional Registry of Cooperatives (Registro Autonómico de Cooperativas) of Aragón, Navarra, Cantabria, Cataluña, País Vasco, Castilla y León, La Rioja y Castilla la Mancha.

Associations are defined as non-profit entities that are constituted by agreement of three or more legally constituted natural or legal persons, who undertake to share knowledge, means and activities to achieve lawful purposes of general or particular interest. There are specific sort of associations that are registered on specific registries. For instance, political parties; unions; Business organizations; churches, denominations and religious communities; sports associations; consumer and user associations; and professional associations of members of the Armed Forces, the Civil Guard and magistrates, judges and prosecutors. This to say, that my data don't include the associations above mentioned. Source: Guía de Asociaciones. Subdirección General de Asociaciones, Archivos y Documentación. Ministerio del Interior.

A **Cooperative** is a society made up of people who join, under a free membership regime and voluntary withdrawal, to carry out business activities, aimed at satisfying their economic and social needs and aspirations, with a democratic structure and functioning.

A.1.3 1940 Census data

To conduct this project I digitized 1940 Spanish Population Census from the Spanish National Statistics Office. Figure A.1 shows a page image of the 1940 Spanish Population Census. Population data are broken down by gender, civil status and education (illiterate rate).

Figure A.1: 1940 Spanish Population Census printed

Censo de población de 1940 (Hecho)

Clasificación por municipios

Provincia de Huesca

	MUNICIPIOS	VARONES				Alfabetos	Alfabetas	MUJERES			
		Total	S	C	V			V	C	S	Total
1	Abay	269	194	63	12	217	153	27	61	139	227
2	Abena	126	90	25	11	106	67	9	27	62	98
3	Abiego	276	150	106	20	193	212	46	122	134	302
4	Abizanda	193	108	72	13	141	118	15	72	91	178
5	Acín	113	76	28	9	103	70	17	33	53	103
6	Acumuer	169	111	48	10	141	100	24	48	86	158
7	Adahuesca	219	128	84	7	170	156	27	91	119	237
8	Aguas	121	71	43	7	95	81	24	45	55	124
9	Agüero	407	227	152	28	273	244	56	172	201	429
10	Aguinalíu	114	68	38	8	83	49	11	41	35	87
11	Aínsa	240	147	81	12	196	185	18	86	121	225
12	Aísa	134	77	51	6	111	65	19	51	55	125
13	Albalate de Cinca	614	346	227	41	426	440	71	237	301	609
14	Albalatillo	253	135	111	7	174	176	23	114	138	275
15	Albelda	621	300	288	33	498	517	81	320	279	680
16	Albella y Jánovas	439	259	151	29	358	267	45	151	196	392
17	Albero Alto	112	67	34	11	95	93	15	38	80	133
18	Albero Bajo	115	65	44	6	84	63	11	43	56	110
19	Alberuela de la Liena	120	72	39	9	89	71	18	43	59	120
20	Alberuela de Tubo	102	56	39	7	79	87	19	44	61	124
21	Alcalá de Gurrea	757	467	254	36	605	573	70	254	414	738
22	Alcalá del Obispo	162	94	62	6	119	106	33	69	79	181
23	Alcampel	990	466	472	52	737	678	123	487	411	1 021
24	Alcolea de Cinca	876	472	353	51	588	577	119	373	402	894
25	Alcubierre	549	296	228	25	444	431	67	240	283	590
26	Alerre	93	63	27	3	67	61	12	28	43	83
27	Alfántega	110	66	39	5	86	63	18	42	40	100
28	Alíns del Monte	40	21	16	3	25	27	1	19	26	46
29	Almudébar	1.558	938	563	57	1.055	970	176	568	738	1 482
30	Almunia de San Juan (La)	535	264	246	25	373	349	69	258	247	574
31	Almuniente	251	144	94	13	180	168	19	104	129	252
32	Alquézar	268	139	111	18	195	150	28	112	102	242
33	Altorricón	572	351	200	21	406	409	45	212	321	578
34	Angües	339	189	135	15	245	259	47	139	177	363
35	Aniés	238	130	89	19	165	123	20	92	124	236
36	Ansó	410	253	132	25	311	424	55	191	301	547
37	Antillón	168	89	68	11	128	141	25	76	97	198
38	Anzánigo	173	102	61	10	140	102	12	58	76	146
39	Apiés	205	131	64	10	150	141	38	60	98	196
40	Aquilué	133	86	44	3	112	68	11	39	55	105

— 3 —

Note: This image presents an example of one page of the Spanish 1940 Population Census. Population data are breaks down by gender, civil status and education (illiterate rate). 18 provinces have been digitized in total for this paper (Alava, Barcelona, Burgos, Cantabria, Castellón, Girona, Guadalajara, Guipuzcoa, Huesca, Lleida, Navarra, Palencia, La Rioja, Soria, Tarragona, Teruel, Vizcaya y Zaragoza. Source: Spanish National Institute of Statistics.

A.2 Summary statistics

Table A.1: **Descriptive Statistics**

	mean	sd	min	max	count
Displacement Charac.					
Year Lag	2.30	10.27	0.00	78.00	8,185.00
Full Submerged	0.03	0.18	0.00	1.00	8,185.00
Displaced Population	28.56	215.80	-773.00	3648.00	8185.00
Pre-treatment Charac.					
Population (in 1940)	2048.99	9943.60	66.00	238695	8100.00
Women Share (%) (in 1940)	0.48	0.09	0.00	0.94	7668.00
Illiterate Share (%) (in 1940)	0.69	0.14	0.00	1.00	7668.00
Married Share (%) (in 1940)	0.35	0.08	0.00	0.58	7668.00
Widowed (all) Share (%) (in 1940)	0.08	0.02	0.00	0.18	7668.00
Widowed (male) Share (%) (in 1940)	0.05	0.02	0.01	0.14	7632.00
Widowed (female) Share (%) (in 1940)	0.11	0.03	0.03	0.24	7632.00
Geographic Charac.					
Average annual rainfall (1931-1932)	538.72	268.06	60.00	2493.75	8065.00
Average annual temperature (1931-1932)	100.00	28.66	-13.50	167.62	4093.00
Altitude	584.84	282.65	26.00	1432.00	7345.00
Average annual river flow (1966-1975)	200.85	443.47	0.09	2240.90	1560.00
Reservoirs Number	1.36	1.24	0.00	5.00	8185.00
Social participation outcomes					
Pres. Turnout (1977-2015)	0.75	0.09	0.28	1.00	7629.00
Local Turnout (1977-2015)	0.76	0.11	0.00	1.00	4961.00
Associations created (1976-2015)	0.63	5.31	0.00	211.00	50468.00
Agrarian Cooperative (1976-2015) number	0.36	0.87	0.00	12.00	50468.00
Socio-demographic Charac.					
Women Share (%)	0.47	0.04	0.00	0.71	7860.00
Terciary Education Share (%)	0.07	0.06	0.00	0.35	7860.00
Aging Share (%)	0.48	0.25	0.00	0.96	7860.00
Foreigner Share (%)	0.06	0.08	0.00	0.62	5598.00
N	8185				

Notes: This table reports descriptive statistics for the main variables considered in the analysis and for municipality characteristics. The analysis covers 682 municipalities. Crime rates are defined as crimes per 1,000 people and clearance rates as total number of crimes cleared by arrest or exceptional means over total number of crimes. Municipality characteristics are from 1991 and 2011 Spanish Population Census.

B Complementary analysis appendix

Table A.2: **Effect of Displaced Population inflow on Social Participation (1945-1975)**

VARIABLES	(1) Agrarian Coop.	(2) Associations
IDP inflow	1.424***	5.213
	(0.217)	(6.512)
IDP inflow x Full Destroyed	-1.190***	-4.624
	(0.171)	(5.156)
Observations	4,969	5,000
Number of counties	63	63

Note: This table displays the 2SLS estimation results for the effect of displaced population inflow from 1936-1975 on social participation (1945-1975). Municipalities exposed to displaced population inflow (*IDP inflow*) are the *receiving municipalities*. I use an interaction term of reservoir-area of the nearest destroyed municipality to its distance and distance to the nearest destroyed municipality (for existent agrarian cooperatives) as an instrument for displaced population inflows. I regress social participation as "number of cooperatives in the agrarian sector ongoing" (column (1)) and "number of associations created" (column (2)) on an indicator variable for displaced population inflow, baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, violence against Republican (against dictatorship), rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.3: **Falsification test: Number agrarian cooperatives (1945-1949)**

	OLS	**2SLS**	**OLS**	**2SLS**
	(1)	(2)	(3)	(4)
VARIABLES	Agrarian Coop.	Agrarian Coop.	Agrarian Coop.	Agrarian Coop.
PANEL A: Host municipalities - IDP inflow				
IDP inflow			-0.005	-0.066
			(0.020)	(0.258)
IDP inflow x Full Destroyed			0.011	0.067
			(0.027)	(0.235)
PANEL B: Origin municipalities - IDP outflow				
IDP outflow	-0.010	0.434		
	(0.036)	(0.461)		
IDP outflow x Full Destroyed	0.024	-0.509		
	(0.051)	(0.449)		
Observations	580	205	2,025	2,010
R-squared	0.066		0.060	
Number of counties	54	21	76	75

Note: In this table, I perform a falsification test: the dependent variable is number of cooperatives in the agrarian sector before treatment. I number of cooperatives in the agrarian sector on an indicator variable for displaced population flow (inflow and outflow), yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, violence against Republican (against dictatorship), rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.4: **Effect of violence during the dictatorship (1936-1975) on social participation (1976-2018)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Pres. Turnout	Pres. Turnout	Local Turnout	Local Turnout	Associations	Associations	Agrarian Coop.	Agrarian Coop.
PANEL A: Host municipalities - IDP inflow sample								
Victims number buried	-0.000*		-0.000***		0.034***		0.001***	
	(0.000)		(0.000)		(0.000)		(0.000)	
Pro-Republican victims number buried		0.010		0.023***		-0.113		-0.001
		(0.007)		(0.006)		(0.212)		(0.028)
Observations	1,458	3,518	1,125	2,813	5,432	13,284	5,432	13,284
R-squared	0.434	0.348	0.214	0.103	0.690	0.304	0.260	0.144
Number of counties	54	84	54	84	54	84	54	84
PANEL B: Origin municipalities - IDP outflow sample								
Victims number buried	-0.000***		-0.000***		0.017***		0.006***	
	(0.000)		(0.000)		(0.001)		(0.000)	
Pro-Republican victims number buried		0.005		0.020*		0.148		-0.047
		(0.010)		(0.011)		(0.222)		(0.055)
Observations	508	1,140	377	868	1,879	4,258	1,879	4,258
R-squared	0.599	0.387	0.395	0.181	0.516	0.179	0.585	0.394
Number of counties	35	57	35	57	35	58	35	58

Note: This table shows a robustness check. It presents the OLS effect of violence during the dictatorship (1936-1975) on social participation. I regress social participation as "presidential voter turnout" (column (1)), "local voter turnout" (column (2)), "number of associations created" (column (3)) and "number of cooperatives in the agrarian sector ongoing" (column (4)) on two indicator variable for violence (number of victims buried in a mass grave and number of victims buried in a mass grave affiliated to the Republican party), baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, altitude, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.5: **Effect of 50's depopulation on social participation (1976-2018)**

VARIABLES	(1) Pres. Turnout	(2) Local Turnout	(3) Associations	(4) Agrarian Coop.
Depopulation 1950	0.002	-0.007	0.717	0.183
	(0.006)	(0.008)	(0.445)	(0.141)
Observations	1,140	868	4,258	4,258
Number of counties	57	57	58	58

Note: This table shows a robustness check. It presents the OLS effect of the 50's depopulation on social participation. I regress social participation as "presidential voter turnout" (column (1)) "local voter turnout" (column (2)), "number of associations created" (column (3)) and "number of cooperatives in the agrarian sector ongoing" (column (4)) on the population growth from 1960 to 1950 population census, baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, share female in 1940, share illiterate in 1940, share single in 1940, altitude, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.6: **Effect of IDP flows during the democracy (1976-2018) on social participation (1976-2015)**

	OLS	**2SLS**	**OLS**	**2SLS**	**OLS**	**2SLS**	**OLS**	**2SLS**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Pres. Turnout	Pres. Turnout	Local Turnout	Local Turnout	Associations	Associations	Agrarian Coop.	Agrarian Coop.
PANEL A: Host municipalities - IDP inflow at the Democracy								
IDP inflow	0.013*	-1.692	-0.015	-6.079	0.499	-32.201	0.100	-16.344**
	(0.007)	(2.638)	(0.018)	(5.656)	(0.318)	(42.039)	(0.078)	(7.967)
Observations	3,623	1,325	2,893	1,037	11,959	9,120	11,959	8,794
R-squared	0.304		0.084		0.321		0.141	
Number of counties	80	31	80	31	80	70	80	70
PANEL B: Origin municipalities - IDP outflow at the Democracy								
IDP outflow	0.117***	-0.038	0.164***	0.269**	0.081	-1.488	0.327	1.273***
	(0.022)	(0.055)	(0.042)	(0.123)	(1.176)	(1.390)	(0.472)	(0.407)
Observations	398	243	366	225	3,107	1,734	3,107	1,101
R-squared	0.466		0.251		0.235		0.401	
Number of counties	25	21	25	21	54	39	54	22

Note: This table show a robustness check. This table displays the estimation results for the effect of displaced population flow after the dictatorship (1976-2015) on social participation. Municipalities exposed to displaced population inflow (*IDP inflow*) are the *receiving municipalities*. Municipalities exposed to displaced population outflow (*IDP outflow*) are the *(origin municipalities)*. I use reservoir-area (reservoir's extension in meter squared) and an interaction term of reservoir-area to distance to the nearest origin municipality as an instrument for displaced population outflow and inflow, respectively, from 1975 to 2015. I regress social participation as "presidential voter turnout" (column (1) and (2)), "local voter turnout" (column (3) and (4)), "number of associations created" (column (5) and (6)) and "number of cooperatives in the agrarian sector ongoing" (column (7) and (8)) on an indicator variable for displaced population flow, baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A.7: **Robustness checks to IDP inflow Treatment Definition**

	(1)	(2)	(3)	(4)
VARIABLES	Pres. Turnout	Local Turnout	Associations	Agrarian Coop.
PANEL A: Baseline definition of Host municipalities - IDP inflow				
IDP inflow	-0.023***	-0.022**	-0.187	0.198***
	(0.006)	(0.011)	(0.402)	(0.055)
Observations	3,440	2,751	11,360	11,321
R-squared	0.320	0.101	0.321	0.151
Number of counties	80	80	80	80
PANEL B: Extensive definition of Host municipalities - IDP inflow				
IDP inflow	-0.006	0.009	-0.177	0.212
	(0.006)	(0.012)	(0.382)	(0.172)
Observations	4,396	3,546	14,498	14,459
R-squared	0.300	0.094	0.315	0.140
Number of counties	82	82	83	83
PANEL C: Non-adjacent definition of Host municipalities - IDP inflow				
IDP inflow	-0.006	0.007	-0.113	0.281
	(0.006)	(0.011)	(0.356)	(0.188)
Observations	3,633	2,926	11,973	11,934
R-squared	0.310	0.088	0.297	0.152
Number of counties	80	80	81	81

Note: This table show a robustness check. This table displays the OLS estimation results for the effect of displaced population inflow during the dictatorship (1976-2015) on social participation for different definitions of *receiving* municipalities. Municipalities exposed to displaced population inflow (*IDP inflow*) are the *receiving municipalities*. I regress social participation as "presidential voter turnout" (column (1) and (2)), "local voter turnout" (column (3) and (4)), "number of associations created" (column (5) and (6)) and "number of cooperatives in the agrarian sector ongoing" (column (7) and (8)) on an indicator variable for displaced population flow, baseline and yearly municipality characteristics, county fixed effects and province-year interactions fixed effects. The characteristics included are total population, rainfall deviation, temperature deviation, share female, share tertiary education, share aging population, share foreigner, education. Standard errors are clustered at the county level. The dataset is at the municipality by year level. Treatment is defined at the yearly level. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1