Persistent Specialization and Growth: The Italian Land Reform*

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Abstract

How does redistribution of property affect sectoral composition and growth? We study the effects that a 1950s national land reform had on the economic structure and development in Italy. Using novel data on the expropriations, we implement a difference-in-differences model, and find that areas with more redistribution remained more agricultural, with fewer workers joining the manufacturing sector over the following decades. Our results suggest that intergenerational occupational transmission plays an important role in the persistence of employment in the agricultural sector. Using a matching estimator, we also provide evidence of a negative effect in the long-run: reformed municipalities are associated with significantly lower income growth in the period 1970-2000.

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1 Introduction

The structure of property affects economic outcome through bargaining (Hart and Holmström, 1987), consumption patterns (Matsuyama, 1992), investment choices (Goldstein and Udry, 2008), and other channels. In the agricultural sector, redistribution policies are often meant by governments as a tool to improve economic productivity and to gain popular consensus. These goals are typically short-run in nature, and many studies have analyzed the consequences of reforms in the first years after their implementation (De Janvry et al., 2015, Montero, 2020, Besley and Burgess, 2000). Research studying long-run effects of changes in land ownership structure often focuses on outcomes in the agricultural sector (Besley et al., 2016), so that knowledge about effects on overall development in affected areas is still limited.

This paper studies the short- and long-run impact on local economic structures and growth of a large-scale land redistribution reform. In the 1950s, the Italian government, implemented a reform based on land redistribution and improvement with three main objectives: (i) redistributing wealth, (ii) increasing agricultural efficiency, and (iii) gaining political consensus.

We exploit a unique dataset based on newly digitized data on expropriation at the municipal level, as well as on pre- and post-reform socioeconomic variables, to show the effects on sectoral composition of employment. To identify the causal impact of the reform on the structural transformation, we implement a difference-in-differences model, tracking the share of individuals employed in agriculture and in manufacturing at the municipal level through several census waves. Areas with higher incidence of redistribution experienced a sizable and significant increase in the share of workers employed in agriculture; correspondingly, the share of workers employed in the manufacturing sector decreased. The effects of the reform are sizable and persist for four decades following the implementation of the reform: 40 years after the reform, the share of agricultural workers in treated areas is 16% on average, 45% higher than the corresponding share in control areas. These results are not sensitive to an array of robustness exercises, addressing potential issues coming from sample and specification choices. In particular, we find that the identified relationship between expropriations and agricultural specialization holds when focusing only on treated municipalities.

What mechanism can explain these long-term patterns? We first test the effects on educational attainments, a channel highlighted by the previous literature. While some studies suggest positive effects (Galor et al., 2009), others find negative ones (Albertus et al., 2020), we do not find important effects on education, consistent with a context where education is publicly provided and easily accessed by the population.

Instead, we attribute the persistent effects on the sectorial composition to an increased intergenerational transmission of occupation. Children of agricultural workers become more likely to be agricultural workers themselves when their parents own the land they work. The land reform increased the number of landowners and affected occupational choices of their descendants. We provide evidence of the effects of property on occupational choices of children by exploiting Italian survey data. Lack of agglomeration in urban centers is an additional factor that might have hindered the development of the industrial sector (Martin and Ottaviano, 2001): we identify an adverse impact of the land reform on population density and urban agglomeration.

Finally, we ask whether the reform led to higher or lower growth, as agricultural specialization has ambiguous implications for average income in a municipality. To answer this question we contribute a new measure of income growth at the municipality level for the period 1970-2000 and use it to estimate the impact on long-run growth. Matching treated and control municipalities based on their pre-treatment land inequality, geography, and land fertility, we show that municipalities affected by land redistribution experienced lower long-run growth. We find 20p.p. lower growth between 1970 and 2000 in treated areas, compared to a 183% baseline in the relevant sample. Linear specifications and propensity score methods confirm this finding.

The paper contributes to several strands of literature. First, our paper contributes to the empirical literature on structural change and economic growth (see Bustos et al., 2016 and Bustos et al., 2020 for recent examples). We leverage a specific historical event that represented a labor-increasing shock to productivity and show that it increased participation to agriculture. We also provide long-run estimates, showing remarkable persistence, and provide suggestive evidence of the mechanisms driving it. Similar to Mattheis and Raz (2021), our findings suggest the the land redistribution policy implemented in Italy generated distortions that had persistent impacts on the industrial structure.

Second, it speaks to the large body of evidence documenting the effects of land reforms. Historically, land reforms have included policies focused on different aspects, such as redistribution (Albertus et al. (2020)), land titling formalization (De Janvry et al. (2015)), or changes in the organization of production (Montero (2020)). Importantly, reforms vary in the thoroughness of implementation (see the case of India in Besley et al., 2016). We analyze a reform that was focused on land redistribution, and that according to historical accounts was carefully implemented. Our paper is among the first to estimate long-run effects of a reform with such characteristics.

Finally, we speak to a growing literature on agricultural policies in Italian history (Marciani, 1966, King, 1973, and Caprettini et al., 2021 on the land reform; Carillo, 2021 on Mussolini's Battle of Grain). We use previously unavailable data to provide evidence of effects beyond political gain from the reform, offer precise causal estimates of the effects on the sectoral composition and economic development of reformed areas.

The remainder of the paper is organized as follows. Section 2 reviews the historical background, describing the socioeconomic context before the land reform, its characteristics, and the consequences documented in historical accounts. Section 3 illustrates our data and provides descriptive statistics. Section 4 presents our empirical strategy. Section 5 displays our main results on sectoral specialization and the related robustness checks. Section 6 investigates the channels through which the reform operated, and provides evidence of the long-run effects of the reform on economic development. Section 7 concludes the paper. The Appendix contains additional figures, tables and robustness checks.

2 Historical Framework

2.1 The Reform

After the end of WWII, poor agricultural workers were living in dire straits, especially in the rural areas of southern Italy where a feudal regime was essentially still in place. At the end of the 1940s, rural workers started striking and occupying plots of uncultivated land, especially in the South of Italy. Grievances were linked to the inaction and exploitation of

absentee landowners.[1] The occupations naturally led to repression by the police, which in several instances ended in blood.[2]

To avoid an even bloodier escalation of social unrest, the Christian Democrats (i.e. the ruling party since the 1948 elections) decided on a redistributive plan and enacted a law that defined the areas where expropriations of the largest landowners could be carried out. The law n.841, called *legge stralcio*[3], was approved in October 1950 (Bagnulo, 1976). The main declared goal of the land reform was to reduce land inequality with an eye for productivity improvement.[4] An additional implicit objective of the reform was to contrast the rhetoric of the Italian Communist party, which led and fomented many of the revolts and land occupations.

The reform had a wide coverage, eight and a half million hectares were potentially interested: approximately one third of the total national territory.[5] Only a part of that land was expropriated, for a total of about 700.000 hectares. Two measures prevented landowners from eluding expropriation or taking advantage of them. First, decisions were based on the land distribution as of 1949, which prevented splitting of ownership within families or fake transfers of land; second, the value of the compensation was calculated using the tax returns of 1947 (Bandini, 1952). Expropriated landowners were compensated with 25-years fixed-rate government bonds at an average rate of 77.000 lire per hectare, approximately one third of the market value according to Marciani (1966). To avoid a rapid restoration of the pre-reform status quo, expropriated landlords were imposed a ban on the purchase of new lands for 6 years after the expropriation.

Farmers who were assigned a plot could purchase it through advantageous long-term loans consisting of 30 annuities (later relaxed to allow for early repayment). Plots were of different sizes: the smaller ones were called *quota* and meant to supplement an already exist-

[1] Martinelli (2014) suggests that large landowners enjoyed sizable market power over workers.

[2] The most notable case is probably the one of Melissa in 1949, which culminated with the killing of three occupants (Ginsborg, 2003). Albeit northern Italy was less afflicted by poverty than the South, peasants' struggles were common: a strike organized by the landless workers from the river Po delta in 1948 was repressed by the police and one laborer died in the fights.

[3] *Legge stralcio* translated to "excerpt of law", alluded to the fact that more would be done to address the social and distributional issues of the affected areas.

[4] This was also reflected by the expropriation rule (see Figure A1 in the Appendix) that combined measures of inequality with measures of productivity for determining the amount of land that would be expropriated of each landowner. The rule didn't apply to the area of Sila in Calabria where the expropriations had been already ordered with a previous law that focused on "unimproved" arable land.

[5] Figure A2 in the Appendix shows the areas that were affected by the reform.

ing household income; larger plots were called *podere* and meant to constitute independent farms.[6] To alleviate the potential concern that the reduction in the scale of operations following the expropriations would impair the investment ability and productivity of the new business units, assignees were required to affiliate to cooperatives (Bandini, 1952). Such cooperatives would make the high-cost investments in equipment and infrastructure to enable the processing and commercialization of the agricultural products. Approximately 120.000 families received a part of the 700.000 expropriated hectares.

The role of the state was not limited only to land expropriation and re-assignment, the *Enti di riforma* (i.e. the institutions entitled to implement the reform at local level) were also in charge of the improvement of the expropriated land. Figure A3 in the Appendix shows that more than 50% of the implementation expenditure of the reform was devoted to investment in land reclamation and productivity improvement.

2.2 A Short-Term Assessment

The Italian land reform of the 1950s attracted considerable attention in the aftermath of its implementation. Prinzi (1956) and Rossi-Doria (1958) analyze the implementation of the reform and its short-term effects. King (1973) and Angeli and INSOR (1979) provide an overall assessment of the success of the reform in attaining its main goals twenty years after the law was signed. According to Angeli and INSOR (1979), about 83% of the original 120,000 firms were still operating in 1974. About 80,000 plots were still cultivated by the original assignees or by their descendants. Rural workers grew their possessions: an additional 170,000 hectares of land not affected by the reform were cultivated in 1974.

As opposed to the mechanic effects on land distribution, the effects on productivity are ambiguous due to the countervailing effects of land improvement, agency realignment, and the reduction of scale. However, the available evidence suggests that the reform brought significant improvements to the affected areas. Table 1 from King (1973) shows that productivity growth in the reformed areas was higher than the national average between 1953 and 1963. This was likely due to the change in ownership structure and to land investments.

[6]The assignment procedure was not consistent across all areas covered by the reform. Several scholars, like Ginsborg (2003) and King (1973), remarked that political ideology played a role and that applicants with known communist sympathies were penalized. Caprettini et al. (2021) argues that this was less prevalent in the Center and North of Italy.

However, the economic situation of the different treated areas remained very heterogeneous. For example, Campania started with productivity levels similar to the national average and grew to much higher productivity, while Sardinia, starting from extremely low levels, only reached one third of the national average in 1963.

Table 1: Gross Saleable Production per Hectare

Year	Po Delta	Maremma	Fucino	Campania	A-L-M	Calabria	Sardinia	Total	Average (Italy)
1953	189	83	345	156	66	57	10	71	134
1954	182	81	275	133	55	60	15	73	129
1955	245	92	288	216	61	65	18	86	136
1956	226	97	292	242	63	80	20	90	133
I957	195	87	287	284	78	86	33	94	136
1958	247	110	379	280	89	98	48	114	151
1959	266	114	362	308	113	95	53	124	156
1960	246	107	375	330	92	98	56	116	151
1961	264	115	381	315	124	118	55	132	164
1962	265	135	414	411	138	129	59	148	165
1963	293	123	370	554	146	135	56	153	161
% yearly growth	**4**	**4.9**	**3.2**	**13.4**	**11.5**	**9.5**	**19.9**	**8.5**	**2.6**

Notes. Gross saleable production per ha. on assigned reformed lands (figures in '000 lire, constant prices). *Source*: King (1973).

3 Data

To assess the impact of the Italian land reform on economic development and its effects on the structure of the local economies, we build a novel dataset that combines information on all recorded episodes of expropriation with a wide set of historical information on Italian municipalities. In particular, the dataset combines publicly available information, mainly from decennial censuses, with newly digitized data on the land reform and land distribution.[7]

Expropriation data. Our novel dataset includes each single land expropriation realized following the 1950 *legge stralcio* extracting first name (of the beneficiary), last name (of the beneficiary), municipality and size of the expropriation from the original expropriation documents.[8]

These documents were originally published in the "Gazzetta Ufficiale", the official law gazzette of Italy, between 1950 and 1953. Prinzi (1956) was the first to list the municipalities within the reform areas that underwent land expropriations. We are the first to systemati-

[7]The descriptive statistics are reported in Table A1 in Appendix B

[8]For an example of the original source, see Appendix C.

cally collect and use precise information about the intensity of expropriation in all the regions affected by the 1950 *legge stralcio*.

Our main measure of expropriation for the municipality is built by aggregating the expropriation data at the municipality level (i.e. the sum of total expropriated lands in each municipality) and dividing it by the total area of the municipality in 1951. This measure, called *Percent expropriation*, is expressed in percentage points and constitutes our main treatment variable. We also build a dummy variable and we use if for the analysis of the extensive margin of expropriation.

Table 2 reports descriptive statistics of the expropriation data for each treated region.[9]

Table 2: Expropriation data statistic

Region	**Number of municipalities**	**Number of expropriations**	**Expropriated area (hectares)** Total	Average
Main sample regions				
EMILIA-ROMAGNA	13 (44)	200	36,339.38	2,795.34
LAZIO	40 (180)	341	68,647.16	1,716.18
TOSCANA	38 (123)	540	127,102.97	3,344.81
VENETO	9 (93)	71	9,490.20	1,054.47
Other regions				
ABRUZZO	8 (108)	18	19,331.85	2,416.48
BASILICATA	45 (131)	353	64,000.12	1,422.22
CALABRIA*	81 (262)	279	43,795.82	-
CAMPANIA	18 (262)	132	9,046.44	502.58
MOLISE	12 (84)	55	5,416.46	451.37
PUGLIA	60 (258)	1,107	129,158.08	2,152.63
SARDEGNA	113 (377)	240	45,554.93	403.14
Total	**437**	**3,336**	**557,883.41**	**-**

Notes: Values in parenthesis report the overall number of municipalities in the treated provinces (i.e. provinces with at least one expropriation in their territory).

Figure 1 displays the intensity of treatment in the provinces that had at least one expropriation in their territory (we will refer to these provinces as "treated"), i.e. the percentage of land that was expropriated because of the land reform in each municipality.

[9]Sicily was subject to a land reform but is not included in our data. Because of its special statute, Sicily has its own legislative organ that wrote the laws for the land reform and the subsequent expropriations. These laws are not available. Data for Reggio Calabria is not consistent with the rest of the data. The reason is that the province had an earlier expropriation based on the law n.230 of 1950 that was based on slightly different expropriation principles. As a consequence, the expropriation acts follow a different structure and we can observe the names of the expropriated landlord and the municipality of the expropriation, but we cannot compute the total amount of expropriated land. We thus capture about 560,000 hectares of expropriations out of the total amount of expropriated land (about 700,000 according to historical records).

Land distribution data. We also collect novel data about the land distribution in Italy in 1948, by digitizing Table 1 of the study by Medici (1948).

Giuseppe Medici, on behalf of INEA, the Italian Institute for Agricultural Economics, undertook the impressive task of measuring land distribution in each Italian municipality. While the size of a land plot was not a direct factor in determining the amount of land that would be expropriated, the reform areas were chosen on the basis of their significantly unequal distribution.

Socioeconomic and political variables. We rely on a wide set of socioeconomic indicators from decennial censuses in our analysis such as sectorial employment, resident population, share of high school graduates. Specifically, we use the municipality level data from the Italian national censuses 1936-2001 collected by ISTAT (Italian Institute of National Statistics). We also digitize data on municipal level income per capita in 1970 from the Historical Archive of Banco di Roma. We combine this measure with the same variable elaborated in 2000 by the Ministry of Economics and Finance to produce a measure of economic growth between 1970 and 2000.[10]

We calculate average land suitability for each municipality based on the land suitability index measured by FAO with the GAEZ project. We also use data from the decennial Italian agrarian censuses of 1990 and 2000 collected by ISTAT to measure inequality of land distribution.

Finally, we complete our dataset with electoral data collected by the Ministry of Interior on the national elections from 1946 to 1987.

4 Empirical strategy

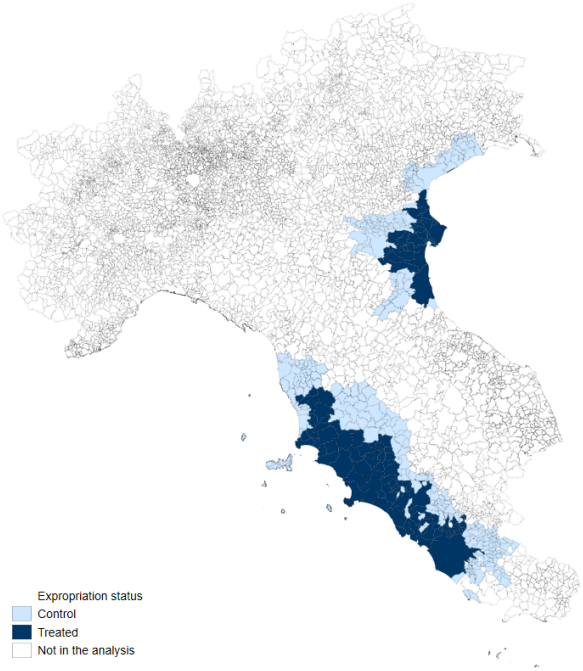
The panel structure of the data allows us to follow the two groups (treated and untreated municipalities) over time and estimate a difference in differences model under the assumption of parallel trends with a model of the type:

$$y_{it} = \gamma_t + \delta_i + \alpha_{36} \times d_{36} \times E_i + \sum_{\tau \in \mathcal{T}^{post}} \alpha_\tau \times d_\tau \times E_i + \varepsilon_{it} \tag{1}$$

[10] More details on the construction and the sources of these variables are reported in the Appendix C

where y_{it} is the economic outcome (e.g. agricultural employment) in municipality i in the decade t; E_i represents either a treatment dummy or the percentage of expropriated lands; d_t are time dummies; γ_t and δ_i denotes a full set of time effects and full set of municipality fixed effects, respectively; $\mathcal{T}^{post}$ is the set of years after treatment. This model controls for common changes over time in the sectoral composition of employment through d_t and for the level of each municipality through δ_i. We can, finally, test for the presence of differential pre-trends (α_{36}) and for dynamic effects over time (α_τ). To account for potential correlation over time and across waves of the census, our favorite specification clusters standard errors both at the municipality level and at the year level.

Figure 1: Expropriated municipalities in treated provinces

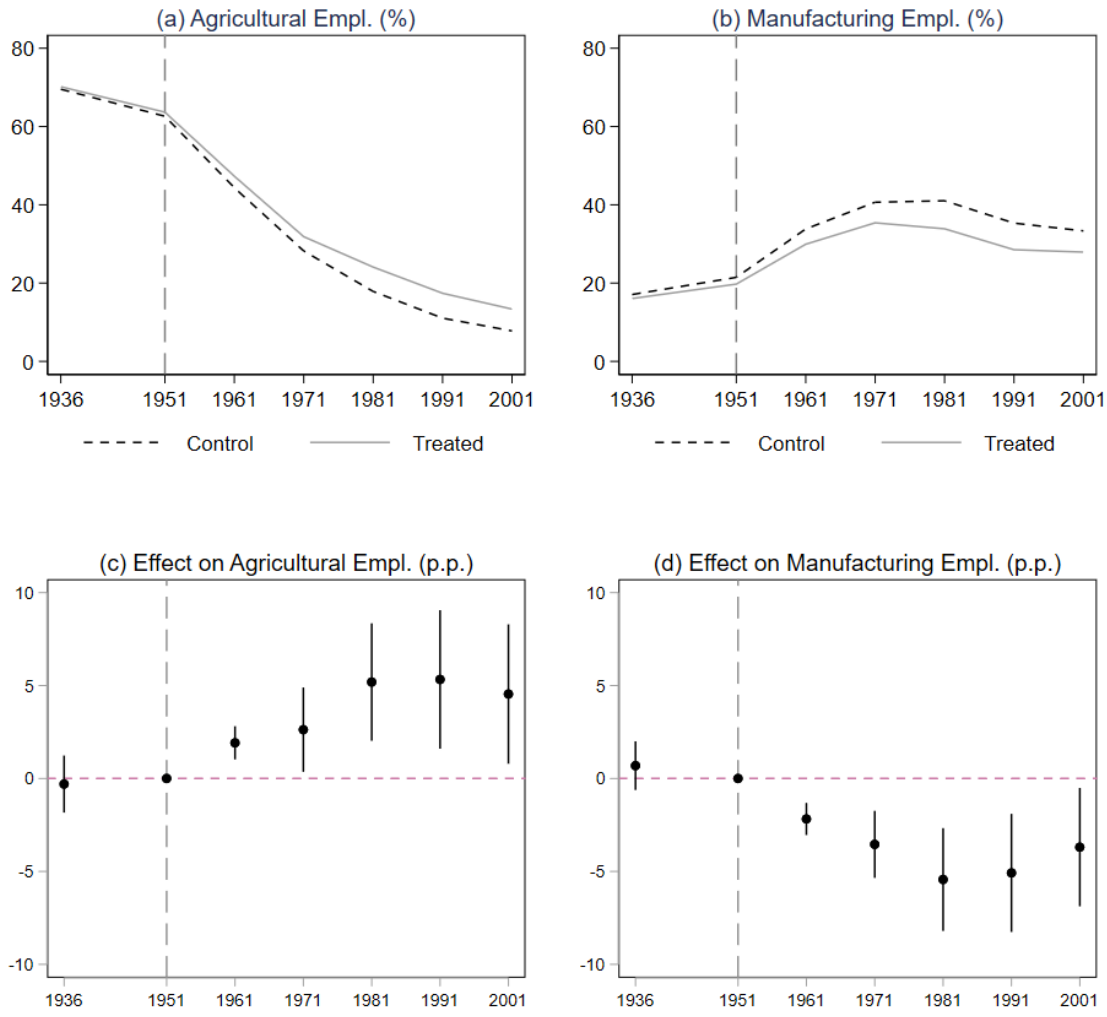


Note: In dark blue, municipalities that were included in the land reform; in light blue, municipalities in provinces where at least one municipality was expropriated. Light blue municipalities will compose the main control group in our difference-in-differences analysis. *Source: Legge Stralcio.*

Our sample, represented in Figure 1, does not include southern Italian regions, hence our analysis focuses only on municipalities in the Center-North. This choice is driven by the contemporaneous implementation of "Cassa del Mezzogiorno" policy, which determined a massive public funding to southern municipalities to boost industrialization in underdeveloped areas (see Colussi et al., 2021 for more details). The coexistence of these two projects

might have biased our estimates, hence we restrict our sample to areas that are not affected by the industrialization policies.[11]

Figure 2: Raw Data and Diff in Diff Estimates for Extensive Margin



Panels (a) and (b) display the average employment share of agriculture and manufacturing, respectively, as measured by the Population Census. Panels (c) and (d) report the estimated effect of the reform on employment shares in agriculture and manufacturing, respectively. The coefficients are estimated using a Difference in Differences design, under the parallel trends assumption, and are also reported in Table 3 column 1 for (c), and column 4 for (d).

[11] Our choice of using a restricted sample is consistent with Caprettini et al. (2021). The authors exclude southern regions for identification reasons. In Table A2 in the Appendix we replicate our main specifications and show that parallel trends are unlikely to hold for the southern regions based on a pre-trend analysis.

Figure 2 top panels show the evolution of employment in agriculture and manufacturing for the two groups of municipalities in the raw data.

5 Results

In this section we perform the analysis of the effects of the land reform on sectoral specialization. We first show our main results and then we provide evidence that our results are consistent across a battery of robustness checks.

5.1 Main Results

We begin by estimating equation (1) using agricultural employment as the dependent variable. Columns (1) to (3) of Table 3 report the results. We detect positive, large effects on agricultural employment: in column (1) we can see that areas treated with expropriation had as much as 5p.p. higher employment in agriculture in 1991 (average agricultural employment in control areas was 11% in 1991). While we find significant effects from the first years following the reform, we want to highlight that effects become larger over time: this means that, while the agricultural sector shrinks over time, treated areas retain more workers in agriculture. In column (2) we control with the percentage of expropriated lands, the identified patterns are very similar to the ones estimated in the previous model with the treatment dummy. Finally, column (3) reports the results of the model using the percentage of expropriated lands in the sample including only municipalities where expropriated lands have been reported (i.e. expropriated lands >0). All the estimated models show that agricultural specialization in the municipalities is proportional to our measure of expropriation intensity. The estimated coefficients always positive and statistically significant in the first decades after the implementation, suggest that more expropriated lands are associated to a significant increase in the employment in the agricultural sector.

Table 3: Difference in differences results, agriculture and manufacturing

	Agriculture			Manufacturing		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat. margin:	Ext.	Both	Intensive	Ext.	Both	Intensive
1936	-0.299	-4.597	-9.110	0.692	4.957	5.797
	(0.627)	(2.755)	(5.531)	(0.534)	(2.626)	(4.706)
1961	1.917***	15.11***	19.67***	-2.177***	-13.14***	-11.49***
	(0.365)	(1.423)	(2.613)	(0.354)	(0.741)	(2.539)
1971	2.627**	17.51**	18.34*	-3.543***	-16.93***	-6.700
	(0.928)	(4.932)	(7.571)	(0.737)	(3.402)	(5.193)
1981	5.190***	31.01***	26.58**	-5.433***	-20.04**	5.726
	(1.292)	(5.881)	(9.452)	(1.131)	(6.065)	(9.663)
1991	5.328**	28.04***	17.02	-5.079***	-14.73*	16.16
	(1.523)	(7.335)	(11.96)	(1.299)	(7.080)	(12.02)
2001	4.544**	22.85**	11.64	-3.695**	-8.655	17.32
	(1.531)	(7.639)	(12.55)	(1.302)	(7.423)	(12.49)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mun. FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2867	2867	672	2867	2867	672

Notes. Column (1) estimates model (1) exploiting the treatment dummy; Column (2) estimates model (1) exploiting the percentage of expropriated lands; Column (3) estimates model (1) exploiting the percentage of expropriated lands in the sample including only municipalities where lands have been expropriated. Year and municipality fixed effects are always included. Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Columns (4) - (6) of Table 3 use employment in manufacturing as outcome variable. These

columns report the results of the baseline model with the expropriation dummy, the one using the measure of expropriation intensity and the model using the percentage of expropriated lands in the sample including only municipalities where lands have been expropriated, respectively. Results mirror those found for agriculture, but with somewhat lower persistence. Remarkably, across all the columns we do not find any evidence of pre-trends, with the estimates of α_{36} small and not significant in all our specifications. Estimated effects are the largest in 1981 and decrease in the years following. The empirical evidence suggests that the land reform, specifically our measure of expropriation, is associated with a significant decline of the employment in manufacturing sector.[12] Overall, our findings provide evidence that treated areas recorded a significant increase (decrease) in the employment in the agricultural (manufacturing) sector in the short term, in line with the intention of the implemented reform, but this structural change in the local economies persisted in the following decades.

5.2 Robustness

In this section, we perform a series of robustness checks to address potential threats to our identification strategy. In particular, we test for robustness to using alternative samples, as well as to changes in model specifications. First, we show that our evidence is not driven by influential observations. In Table 4, we exclude from our sample the administrative center of each province. The administrative center is often the most populated town in the province, hence it might have different economic dynamics compared to the peripheral areas. The estimated coefficients are virtually unchanged with respect to the baseline models, suggesting that our results are not driven by the most relevant cities. In addition, given that a visual inspection of Figure 1 shows that the intensity of expropriation might be spatially correlated, we control whether our results survive the correction for spatial correlation. Table 5 reports the results of baseline estimates where standard errors are corrected for spatial correlation using Conley (1999), and with different distance cutoffs: 5, 10, 15 and 20 kms. This is equivalent to allowing for spatial correlation among neighboring municipalities. Specifically, columns (1) - (8) replicate columns (2) and (5) of Table 3. The reported coefficients, consistently with the baseline models, suggest that expropriated lands are persistently and

[12] Results are very similar when we replace municipality fixed effects with municipal controls and province fixed effects. Results are reported in Table A3 in the Appendix.

positively associated with the employment in the agricultural sector and negatively associated with the employment in manufacturing sector.

Table 4: Robustness: excluding administrative centers of each province

	Agriculture			Manufacturing		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat. margin:	Ext.	Both	Intensive	Ext.	Both	Intensive
1936	-0.345	-5.061	-9.873	0.567	4.840	6.911
	(0.620)	(2.761)	(5.462)	(0.511)	(2.566)	(4.621)
1961	1.860***	15.26***	20.91***	-2.153***	-13.28***	-12.38***
	(0.404)	(1.508)	(2.761)	(0.373)	(0.785)	(2.654)
1971	2.551**	17.87**	20.43**	-3.462***	-17.13***	-8.551
	(0.926)	(4.986)	(7.596)	(0.717)	(3.369)	(5.181)
1981	5.135***	31.54***	29.19**	-5.328***	-20.19**	3.450
	(1.267)	(5.834)	(9.396)	(1.114)	(6.014)	(9.671)
1991	5.225**	28.49***	20.01	-5.018***	-14.94*	14.22
	(1.485)	(7.251)	(11.88)	(1.305)	(7.077)	(12.10)
2001	4.381**	23.22**	14.96	-3.631**	-8.847	15.58
	(1.477)	(7.535)	(12.45)	(1.311)	(7.439)	(12.57)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mun. FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2797	2797	644	2797	2797	644

Notes. The sample does not include the administrative centers of each province. Year and municipality fixed effects are always included. For more details, see footnote of Table 3. Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Robustness: using Conley standard errors

	Agriculture				Manufacturing			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1936	-4.597	-4.597	-4.597	-4.597	4.957*	4.957	4.957	4.957
	(3.782)	(4.353)	(4.806)	(4.365)	(2.735)	(3.278)	(3.692)	(3.743)
1961	15.11***	15.11**	15.11**	15.11*	-13.14***	-13.14***	-13.14**	-13.14*
	(5.275)	(6.356)	(7.632)	(9.025)	(3.989)	(4.861)	(5.829)	(6.732)
1971	17.51**	17.51*	17.51	17.51	-16.93***	-16.93**	-16.93**	-16.93**
	(8.135)	(9.467)	(11.07)	(12.68)	(5.912)	(6.918)	(7.677)	(8.541)
1981	31.01***	31.01***	31.01**	31.01**	-20.04***	-20.04**	-20.04*	-20.04*
	(8.857)	(10.64)	(12.63)	(13.60)	(7.771)	(9.342)	(10.36)	(11.19)
1991	28.04***	28.04**	28.04**	28.04*	-14.73*	-14.73	-14.73	-14.73
	(9.702)	(11.80)	(13.82)	(15.26)	(8.896)	(11.01)	(12.05)	(12.78)
2001	22.85**	22.85*	22.85	22.85	-8.655	-8.655	-8.655	-8.655
	(10.51)	(12.55)	(14.43)	(15.68)	(9.549)	(11.71)	(13.11)	(14.35)
Bandwidth	5	10	15	20	5	10	15	20

Notes. Estimation of model (1) using a treatment dummy using Conley standard errors with different bandwidths. Comparable estimates with clustered standard errors are available in columns (1) and (4) of Table 3 * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6 Persistence Channels and Long Run Growth

In this section we test the intergenerational transmission of occupation by exploiting Italian survey data. Then, we test the long-run effect of the reform on economic development. Finally, we empirically investigates mechanisms that might explain the adverse relationship between the reform and the long-run economic development.

6.1 Intergenerational Occupation Transmission

The results from Section 5 suggest that the land reform affected the labor choices of generations beyond the one of the direct beneficiaries. While a few papers have studied the relationship between occupational choices of parents and kids, no specific attention has been paid to the distinct effect of ownership. In a recent study Aina and Nicoletti (2018) provide evidence of intergenerational transmission of the occupation. In particular, they find that an Italian graduate having a father who is a liberal professional is more likely to become a liberal professional. Similarly, Dunn and Holtz-Eakin (2000), using data from the National Longitudinal Surveys, find that parental self-employment has a strikingly large and statistically significant effect on the propensity to become self-employed. Consistently to the existing literature, we investigate whether descendants of landowners have a higher probability of working in agriculture as adults. As a consequence, the increase in the number of small landowners induced by the land reform, might have led to a persistent differential in the share of workers employed in agriculture.

To validate this hypothesis, we leverage the Survey on Household Income and Wealth (SHIW) collected between 1977 and 2016 by the Bank of Italy. This allows us to identify whether young adults are employed in the same sector as their father (i.e. our outcome of interest). The main explanatory variable is a dummy indicating whether an individual's father worked in agriculture as the business-owner; we build and include the same variable for other sectors. Finally, we control for the sector in which the father was employed, the year of the survey and age of the respondent. We only include individuals aged 19 to 25. We estimate the linear probability model:

$$same\_occ_{it} = \beta_1 agr\_owner_i + \beta_2 other\_owner_i + \sum_s \theta_s \{father\_sector_i = s\} + \theta_t + \rho age_i + e_i \tag{2}$$

Table 6: Probability of Being in Same Sector as Father

	Men only		Men and Women	
	(1)	(2)	(3)	(4)
	Transmission	Transmission	Transmission	Transmission
Owner Agriculture	0.0754**	0.0700**	0.0496**	0.0390*
	(0.0332)	(0.0337)	(0.0208)	(0.0212)
Owner Other	0.00467	-0.0000791	0.00333	-0.000517
	(0.0165)	(0.0162)	(0.0121)	(0.0118)
Region FE	No	Yes	No	Yes
Observations	6931	6931	12815	12815
Mean (Agr.)	0.117	0.117	0.0810	0.0810
Mean (Oth.)	0.407	0.407	0.399	0.399

Notes. Standard errors clustered at the family level in parentheses. Controls included: age of interviewee, year of survey, sector where father works. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6 reports the results from the estimation of equation (2). Our findings suggest that family ownership of an agricultural business affects the sector choice of young adults; family ownership of businesses in other sectors is not predictive of occupational choices. This effect is stronger for men and robust to the inclusion of region fixed effects (columns 1-4). The estimated effect represents an increase of about 60% compared to the baseline transmission in agriculture.

We can put an upper bound on how much of the persistence is likely to be explained by a change in the mean occupational transmission. Assuming that before the reform no agricultural worker owned any land, and that the reform made them all small landowners we can calculate the share of agricultural workers in the next generation. For $y_{m,g}$ equal to the share of workers in municipality m in generation g, the share in the next generation will be represented by

$$y_{m,g+1} = y_{m,g} * Pr(Transmission|m)$$

Substituting numbers from column 2 above and census data, we find that $y_{treated,1975} - y_{control,1975} \approx 60 * (0.07) = 4.2p.p.$: this is suggests that changes in intergenerational occupation transmission have the potential to drive most of the persistence, given the estimated reform effect of about $5p.p.$ from Table 3.

6.2 Effects on Economic Growth

Until now, our analysis has not considered whether the highlighted patterns of structural changes, determined by the reform, favored or hindered economic growth. Higher intergenerational occupation transmission might be growth-enhancing if, for example, small landowners were more able than landless workers to increase their kids' productivity in agriculture. On the other hand, higher transmission might be a consequence of inertia, whereby kids of agricultural workers are more likely to imitate their parents' occupational choices. In the latter case, we would expect that, ceteris paribus, having parents who are small landowners would impact income negatively.[13]

To estimate the impact of the reform on growth, we will then study income per capita at the municipality level. Because of the unavailability of income data at the municipal level before the reform, we resort to a matching approach to study the effects of the reform on 1970 income and on income growth between 1970 and 2000. We use Coarsened Exact Matching (implemented following Blackwell et al., 2009) and identify strata in the data where units are comparable based on their belonging to the same region, on their wheat soil suitability, and on their Gini index of land ownership in 1948.[14] The second and third variables are meant to capture the factors determining expropriation intensity for municipalities included in the reformed area and the potential development of their agricultural sector; belonging to the same region allows for comparability of regional policies.[15] While Exact Matching only compares treated and control units that have *the same* covariates, Coarsened Exact Matching compares municipalities in the same region that have *similar* fertility and ownership distri-

[13] Estimates of this effect using information on earnings from the SHIW dataset are reported in Table A4 in the Appendix. Point estimates are negative, even though, due to a large reduction in sample size, they are not precise enough to reject a null hypothesis of no effect.

[14] We calculate the Gini index for each municipality based on the distribution of land recorded in Medici (1948).

[15] Restricting matching to the municipalities within provinces with at least one expropriation drastically reduces the matched sample, thus decreasing statistical power of our model. Point estimates are consistent with those found in the tables shown.

bution, which facilitates the inclusion of continuous variables.

Table 7 reports estimates of the effects of the reform on income in 1970 and income growth in the period 1970-2000.[16] We can see in columns (1) and (2) that the estimated effects on 1970 income are very small and statistically insignificant. Effects on growth in columns (3) and (4) appear to be negative and statistically significant, averaging around 20p.p. lower growth over 30 years, compared to an average of 183% growth in the studied sample. These results suggest that even though the reform might have had some positive effects on economic development in the first years from implementation, it had negative effects on income growth in the long run.

Table 7: CEM estimates for long-run growth effects

	1970 Income		1970-2000 Growth	
	(1)	(2)	(3)	(4)
Dummy Expropriation	6.802	12.25	-0.203**	-0.211**
	(159.7)	(154.7)	(0.0841)	(0.0815)
Wheat		24.56***		-0.00917***
		(5.651)		(0.00196)
Gini Index		10.78		-0.00317
		(10.43)		(0.00450)
Constant	4836.9***	3358.5***	1.878***	2.363***
	(121.3)	(801.2)	(0.0584)	(0.348)
N	341	341	331	331
R-squared	0.000007	0.145	0.0219	0.0928

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

6.3 Other Mechanisms

Finally, we investigate channels that could explain the negative relation between the reform and growth in the long run, other than the intergenerational transmission of occupation. As suggested by previous literature, a first explanation of this negative relationship is that the land reform might negatively affect the accumulation of human capital. A delayed industri-

[16] We provide estimates with and without including the matching variables: the estimates of interest are unaffected by this inclusion.

alization in the treated areas might be detrimental for the individual investments in human capital. In a recent article, Albertus et al. (2020) document a negative effect on the human capital accumulation following a land reform in Peru in the second half of twentieth century. The authors attribute this negative effect to the persistence in rural activities by the beneficiaries of the land reform that led to "intergenerational rural stasis". Our findings may be compatible with Albertus et al. (2020)'s results, hence we investigate what is the relationship between land expropriation and educational attainments in Italy. However, many studies have remarked the positive relationship between land distribution and human capital development. Galor et al. (2009) develop a model in which economies in which land was rather equally distributed implemented earlier public education compared to economies characterized by a more unequal distribution of landownership. Similarly, empirical evidence of a negative correlation between landownership concentration and education in nineteenth century Prussia has been provided by Cinnirella and Hornung (2016). We collect data on educational outcomes at municipal level and provide evidence that there is no detectable effect of the land reform on educational patterns. Columns (1) - (6) of Table 8 present the results of our baseline models using educational outcomes as dependent variables. In columns (1) - (3) we use the percentage of illiterate people at municipal level as reported in the decennial censuses. The estimated coefficients are always negative and, often, statistically significant suggesting that the reform is associated to a decrease in illiteracy rate. When interpreting these results, it is important to stress that Italy was slowly converging to low levels of illiteracy during the twentieth century, hence these results may only reflect a convergence effect characterizing rural areas.[17] Additionally, columns (4) - (6) report the estimated coefficients of the baseline model on the percentage of people with completed higher education at municipal level. The estimates suggest that there is no detectable systematic effect of the expropriation on the high educational outcomes. Overall, the estimated coefficients suggest that education is not likely to be the channel through which the land reform determines negative long-run effects on the local economy: either we do not find any significant relationship between land expropriation and higher level of education, or we detect a positive relationship with primary education, which is incompatible with (the negative) economic performance.

[17] In aftermath of the Italian unification illiteracy rate was approximately 70%; in 1951 the estimated illiteracy rate was still double-digit, approximately 12% (source Italian National Institute of Statistics).

An alternative hypothesis is that the impact of the reform on industrial development may be driven by a slower urban expansion, which reduced the benefits of agglomeration. This mechanism would be consistent with the findings by Mattheis and Raz (2021), they find that settlement under the Homestead Act, a land distribution project implemented in the US in 1860s, reduced local economic development today. According to the authors, one of the causes of this negative effect was the adverse impact of the Act on the development of cities. In line with the existing literature, we expect that more densely settled areas benefit from agglomerating individuals and firms (e.g. Glaeser and Gottlieb, 2009). Besides, existing evidence suggests that temporary economic shocks can generate long-run effect on population levels and agglomeration (e.g. Bleakley and Lin, 2012; Hanlon, 2017). By using population density as proxy of urban agglomeration, we present evidence of a persistent negative relationship between land expropriation and urbanization. Columns (7) - (9) of Table 8 present the results of our baseline models using population density as dependent variables.[18] Over the years, population density gets smaller and smaller in the treated areas; a clear divergence between treated and untreated areas is evident. The estimated coefficients are always negative, significant and increasing in magnitude over decades.[19] The intensity of treatment does not play a relevant role when analyzing the effects on population density, the analysis on the treated sample does not provide any systematic pattern (column 9). These findings are consistent with the existence of an adverse impact of the land reform on the population density of Italian municipalities. The share of the population in urban areas might have significantly affected the local economic development, determining an economic divergence and reinforcing labor specialization between treated municipalities and untreated ones in the long run.

[18]The variable is computed as the ratio between the decennial population reported in the relative census and the area of the municipality reported in 1951. The ratio has been winsorized at 1% to avoid that the results may be driven by outliers.

[19]Results are consistent even when using an alternative proxy of agglomeration. In particular, we use a measure of *rurality*, computed as the percentage of the population living in *nucleo abitato* (i.e. a tiny nucleus of houses in the territory of the municipality) or in *case sparse* (i.e. houses spread over the territory of the municipality but without forming a residential nucleus) over the total population at municipal level. Table A5 in the Appendix reports the results.

Table 8: Mechanisms

	Illit. %			High. Ed. %			Pop. Density		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treat. margin:	Ext.	Both	Intensive	Ext.	Both	Intensive	Ext.	Both	Intensive
1936							-0.325	2.288	9.909
							(4.643)	(22.26)	(39.44)
1961	-0.00281***	-0.0131***	-0.00451	0.0762	0.344	0.0888	-6.362***	-18.09***	21.24***
	(0.000481)	(0.00159)	(0.00541)	(0.148)	(0.747)	(1.392)	(0.147)	(0.811)	(3.890)
1971	-0.00383***	-0.0194***	-0.0101*	0.290***	0.627	-1.505	-19.69***	-84.03**	-9.989
	(0.000732)	(0.00329)	(0.00478)	(0.0527)	(0.330)	(0.921)	(5.309)	(26.71)	(42.34)
1981	-0.00471	-0.0278*	-0.0232	-0.187	-1.956	-3.216	-27.83**	-119.8**	-16.87
	(0.00238)	(0.0120)	(0.0195)	(0.237)	(1.214)	(1.721)	(8.107)	(39.50)	(60.51)
1991	-0.00518	-0.0374*	-0.0439	0.0980	-2.425	-7.625	-29.64**	-129.5**	-23.11
	(0.00325)	(0.0174)	(0.0289)	(0.548)	(2.925)	(4.792)	(9.521)	(47.54)	(72.59)
2001	-0.00679	-0.0465*	-0.0509	-0.702	-6.788*	-10.60*	-34.38**	-152.7**	-33.39
	(0.00359)	(0.0193)	(0.0318)	(0.619)	(3.271)	(5.220)	(10.20)	(50.60)	(76.38)
Mun. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2466	2466	576	2460	2460	576	2874	2874	672

Notes. Columns (1), (4) and (7) estimate model (1) exploiting the treatment dummy; Column (2), (5) and (8) estimate model (1) exploiting the percentage of expropriated lands; Column (3), (6) and (9) estimate model (1) exploiting the percentage of expropriated lands in the sample including only municipalities where lands have been expropriated. Year and municipality fixed effects are always included. The dependent variables are reported in the column headings. Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

7 Conclusions

This paper analyzes the outcomes of a land reform that was implemented in Italy in the post-WWII period. It was a large-scale redistribution with different (i.e. social, economic and political) goals. We use administrative sources and construct a novel, fine-grained dataset that allows us to evaluate the intensity of the expropriation at the municipal level.

First, we exploit this measure to evaluate the impact of the reform on the industrial composition. Using a difference in differences model, we find robust evidence that the reform generates an increase in the number of workers employed in the agricultural sector and a drop in the number of workers employed in the manufacturing one. We detect a strong persistence of this structural change in the treated areas, hence we investigate whether the new structure of ownership determined by the reforms affect the future generations. Indeed, our findings suggest that intergenerational transmission of occupation played a relevant role. Then, we investigate the impact of this structural change on economic development. We use a matching estimator and provide evidence of a negative correlation between the reform and income growth in the period 1970-2000. These results support the hypothesis that the reform might have had some positive effects in the short run, both in terms of economic development and wealth redistribution, but had negative effects over the following decades. Finally, we studied two mechanisms that can explain the adverse effect of the structural change on economic growth. Our favorite interpretation focuses on a process of urban agglomeration, treated municipalities are characterized by persistent low levels of population density compared to untreated ones. Hence, these communities could not benefit from the positive effects deriving from the agglomeration of people and firms. Our findings suggest that the Italian land reform did not have significant effects on the human capital accumulation, the economic decline of treated areas cannot be explained by a divergence in educational attainments.

In a broader perspective, our results contribute to the existing debate on the effects of large-scale redistribution programs. We highlight how long-term effects may diverge from the initial motivation that led to such policies. Even though a redistribution policy might achieve not only greater equality but also faster growth and poverty reduction in the short term, such reforms may lead to lower levels of economic growth in the long run. Despite the usual limits to the generalizability of analyses of specific historical events, our findings support the idea that land reforms can generate distortions and frictions in the labor market that are detrimental for economic growth.

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Online Appendix: Persistent Specialization and Growth

by Riccardo Bianchi-Vimercati, Giampaolo Lecce, and Matteo Magnaricotte

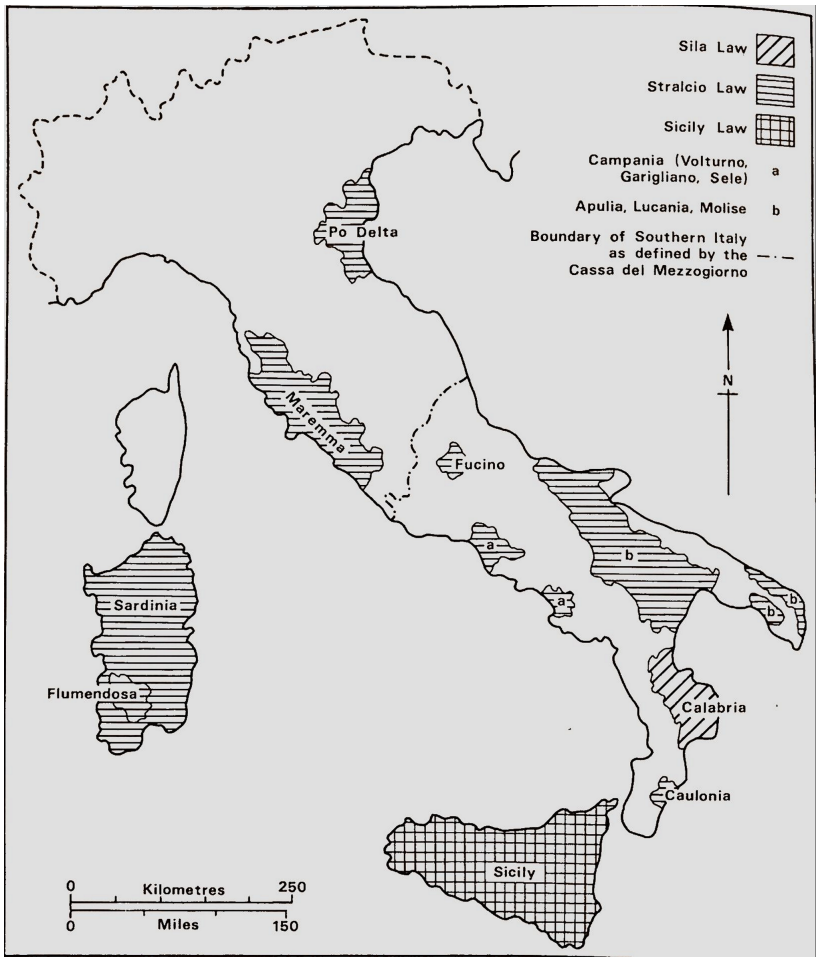
A Additional Figures

Figure A1: Expropriation Rule for the *Legge Stralcio*

Percentuali di scorporo
riferite agli scaglioni di reddito imponibile

Scaglioni di reddito imponibile totale — Lire	Imponibile medio per Ha. Lire: 1000 e oltre	900	800	700	600	500	400	300	200	100 e meno
Fino a 30.000	—	—	—	—	—	—	—	—	—	—
Da oltre 30.000 a 60.000	—	—	—	—	—	0	15	30	55	70
» 60.000 a 100.000	—	—	—	—	0	10	30	60	70	85
» 100.000 a 200.000	35	40	47	55	60	65	70	75	84	90
» 200.000 a 300.000	45	50	55	60	65	70	75	80	87	95
» 300.000 a 400.000	52	57	60	65	70	75	80	85	90	95
» 400.000 a 500.000	60	64	66	71	76	80	85	90	95	95
» 500.000 a 600.000	64	70	76	78	80	85	90	95	95	95
» 600.000 a 700.000	68	74	79	82	85	90	95	95	95	95
» 700.000 a 800.000	72	78	82	85	90	95	95	95	95	95
» 800.000 a 900.000	76	82	86	90	93	95	95	95	95	95
» 900.000 a 1.000.000	82	86	90	93	95	95	95	95	95	95
» 1.000.000 a 1.200.000	90	92	95	95	95	95	95	95	95	95
Oltre 1.200.000	95	95	95	95	95	95	95	95	95	95

Figure A2: Areas interested by the land reform



Source: King (1973)

Figure A3: Breakdown of the expenses of the *Enti di riforma* in the 1950s

Tab. 41 - **Risultanze finanziarie per l'insieme degli Enti di riforma (*a*) a fine del decennio 1950-51 / 1959-60.**

Categorie di entrata	Importi		Categorie di uscita	Importi	
	milioni di lire	%		milioni di lire	%
Assegnazioni per compiti istituzionali	512.760	*84,2*	Trasformazione fondiaria	340.006	55,8
			Assistenza e cooperazione	41.903	*6,9*
Redditi patrimoniali e entrate diverse	51.571	*8,5*	Acquisizione di macchine e scorte	38.661	*6,3*
Debiti verso banche	33.856	*5,5*	Anticipazioni per opere di bonifica eseguite in concessione	2.281	*0,4*
Totale entrate	**598.187**	*98,2*	Crediti verso assegnatari e cooperative	26.395	*4,3*
Disavanzo	10.867	*1,8*	Spese generali, di amministrazione e per oneri patrimoniali	138.101	*22,7*
			Interessi passivi	21.707	*3,6*
Totale a pareggio	**609.054**	*100,0*	**Totale uscite**	**609.054**	*100,0*

(*a*) Eclusa la Sezione speciale per la riforma fondiaria dell'Ente autonomo del Flumendosa.

FONTE: Nostra elaborazione dei dati tratti dalle Relazioni della Corte dei conti al Parlamento (ATTI PARLAMENTARI, *cit.*).

B Additional Tables

Table A1: Descriptive Statistics

	Mean	Min	Max	Std. Dev.	Observations
Expropriation					
Expropriation Dummy	0.23	0.00	1.00	0.42	411
Land Expropriated (%)	0.04	0.00	0.4	0.08	411
Census					
Empl. Agriculture (% - 1951)	62.87	2.96	91.65	19.56	410
Empl. Manufacturing (% - 1951)	21.07	1.32	79.48	13.60	410
Illiteracy Rate (1951)	0.12	0.03	0.25	0.04	411
Higher Education Rate (1951)	1.99	0.39	12.47	1.24	410
Population (Thousands - 1951)	12.83	0.24	1651.75	83.50	411
Population Density (1951))	159.16	17.99	1140.80	139.65	411
Rurality Measure (% - 1951)	36.29	0	87.15	24.87	410
Geography					
Gini Index - Land Dist. (1948)	76.95	47.80	93.42	9.29	411
Land Suitability (Wheat)	3193.89	249.93	7752.41	2054.71	411
Municipality Area (1951)	68.21	3.50	1285.30	96.31	411

Table A2: Replication of Table 3 with municipalities in the South of Italy

	Agriculture			Manufacturing		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat. margin:	Ext.	Both	Intensive	Ext.	Both	Intensive
1936	-1.282***	-13.19***	-12.26**	1.137***	10.69***	9.321**
	(0.341)	(2.652)	(3.763)	(0.261)	(2.006)	(2.962)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Mun. FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9794	9738	2193	9794	9738	2193

Notes. The analyzed sample includes only treated provinces in the south of Italy and replicates the models in Table 3. Column (1) estimates model (1) exploiting the treatment dummy; Column (2) estimates model (1) exploiting the percentage of expropriated lands; Column (3) estimates model (1) exploiting the percentage of expropriated lands in the sample including only municipalities where lands have been expropriated. Year and municipality fixed effects are always included. Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: Replication of Table 3 with a different set of controls

	Agriculture			Manufacturing		
	(1)	(2)	(3)	(4)	(5)	(6)
Treat. margin:	Ext.	Both	Intensive	Ext.	Both	Intensive
1961	0.876	13.89**	19.25*	-1.319	-14.46**	-14.74**
	(1.100)	(5.219)	(7.857)	(1.034)	(4.305)	(5.476)
1971	1.373	15.67**	18.06*	-2.252	-17.29**	-11.93
	(1.200)	(5.508)	(8.668)	(1.122)	(4.614)	(6.222)
1981	3.233**	27.33***	28.81**	-4.199**	-21.97***	-3.206
	(1.141)	(4.875)	(7.448)	(1.061)	(4.430)	(5.846)
1991	3.493**	25.58***	20.24**	-3.574**	-17.79***	1.287
	(1.015)	(4.493)	(7.809)	(0.916)	(4.170)	(5.574)
2001	2.180*	18.34***	14.15	-2.734**	-15.26**	-0.635
	(0.957)	(4.312)	(7.543)	(0.866)	(4.060)	(5.242)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Prov. FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2460	2460	576	2460	2460	576

Notes. Column (1) estimates model (1) exploiting the treatment dummy; Column (2) estimates model (1) exploiting the percentage of expropriated lands; Column (3) estimates model (1) exploiting the percentage of expropriated lands in the sample including only municipalities where lands have been expropriated. Year and province fixed effects are always included. Municipality latitude, longitude, wheat soil suitability, illiteracy rate, share of educated people and the percentage of the population living in *case spare* (scattered houses) are always included. Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: Earnings (logarithm)

	Men only		Men and Women	
	(1)	(2)	(3)	(4)
	Log Income	Log Income	Log Income	Log Income
Owner Agriculture	-0.0487	-0.102	-0.00738	-0.0891
	(0.110)	(0.104)	(0.0897)	(0.0846)
Region FE	No	Yes	No	Yes
Observations	2837	2837	4853	4853

Notes. Standard errors clustered at the family level in parentheses. Controls included: age of interviewee, year of survey, sector where father works. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Replication of Table 8 with a rurality measure

	Rurality		
1961	1.691***	10.96***	10.98***
	(0.411)	(1.548)	(2.074)
1971	4.907***	22.95***	7.927
	(0.396)	(1.985)	(3.952)
1981	8.029***	32.97***	0.592
	(1.318)	(5.936)	(9.250)
1991	8.954***	34.33***	-5.930
	(1.620)	(7.144)	(10.25)
2001	10.57***	39.20***	-10.57
	(1.697)	(7.447)	(11.18)
Year FE	Yes	Yes	Yes
Mun. FE	Yes	Yes	Yes
Observations	2460	2460	576

Notes. Column (1) estimates model (1) exploiting the treatment dummy; Column (2) estimates model (1) exploiting the percentage of expropriated lands; Column (3) estimates model (1) exploiting the percentage of expropriated lands in the sample including only municipalities where lands have been expropriated. Year and municipality fixed effects are always included. The dependent variable *Rurality* is the percentage of the population living in *case sparse* (scattered houses, i.e. outside of towns). Clustered standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

C Data: Description and Sources

Expropriation Data

Treatment variables have been digitized from original expropriation documents (i.e. Gazzetta Ufficiale). In each expropriation we collected information on the first name and the last name of the beneficiary, municipality and size of the expropriation. Figure A4 reports an example.

Figure A4: Example of reported expropriation in Gazzetta Ufficiale

DECRETO DEL PRESIDENTE DELLA REPUBBLICA 18 dicembre 1952, n. 3300.

Trasferimento in proprietà all'Ente per lo sviluppo dell'irrigazione e la trasformazione fondiaria in Puglia e Lucania - Sezione speciale per la riforma fondiaria - di terreni di proprietà di Torre Maria fu Gioacchino, nel comune di Grottole (Matera).

IL PRESIDENTE DELLA REPUBBLICA

Visti gli articoli 77, comma primo ed 87, comma quinto, della Costituzione della Repubblica;

Viste le leggi 12 maggio 1950, n. 230; 21 ottobre 1950; n. 841; 18 maggio 1951, n. 333; 2 aprile 1952, n. 339 e 16 agosto 1952, n. 1206;

In virtù della delegazione concessa dagli articoli 5 della legge 12 maggio 1950, n. 230 ed 1 e 2 della legge 21 ottobre 1950, n. 841;

Visto il proprio decreto 7 febbraio 1951, n. 67;

Visto il piano particolareggiato di espropriazione compilato dall'Ente per lo sviluppo dell'irrigazione e la trasformazione fondiaria in Puglia e Lucania — Sezione speciale per la riforma fondiaria —, nei confronti di Torre Maria fu Gioacchino, per i terreni ricadenti nel comune di Grottole (provincia di Matera);

Udito il parere, in data 26 novembre 1952, espresso dalla Commissione parlamentare nominata a norma degli articoli 5 della legge 12 maggio 1950, n. 230 ed 1 e 2 della legge 21 ottobre 1950, n. 841;

Sentito il Consiglio dei Ministri;

Sulla proposta del Ministro Segretario di Stato per l'agricoltura e per le foreste;

Decreta:

Art. 1.

E' approvato il piano particolareggiato di espropriazione compilato dall'Ente per lo sviluppo dell'irrigazione e la trasformazione fondiaria in Puglia e Lucania — Sezione speciale per la riforma fondiaria —, nei confronti di Torre Maria fu Gioacchino, relativo ai terreni ricadenti nel comune di Grottole (provincia di Matera), per una superficie di ettari 51.26.31, specificamente descritti nell'elenco n. 1 allegato al presente decreto.

Art. 2.

I terreni indicati nel precedente articolo sono trasferiti in proprietà all'Ente per lo sviluppo dell'irrigazione e la trasformazione fondiaria in Puglia e Lucania — Sezione speciale per la riforma fondiaria.

Art. 3.

E' ordinata l'immediata occupazione, da parte dell'Ente predetto, dei terreni indicati nel precedente articolo 1.

Art. 4.

L'elenco dei terreni, con l'indicazione dell'indennità di espropriazione offerta, munito del visto del Ministro proponente, forma parte integrante del presente decreto, che entra in vigore il giorno stesso della sua pubblicazione nella *Gazzetta Ufficiale* della Repubblica Italiana.

Il presente decreto, munito del sigillo dello Stato, sarà inserto nella Raccolta ufficiale delle leggi e dei decreti della Repubblica Italiana. E' fatto obbligo a chiunque spetti di osservarlo e di farlo osservare.

Dato a Roma, addì 18 dicembre 1952

EINAUDI

DE GASPERI — FANFANI

Visto, *il Guardasigilli*: ZOLI

Registrato alla Corte dei conti, addì 15 *gennaio* 1953
Atti del Governo, registro n. 69, *foglio n.* 108. — PALLA

Income Data

Income 1970 is an estimation of the average net income at municipal level in 1970. Incomes are expressed in 2000 euros. The data are from Bocca and Scott (1974).

Income 2000 is an estimation of the average net income at municipal level in 2000. It has been computed as the ratio between the overall taxable income over the number of taxpayers in each municipality. Incomes are expressed in 2000 euros. The data have been downloaded from the Ministry of Economy and Finance.

Other Control Variables

Rurality is the percentage of the population living in *nucleo abitato* (i.e. a tiny nucleus of houses in the territory of the municipality) or in *case sparse* (i.e. houses spread over the territory of the municipality but without forming a residential nucleus) over the total population at municipal level. The data are from "ottomilacensus.istat.it".

Share of People with Completed Higher Education is the share of people in the population (aged 6 or more) that completed at least high school. The data are from "ottomilacensus.istat.it".

Illiteracy Rate is the share of people in the population (aged 6 or more) that is illiterate. The data are from "ottomilacensus.istat.it".