

Land redistribution and local development: evidence from the Italian reform ¹

Marco Percoco

Università Bocconi

Abstract

The role of wealth inequality for local development has long been neglected, although some literature has pointed out its relevance in explaining entrepreneurial and education investment. Among the typologies of assets composing individuals' wealth, land is of paramount importance in underdeveloped economies specialized in agriculture. Land reforms in terms of redistribution of land ownership are hence expected to boost development through an increase in entrepreneurship rate and human capital stock. In this paper, I consider land reform in Italy which took place in 1950s in some specific areas all across the country. By adopting an Oaxaca-Blinder regression method and using data at city-level on the implementation of the reform for Puglia-Basilicata-Molise in the South of Italy and, as robustness checks, for Maremma in the Center and Delta del Po in the North, I have found a positive impact of land redistribution on human capital accumulation and a less significant impact on employment and firm location.

Keywords: Land inequality, land reform, long run development, Italy.

JEL Numbers: O4, Q1

¹I thank Paul Cheshire, Steve Gibbons, Motonari Hayashida, Simona Iammarino, Peter Tyler and audiences at seminars at London School of Economics, University of Cambridge, University of Strathclyde, North American Meetings of the Regional Science Association in Washington DC for useful comments. I am also indebted to Annalisa Percoco and Massimiliano Onorato for useful discussions in the very early stages of the research. Financial support from Italian Ministry of Education and Research through the FIRB Grant "Social and spatial interactions in the accumulation of civic and human capital" is gratefully acknowledged.

1 Introduction

This paper aims to estimate the long run effect of land reform on local development in Italy. Land reforms allow for a drastic change in the distribution of wealth in agricultural societies, so that a change in outcomes (such as entrepreneurship or human capital) should be observed. Land reforms generally take place in developing societies where the most important sector is agriculture. This gives the opportunity to study a clear place-based policy without agglomeration externalities and to study indirectly the effect of wealth inequality on entrepreneurship and industrialization in general. In agricultural society, land is one of the most important sources of wealth and income for workers and landowners. Neoclassical theory posits a positive relationship between inequality and growth since the marginal propensity to save increases with wealth. Then inequality channels resources towards individuals with higher propensity to save and this increases capital accumulation and economic growth. This view has however been contested by more recent models of growth.

Galor and Zeira (1993) demonstrate that under credit market imperfections and fixed cost of human capital acquisition, income distribution has a long lasting effect on investment in human capital, aggregate income and economic development. If deprived individuals do not have access to credit markets, inequality will affect occupational choice (and thus the segmentation of the labor force between skilled and unskilled workers). Through inter-generational transmission, the situation will be perpetuated.

Banerjee and Newman (1993) propose a model in which individuals have to choose whether or not to become an entrepreneur. They demonstrate that under the assumptions of credit market imperfections and fixed costs associated with entrepreneurship, inequality may result in an under-investment in entrepreneurial activity and may therefore be harmful for economic development. In a similar vein, Aghion and Bolton (1997) prove that redistribution improves the efficiency of the economy, because it enhances equality of opportunity and the trickle-down process from the rich to the poor.²

Recent literature has focused on the economic and political consequences of land inequality. Galor et al. (2009) argue that the transition from agriculture to an industrial economy changes the relationships

²It should be mentioned, however, that direct empirical evidence of the wealth effect is not conclusive so far. Hurst and Lusardi (2004) could not find evidence of a wealth effect on entrepreneurship. Instead, segmenting businesses into industries with high- and low-starting capital requirements, they find evidence for a crucial role played by inheritance. This evidence is contrasted by Nykvist (2008), pointing to a heterogeneous effect of liquidity constraints.

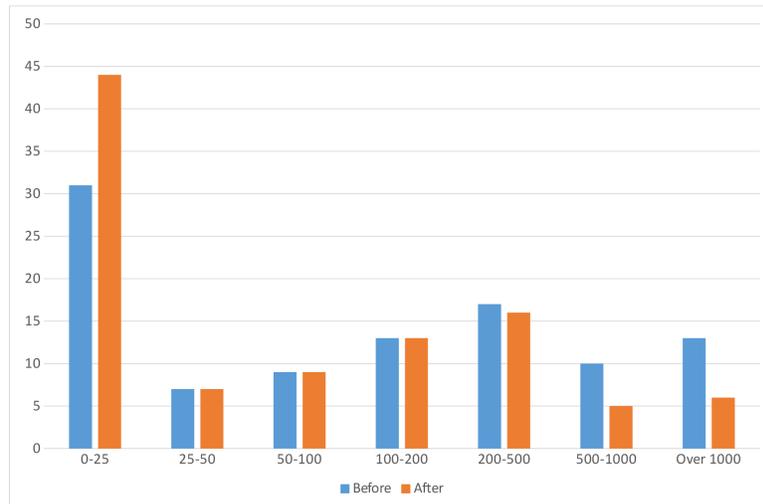
between landed aristocracy and new capitalists. This is because landowners are interested in maintaining a large labor supply to keep wages low, whereas capitalists prefer skilled workers. They find evidence of a negative relationship between land inequality and public investment in education (Galor et al., 2009; Vollrath, 2013).

Landlords may be interested in blocking structural change and in using land as a mean to control Land as a political barrier to structural change. Acemoglu and Robinson (2006) propose a model in which political elites may block technological and institutional development, because of a "political replacement effect." Innovations often erode elites incumbency advantage, increasing the likelihood that they will be replaced, increasing incentives to block structural change. Furthermore, they show that elites are unlikely to block development when there is a high degree of political competition or when they are highly entrenched. It is only when political competition is limited and also when their power is threatened that elites will block development.

Robinson and Baland (2008) provide evidence on the political control of workers votes by landlords in Chile. In particular, they examine the effects of the introduction of the secret ballot in Chile in 1958 on voting behavior. Before the reforms, localities with more pervasive patron-client relationships tended to exhibit a much stronger support for the right-wing parties, traditionally associated with the landed oligarchy. After the reform, however, this difference across localities completely disappeared. As votes are used by the landlords to accumulate political rents, vote control increases the demand for labor and for land. This implies, that political power is capitalized into the value of land. Baland and Robinson (2012) find that introduction of the Australian ballot in 1958 in Chile led to a fall of about 26% in land prices in the areas where patron-client relationships were predominant.

Literature on land reform has primarily focused on India. Besley and Burgess (2000), by using panel data from 1958 to 1992 for 16 Indian states find a decrease in poverty rates, whereas Bardhan et al. (2012) could not find significant impact on household variables (e.g. consumption, migration) for West Bengal. Banerjee et al. (2002) find an increase in agriculture productivity in West Bengal after tenancy reform (regulating the share of production paid as a rent). Bardhan and Mookherjee (2010) study the political economy of land reform in West Bengal and find evidence of political opportunism (re-election concerns) and electoral competition, more then issue ownership.

Figure 1: Distribution of land ownership in the Puglia-Basilicata-Molise (share of land plots across size classes in ha)



Source: Medici (1952)

The case of Italy is particularly interesting as a place-based policy because of the profound changes that accompanied it (Percoco, 2010). Land reform took place in the aftermath of World War II, especially in the South, although also some smaller areas in the Center and in the North were treated. In Northern Italy, as in most of Europe, the period 1930-1950 saw a drop in the share of employment in agriculture, whereas this increased by 17% in the South. In 1950, agriculture absorbed 55% of total labor force in the South, although it contributed only 44% of the total income (Percoco, 2010).

In 1946, properties over 100 ha, although representing only 0.2% of the total number of owner, covered 26% of the agricultural area in the South (Medici, 1952). Land reform, implemented in 1950-1951, consisted in the expropriation and redistribution of about 600.000-800.000 hectares of land, and hence modified substantially the distribution of land ownership. Figure 1 shows the change in the distribution of land ownership in Puglia-Basilicata-Molise and documents the substantial reduction into the share of large holdings with a subsequent increase into the share of small-medium land plots.

Armed with the literature reviewed in previous paragraphs, in this paper we investigate the impact of the reallocation of land ownership on education, employment and entrepreneurship. As the policy aimed mainly at improving living standards of Southern peasants, we focus on the implementation of the

reform in the largest area in continental South, i.e. in the regions of Puglia, Lucania³ and Molise. From a methodological perspective, we adopt an Oaxaca-Blinder regressions approach as in the spirit of Kline and Moretti (2014). A positive effect on education was found, with a 1-5% differential decadal growth rate in the size of population with a high school degree. Impacts on employment and entrepreneurship are weaker, especially in the medium run. Mild effects of the reform are confirmed also in the case of other areas where land redistribution took place, i.e. Maremma in Toscana and Po Delta in Emilia Romagna.

It should be mentioned that this paper adds to the existing literature in that it is the first attempt at causally evaluating the effect of land reform in a European country.

The remainder of the paper is as follows. Details on land reform in Italy are presented in section 2: Section 3 presents the methodology whose results are in section 4. Section 5 concludes.

2 Land reform in Italy

Land reform has been constantly high in the agenda of Italian policy makers, especially at the end of WWI. In particular, in 1917 the government established the “Opera Nazionale Combattenti” (an institute for veterans) with the aim of expropriating part of large estates to be redistributed to landless veterans. However, the activity of this institute has been extremely limited as only 40,000 ha were actually redistributed.

After the fascist period, the idea of land reform regained consensus, especially with the new constitution passed in 1946 which pointed out the “social role” of agriculture and of land ownership (article 42), whereas article 44 established that agricultural contracts (both labor and land rent contracts) had to be “fair”. These two articles of the Constitution opened the public discourse to policies aiming at promoting more equality in the ownership of land.

The end of the Second World War represented a turning point in the debate on the “Questione Meridionale”, that is the issue of the underdevelopment of the South of Italy, as it meant the final overcoming of the fascist position that denied even the existence of an issue. It was during that period that policy debate started to consider options to solve secular problems of poverty of rural population, widespread unemployment in contrast with the large estates, social relations based on exploitation of the peasantry

³The region has two names, Lucania and Basilicata, which will be used interchangeably throughout the article.

(Zagari, 1976). Given these persistent adverse conditions and the burden imposed by the social and economic costs of the war, land invasions took place in most of the South (Bevilaqua, 1993; Percoco, 2014). Interestingly, the Communist Party (PCI) led invasions and Christian Democrats (DC) reacted by passing the land reform laws (Percoco, 2014).

These riots led the government to pass emergency measures in the form of the so-called “Gullo decrees” that imposed constraints on land ownership, limitations to extensions of latifundia, and promoted land remediation and the transfer of some state owned land to peasants (Bevilacqua, 1993). “Gullo decrees”, however were the beginning of a more general land reform. In December 1949, the Government submitted for approval to the Senate a bill for the implementation of the reform in Calabria, which was passed in May 1950. This law, also known as the “Sila Law”, indicated as land subject to expropriation of private properties greater than 300 acres in exchange of an allowance for owners and established land ownership transfer to take place within three years from expropriation in order to speed up the allocation to farmers. Land recipients were required to pay the price of the land over thirty years with a 3.5% nominal interest rate (Prinzi, 1956). This feature of the reform is hence interesting in the light of eventual credit constraints faced by peasants and can be thought to be an exogenous variation into credit access.

Land reform was extended to other areas in Italy with the “Stralcio law” in October 1950, that extended the rules foreseen in the “Sila law” to the Po Delta in the North, Tuscan-Lazio Maremma in the Center-North, Fucino in Abruzzo, Campania (Piana del Sele and Piana del Volturno - Garigliano), Puglia - Lucania - Molise , Sardinia. Interestingly, the treatment was defined at city level, so that within a given treated region or province, only some cities were actually treated with expropriations.

The total area subject to reform was about 8.6 million hectares (King, 1973). Table 1 reports the number of cities treated by the reform in each “comprensorio” and the total number of cities in the corresponding regions.

The reform laws foresaw the creation of *Comprensori di Riforma*, large tracts of latifundia, each administered by a reform agency, the “Ente di riforma”. The amount of land to be expropriated in each zone was determined by a sliding scale formula which took into consideration the total area owned and the average per hectare. Property owners were allowed to retain one-third of the expropriable portion on condition that they undertook to develop it. The expropriated land was to be transformed (drained,

Table 1: Treated cities across *comprensori di riforma*

| <i>Comprensorio di riforma</i> | Treated cities | Control cities in the region |
|--------------------------------|--------------------------|------------------------------|
| Puglia-Basilicata-Molise | 129 | 525 |
| Maremma | 96 | 665 |
| Delta del Po | 21 | 929 |
| Fucino | 12 | 305 |
| Calabria | n.a. | n.a. |
| Sardegna | n.a. | n.a. |
| Sicilia | All cities in the region | 0 |

Source: Prinzi (1956)

deep-ploughed) and assigned within three years.

Expropriated land plots were given on the basis of a ranking according to the following ranking criteria (in decreasing order of importance):

1. Landlesses residing in the town;
2. Agricultural workers working under sharecropping contracts residing in the town;
3. All agricultural workers (or landlesses) residing in other towns of the "Comprensorio" (i.e. in the treated area) but who have been working in the town for the last 3 years;
4. All agricultural workers (or landlesses) residing in towns on the border of the "Comprensorio" but who have been working in the town for the last 3 years;
5. All agricultural workers (or landlesses) residing in other towns on the border of the "Comprensorio";
6. Sharecroppers with low income;
7. Owners of small land plots with low income.

As of 1962, Marciani (1966) calculated that 89% of the 767,000 hectares expropriated was assigned, totaling 682.00 hectares. The most extensive area of reform identified in the framework of the law was the "Comprensorio di Riforma" composed by Puglia, Lucania and Molise, whose boundaries were defined by the Decree of the President of the Republic 67 of 7 February 1951. This area included an area of 1,501,807 hectares (figure 2) which extended to the territory of the three regions, eight provinces (Campobasso in Molise, Foggia, Bari, Brindisi, Taranto and Lecce in Puglia, Potenza and Matera in

Basilicata/Lucania), and 129 municipalities (Prinzi, 1956). The area covered 45% of total surface of regions and 1,543,000 inhabitants, 36% of total population (Chiaia, 1954).

By the end of 1951, the “Ente di riforma” had issued all its expropriation decrees and 200,000 hectares were acquired from nearly 1,500 landowners. 94% of the territory expropriated was low-yielding wheat land, pasture, uncultivated or woods, and 96% was owned by absentee landlords, either renting to tenants on insecure contracts, or run by agents employing wage labor (Prinzi, 1956).

The two most important areas, the Tavoliere and the Metapontino, were natural targets for heavy expropriation, and Foggia and Matera, the two provinces concerned, were those most affected by land reform. 100,000 applicants for land assignments were received, a number far exceeding that for whom land was actually available. In fact, the “Ente di riforma” was able to assign land to only 30,000 families; of these roughly a half received “poderi” (autonomous farm units that usually included a farmhouse build on the holding) and a half “quote” (plots of land that were intended to supplement income derived from other sources).

Land reform consisted also in a large plan of infrastructural improvement and land transformation that covered many sectors (de-stoning, deep ploughing, irrigation, roads, houses, electricity, etc.). Furthermore, it was not only the land which needed improvement at the time of the reform: to make the assignees more adaptable to their new conditions (especially for landless peasants, who generally had little entrepreneurial spirit), the “Ente di riforma” provided numerous courses of general and agricultural education, ranging from literacy classes (a large minority of the beneficiaries were illiterate) to specialized instruction in irrigation techniques, orchard pruning, livestock husbandry. Agricultural colleges were hence set up in the reform area, chiefly for the assignees sons, and special attention was given to experimental farms for research and pilot farms for demonstration.

Table 2 reports the quantity of expropriated land and its share with respect to total surface and treated area by province. It emerges some heterogeneity, although the share of expropriated land is 3-7% across provinces, with the exceptions of Matera and Molise.

The impact of land reform on the region’s property distribution pattern has been considerable. Table 3 shows the changes by province and documents that all across the space of the “Comprensorio di Riforma” of Puglia-Lucania-Molise there has been a substantial drop in the share of holdings larger than 500 ha

Table 2: The implementation of land reform in Puglia-Basilicata-Molise

| Province/region | Total surface (ha) | Treated area (ha) | Expropriation (ha) | Expropriation/Surface(%) | Expropriation/Treated area (%) |
|-----------------|--------------------|-------------------|--------------------|--------------------------|--------------------------------|
| Bari | 512,972 | 206,997 | 23,433 | 4.57 | 11.32 |
| Brindisi | 183,757 | 44,253 | 10,274 | 5.59 | 23.21 |
| Foggia | 718,402 | 445,615 | 52,498 | 7.31 | 11.78 |
| Lecce | 275,941 | 56,06 | 15,529 | 5.63 | 27.70 |
| Taranto | 243,621 | 110,964 | 14,813 | 6.08 | 13.35 |
| PUGLIA | 1,934,693 | 863,889 | 116,547 | 6.02 | 13.49 |
| Matera | 344,184 | 334,184 | 42,728 | 12.41 | 12.41 |
| Potenza | 654,549 | 214,246 | 17,080 | 2.61 | 7.97 |
| BASILICATA | 998,733 | 558,43 | 59,808 | 5.99 | 10.71 |
| MOLISE | 444,999 | 79,488 | 4,205 | 0.94 | 5.29 |
| TOTAL | 3,378,425 | 1,501,807 | 180,56 | 5.34 | 12.02 |

Figure 2: Geography of the comprensorio di riforma Puglia-Lucania-Molise



Source: Original map from Prinzi (1956)

Table 3: Changes in the distribution of land in Puglia-Basilicata-Molise (share of total area)

| Size class (ha) | | Province | | | | | | | | Total |
|-----------------|---------------|----------|----------|--------|-------|---------|--------|---------|--------|-------|
| | | Bari | Brindisi | Foggia | Lecce | Taranto | Matera | Potenza | Molise | |
| 0-25 | <i>before</i> | 37 | 37 | 25 | 30 | 34 | 27 | 34 | 46 | 31 |
| | <i>after</i> | 48 | 60 | 37 | 54 | 51 | 42 | 45 | 54 | 44 |
| 25-50 | <i>before</i> | 6 | 6 | 7 | 9 | 6 | 6 | 7 | 9 | 7 |
| | <i>after</i> | 6 | 6 | 7 | 9 | 6 | 6 | 7 | 9 | 7 |
| 50-100 | <i>before</i> | 9 | 7 | 9 | 12 | 8 | 8 | 9 | 9 | 9 |
| | <i>after</i> | 9 | 8 | 9 | 12 | 8 | 8 | 9 | 9 | 9 |
| 100-200 | <i>before</i> | 14 | 10 | 13 | 16 | 12 | 12 | 11 | 13 | 13 |
| | <i>after</i> | 13 | 11 | 14 | 12 | 13 | 13 | 12 | 15 | 13 |
| 200-500 | <i>before</i> | 18 | 20 | 19 | 17 | 18 | 18 | 17 | 10 | 17 |
| | <i>after</i> | 20 | 8 | 17 | 10 | 18 | 18 | 13 | 9 | 16 |
| 500-1000 | <i>before</i> | 9 | 7 | 12 | 8 | 13 | 13 | 6 | 8 | 10 |
| | <i>after</i> | 2 | 33 | 6 | 0 | 7 | 7 | 4 | 2 | 5 |
| over 1000 | <i>before</i> | 7 | 13 | 15 | 8 | 16 | 16 | 16 | 5 | 13 |
| | <i>after</i> | 2 | 4 | 10 | 3 | 6 | 6 | 10 | 2 | 6 |

Source: Prinzi (1956)

and an increase in the share of very small plots in the size class 0-25 ha.

Although in principle relevant, land reform impacts were never properly evaluated. Also the historical literature has focused primarily on the mechanisms leading to the construction of the policy and its implementation scheme. King (1970, p. 7) reports:

“In 1950 the authors of the Italian reform forecast that it would lead to an increase in employment of 90 million workdays per year, but the real effect has been much less. Assuming that the average *podere* [plot of land] provides 600 workdays per year and that the average *quota* [portion of a land plot] provides 200 [...], the total increase in employment becomes 23 million workdays per year, still a substantial amount but very different from the original forecast”.

In this paper we focus on the Puglia-Lucania-Molise area in a comparative perspective with Maremma in Tuscany and Po Delta in Emilia Romagna. In the case of Puglia-Lucania-Molise, De Leo (2008) and Percoco (2010) argue, in a qualitative perspective, that the reform was only mildly effective in boosting development in the area, with some notable exception in some areas of Basilicata, where land reform promoted agricultural development.

In the case of Maremma, Cecchi (2001, p. 125) estimates that land reform created 8,000 new farms and concluded that:

“the agrarian reform [...] created a farm structure that was strong enough to face the change brought about by the industrialization process that was taking place in the country. For this reason, among others, the decline of agriculture was weaker in the Maremma than in other parts of the region or the country. As a consequence, at the end of the 1990s, agriculture was still an important sector that employed more than 11% of the working population of the area”.

The literature is thus very fragmented and a comprehensive assessment of the results of land expropriation and reallocation is currently lacking. Furthermore, it is interesting to note that, with some few exceptions, most of the studies date back to the 1950s or 1970s.

Given this lack of literature and the relevance of the policy under scrutiny for Italy as well as for

other countries currently implementing land reforms, we think that the causal analysis presented in the following sections is a substantial contribution.

3 Methodology and data

In this paper, we aim at considering the impact of land reform on local development, so that our spatial units of analysis are cities (towns). To evaluate the policy, we need to compare the outcomes of cities within the treated area shown in figure 2 with an appropriate counterfactual. If the geography of the treated area had been randomly defined, then, given a counterfactual, simple OLS regressions would generate unbiased estimates of the impact of the policy. However, although never discussed in the historical literature, treated cities were probably selected on the basis of economic, social and perhaps political characteristics.

In our approach, we will model this selection into treatment and consider cities within the same regions as sources of information to construct a credible counterfactual.

To identify the effect of land reform, we compare outcomes of treated and non-treated towns within the regions of Puglia, Basilicata and Molise⁴, with controls for pre-program differences between treated and control cities by using Oaxaca-Blinder regressions (Kline and Moretti, 2014). To this end, for control towns the following equation is estimated:

$$y_{it} - y_{it-1} = \alpha + \beta X_i + (\varepsilon_{it} - \varepsilon_{it-1})$$

where $y_{it} - y_{it-1}$ is a variation in an outcome of interest (namely, education, firms per capita, employment rate and the share of labor force working in manufacturing sectors), X_i is a vector of pre-intervention characteristics, $\varepsilon_{it} - \varepsilon_{it-1}$ is an error term, α, β are parameters to be estimated. Estimated $\hat{\beta}$ are then used to predict the counterfactual mean of the outcome in treated towns $E[X_i \hat{\beta} | T_i = 1]$ (where T indicates the treatment status). Therefore the average treatment on the treated is given by:

⁴To be noted is the fact that those regions were not affected by any forms of organized crime, such as Mafia in Sicily, Camorra in Campania and 'Ndrangheta in Calabria.

$$ATT = E[(y_{it} - y_{it-1}) - X_i\hat{\beta}|T_i = 1] \quad (1)$$

Oaxaca-Blinder regressions have the advantage of being interpreted as a re-weighting estimator in which the effect of the policy is identified semi-parametrically, hence without imposing strict functional assumption on the estimate of the ATT (Kline, 2011). Furthermore, under standard assumptions, OLS gives unbiased estimates of the ATT. Variance is estimated according to the procedure proposed in Kline (2014).

It should be noted that the estimation of the ATT is in terms of differential growth patterns, so that eventual time-invariant fixed effects are implicitly taken into account. Departures from the growth trend are considered by means of variables in X . The flexibility in the estimation of ATT makes the Oaxaca-Blinder regressions approach more appropriate with respect to using difference-in-differences models.

To increase comparability and avoid problems of non-overlapping support, we have estimated a logit model to estimate the probability to be treated as a function of the variables in vector X . Top and bottom 10% of control units were discarded, hence reducing our sample to 333⁵. Furthermore, to avoid problems of omitted variables we have made use of a quite large set of controls: a third order polynomial of density of population in 1938, altitude, direct access to the sea (dummy) share of houses with drinkable water, land Gini in 1948, share of votes for PCI in 1948, annual growth rate of population between 1881 and 1938 and province dummies.

Land Gini coefficient at city level is calculated using the 1948 INEA survey (INEA, 1956). The number of plots in each city is available for 14 size classes. For each class we use the mean farm size of the category. For the 1,000 acres or more category, I use 1,000 acres. The formula used for calculating the Gini coefficient is (Percoco, 2015):

$$Land\ Gini = 1 + \frac{1}{n} - \frac{2\sum_i(n-i+1)a_i}{n\sum_i a_i}$$

where n is the number of land plots, a_i is mean farm size, and i denotes the rank, where farms are ranked in ascending order of a_i .

⁵Only 12 of those 333 are neighboring cities. This is a desirable feature to overcome problems of spatial spillovers.

Outcome and control variables are from the Censuses (1938, 1951, 2001), whereas land ownership distribution is from the INEA survey, carried out in 1948 with the specific aim to provide information for the subsequent land reform (INEA, 1956). Finally, data on the share of votes for the PCI in the elections of 1948 are from the *Atlante Storico Elettorale* (Corbetta, 2009).

Before proceeding with the empirical analysis it is useful to discuss the choice of the outcome variables.

Galor et al. (2009) have argued and empirically found that in unequal societies public investment in education is lower. Furthermore, landowners of *latifundia*, under low mobility of labor, act as monopsonist in the labor market and set wages at subsistence level, so that household investment in children education is low. Land redistribution can hence increase education by making labor market more competitive and hence by increasing wages (Galor et al., 2009; Vollrath, 2013). On a similar line of argumentation, Acemoglu and Robinson (2006) propose a theory of elites blocking structural change to keep agricultural wages low. Land reform can hence boost the transition of the economy from agriculture to industry, that is the rationale for considering the number of firms and employment in manufacturing as outcomes.

The case of Italy is of particular interest in this regard because an extensive literature has focused on the structure of land ownership as one of the main reasons for the country's persisting North-South dualism (see, for instance, Romeo, 1998). The Center-North, in fact, used to be characterized by a more equal land distribution and sharecropping was widespread. Percoco (2015) has found that these phenomena were among the most important factors explaining the fast industrialization of Northern regions with respect to the South.

The rationale for including manufacturing employment relies on the hypothesis that the reduction of the power of landed elites may promote structural change. However, it should be noted that if land redistribution increases productivity, this may constitute a disincentive to move labor force and capital from the primary to the secondary sector. Therefore, the effect of land reform on industrialization is undetermined *ex ante*.

Unfortunately, no data on income, wages and production are available at city level, so that it is not possible to estimate the effect of land reform on productivity and on living standards.

Table 4 reports descriptive statistics (means) for the main outcome and control variables for treated

Table 4: Descriptive statistics

| | Treated | Control |
|--|---------|---------|
| Land Gini (1948) | 0.823 | 0.779 |
| Firms per capita (1938) | 0.050 | 0.064 |
| Log(population in 1938) | 8.657 | 8.978 |
| Share of employment in agriculture (1938) | 0.365 | 0.376 |
| Share of employment in manufacturing (1938) | 0.0349 | 0.0397 |
| Employment share (1938) | 0.466 | 0.383 |
| Share of pop. with high school degree (1938) | 0.163 | 0.173 |
| Share of houses with no drinkable water (1938) | 0.649 | 0.675 |
| N. obs. | 129 | 204 |

and control cities separately. Interestingly enough, differences seem to be relatively small, indicating a good balance in the pre-treatment variables.

4 Results

Our empirical strategy consists in presenting results for the *comprensorio di riforma* of Puglia-Basilicata-Molise and then we will corroborate from a qualitative point of view our findings by presenting evidence from a *comprensorio di riforma* in the Center (Maremma) and in the North (Po Delta).

Table 5 reports our main results. In particular, it reports the effect of land reform in Puglia-Basilicata-Molise in terms of four different outcomes: education growth (i.e. population with a high school degree), total number of firms, total employment and employment in the manufacturing sectors. Decadal growth rates are calculated over the medium-run (1951-1961) and the long-run (1951-2001). It emerges that education was higher by 1% over the years 1951-1961 in treated areas than in other cities in the same area and this figure increased to 5% over the long run. No evidence is found in terms of increase in entrepreneurship, although a positive estimate is found. In fact, the growth rate of the total number of firms is not significant at 90% confidence level in 1951-1961 and mildly significant at 90% level over the years 1951-2001. As for employment, it emerges that the impact of the reform shows only in the long run with a sound 12% differential growth, although this employment was not created in the manufacturing sector, but rather in agriculture and in the service sector since for manufacturing employment no significant effect is detected.

Finally, table 5 reports a placebo test, i.e. the growth rate of outcome variables is calculated over

Table 5: Effect of land reform in Puglia-Basilicata-Molise (average decadal growth rate)

| | 1951-1961 | | 1951-2001 | | 1938-1951 | |
|--------------------------|------------------|------|------------------|------|-----------------|------|
| | b (s.e) | R-sq | b (s.e) | R-sq | b (s.e) | R-sq |
| Education | 0.01** (0.01) | 0.93 | 0.05** (0.02) | 0.91 | 0.01 (0.01) | 0.54 |
| Firms | 0.03 (0.13) | 0.77 | 0.05* (0.03) | 0.81 | 0.02 (0.12) | 0.56 |
| Employment | 0.05 (0.34) | 0.66 | 0.12** (0.05) | 0.92 | 0.01 (0.39) | 0.44 |
| Manufacturing employment | 0.04 (0.17) | 0.62 | 0.14* (0.08) | 0.96 | -0.02 (0.99) | 0.32 |

Note: All regressions include the following controls: a third order polynomial of density of population in 1938, altitude, direct access to the sea (dummy) share of houses with drinkable water, land Gini, polarization index, share of votes for PCI in 1948, annual growth rate of population between 1881 and 1938, province dummies. Standard errors clustered by province in parentheses.

the years 1938-1951⁶, hence before the reform was actually implemented. If our approach correctly identifies the effect of land reform, then no significant difference between treated and control should be found before the implementation of the policy. Interestingly, no significant effect is detected across all outcomes, and thus corroborates the hypothesis that the effects detected for 1951-1961 and 1951-2001 should be attributed to the reform.

Land reform was a policy to promote development mainly in the South, in fact only two of the eight treated regions are located in the Center-North. The Maremma (in Lazio and Toscana) had similar production conditions as the South with 1% of landowners owning 75% of the land (Medici, 1952), whereas the Po Delta was the scene of extensive communist labor union activity. Our analysis for the “Comprendorio di riforma” of Puglia-Lucania-Molise, although conducted by comparing outcomes within the treated area, may still hide some common factor related to the general trend characterizing the Italian South after WWII. Although this fact is not a direct threat to our identification strategy (as the ATT in equation 1 relies on difference-in-differences), an analysis of the eventual effects of land reform also in the Center and in the North of Italy may provide, in a qualitative perspective, further evidence on the effects of the policy.

Tables 6 and 7 report policy effect estimates for Maremma (in Tuscany) and Po Delta (in Emilia Romagna). In particular, results in table 6 confirm the same pattern of results in table 5, although with

⁶This period is considered as a 1.4 decade as for the computation of decadal growth rate.

Table 6: Effect of land reform in Maremma (average decadal growth rate)

| | 1951-1961 | | 1951-2001 | | 1938-1951 | |
|--------------------------|-------------------|------|-------------------|------|----------------|------|
| | b (s.e) | R-sq | b (s.e) | R-sq | b (s.e) | R-sq |
| Education | 0.03*** (0.01) | 0.91 | 0.06*** (0.02) | 0.98 | 0.00 (0.00) | 0.68 |
| Firms | 0.06* (0.03) | 0.84 | 0.07*** (0.01) | 0.91 | 0.12 (1.37) | 0.26 |
| Employment | 0.06* (0.04) | 0.81 | 0.17*** (0.05) | 0.97 | 0.01 (1.19) | 0.34 |
| Manufacturing employment | 0.03 (0.19) | 0.67 | 0.11** (0.05) | 0.98 | 0.03 (1.99) | 0.39 |

Note: All regressions include the following controls: a third order polynomial of density of population in 1938, altitude, direct access to the sea (dummy) share of houses with drinkable water, land Gini, polarization index, share of votes for PCI in 1948, annual growth rate of population between 1881 and 1938, province dummies. Standard errors clustered by province in parentheses.

stronger effect. An initial 3% differential growth in education is found, with a subsequent increase to 6% over the period 1951-2001. Interestingly, in the case of Maremma, a strong effect on the total number of firms (7%), total employment (17%) and manufacturing employment (11%) is found in the long run. This implies, that in Maremma, land reform has actually promoted entrepreneurship and industrialization, contrary to what happened in the South.

Results for the Po Delta in table 7 are more similar to the case of the Puglia-Basilicata-Molise, although in this case, the effect on education is relatively not significant. In this case, land redistribution has had an impact on the number of firms (+5%) and on employment (+7%) only in the long run. Both in table 6 and in table 7, results of the placebo test confirm the identifying assumptions of our approach.

Taken together, empirical results of the impact of land reform on local development show that the redistribution of land has had significant effects on employment growth only in the long run, whereas the impact on education appears also in the medium run (ten years). Results on entrepreneurship (the number of firms) are more mixed and probably depends on the initial conditions of areas where the reform was implemented.

Table 7: Effect of land reform in Delta del Po (average decadal growth rate)

| | 1951-1961 | | 1951-2001 | | 1938-1951 | |
|--------------------------|-----------------|------|------------------|------|----------------|------|
| | b (s.e) | R-sq | b (s.e) | R-sq | b (s.e) | R-sq |
| Education | 0.01 (0.01) | 0.95 | 0.02* (0.02) | 0.91 | 0.01 (0.01) | 0.61 |
| Firms | 0.04* (0.02) | 0.74 | 0.05** (0.03) | 0.87 | 0.02 (0.38) | 0.46 |
| Employment | 0.02 (0.04) | 0.88 | 0.07** (0.03) | 0.87 | 0.01 (0.39) | 0.47 |
| Manufacturing employment | 0.01 (0.02) | 0.68 | 0.01* (0.01) | 0.86 | 0.03 (1.22) | 0.54 |

Note: All regressions include the following controls: a third order polynomial of density of population in 1938, altitude, direct access to the sea (dummy) share of houses with drinkable water, land Gini, polarization index, share of votes for PCI in 1948, annual growth rate of population between 1881 and 1938, province dummies. Standard errors clustered by province in parentheses.

5 Conclusions

The costs associated to income inequality, even in its extreme forms, are currently under the lens of analysts and policy makers. In this paper we have considered wealth inequality in its ancestral form, i.e. inequality in land ownership. Under conditions of credit constraints, economic literature has argued that wealth (or land) inequality may hinder development.

We have considered the case of a change in the distribution of land in some regions of Italy occurred during the 1950s. In particular, we have considered the case of land reform in Puglia-Lucania-Molise where about 5% of total surface (12% in treated areas) was expropriated and redistributed to landless peasants. By adopting an Oaxaca-Blinder regression approach, a positive impact of land redistribution on education was found, whereas the impact on entrepreneurship and industrialization was found to be modest. The pattern of results is confirmed also for other areas of the country, although in some cases (Maremma in Toscana) the impact on industrial development was substantial in the long run.

Although our empirical analysis does not have full external validity, we think that the pattern of results across the cases shows a substantial gain in education following land redistribution. Furthermore, our results confirm that extreme wealth inequality may be detrimental for local development and that positive socio-economic outcomes can be obtained in the medium to long run through place-based policies aiming at redistributing wealth. Of course, wealth expropriation and redistribution is probably out of the feasible set of contemporary policy makers, but a fiscal system aiming at reducing the share of wealth that can be

transmitted intergenerationally (i.e. taxes on inheritances) might achieve interesting results.

References

- [1] Acemoglu D. and J.A. Robinson (2006), *Economic Origins of Dictatorship and Democracy*, Cambridge: Cambridge University Press.
- [2] Aghion, P. and Bolton, P. (1997), A trickle-down theory of growth and development with debt overhang, *Review of Economic Studies*, 64(2):151–172.
- [3] Amoruso, O. (1988), *La piana di Metaponto: dalla marginalità allo sviluppo*, Bari: Adriatica Editrice.
- [4] Baland, J-M and J.A. Robinson (2012), The Political Value of Land: Political Reform and Land Prices in Chile, *American Journal of Political Science* 56(3):601-619.
- [5] Banerjee, A.V. and Newman, A. (1993), Occupational choice and the process of development, *Journal of Political Economy*, 101(2):274–298.
- [6] Banerjee, A. V., Gertler, P. J., and Ghatak, M. (2002). Empowerment and efficiency: Tenancy reform in West Bengal, *Journal of Political Economy*, 110(2):239–280.
- [7] Bardhan, P. and Mookherjee, D. (2010), Determinants of redistributive politics: An empirical analysis of land reforms in West Bengal, India, *American Economic Review*, 100(4):1572–1600.
- [8] Bardhan, P., Mookherjee, D., and Kumar, N. (2012). State-led or market-led green revolution? role of private irrigation investment vis-a-vis local government programs in West Bengal's farm productivity growth. *Journal of Development Economics*, 99(2):222-235
- [9] Besley T. and R. Burgess (2000), Land Reform, Poverty Reduction, and Growth: Evidence from India, *The Quarterly Journal of Economics*, 115(2):389-430.
- [10] Bevilacqua, P. (1993), *Breve storia dell'Italia meridionale*, Roma: Donzelli.

- [11] Cecchi, C. (2001), *Rural Development and Local Systems. The Case of the Maremma Rural District*, PhD Thesis, University of Wales.
- [12] Chiaia A. (1954), *La riforma fondiaria e l'occupazione di manodopera in Puglia e Lucania, Relazione al Secondo Convegno tecnico su la Riforma Agraria*, Ente di Riforma di Puglia-Lucania-Molise.
- [13] Corbetta, P. (2009), *Atlante storico-elettorale 1861-2006*, Bologna: Zanichelli.
- [14] De Leo, R. (2008), *Riforma agraria e politiche di sviluppo. L'esperienza in Puglia, Lucania e Molise (1951-1976)*, Matera: Antezza.
- [15] Galor, O., O. Moav, D. Vollrath (2009), *Inequality in Landownership, the Emergence of Human-Capital Promoting Institutions, and the Great Divergence*, *Review of Economic Studies*, 76:143-179.
- [16] Hurst, E. and A. Lusardi (2004), *Liquidity Constraints, Household Wealth, and Entrepreneurship*, *Journal of Political Economy*, 112(2):319 - 347.
- [17] INEA (1956), *La distribuzione della proprietà fondiaria in Italia*, Rome: INEA.
- [18] King, R. (1970), *Land Reform in Italy: A Geographical Evaluation*, London School of Economics, Graduate School of Geography Discussion Paper n. 39.
- [19] King, R. (1973), *Land Reform. The Italian Experience*, London: Butterworths.
- [20] Kline, P. (2011), *Oaxaca-Blinder as a Reweighting Estimator* *American Economic Review: Papers and Proceedings*, 101(May):532-537.
- [21] Kline, P. (2014), *A Note on Variance Estimation for the Oaxaca Estimator of Average Treatment Effects* *Economics Letters*, 122(March):428-431.
- [22] Kline P. and E. Moretti (2014), *Local Economic Development, Agglomeration Economies, and the Big Push: 100 Years of Evidence from the Tennessee Valley Authority*, *Quarterly Journal of Economics*, 129:275-331.

- [23] Medici, G. (1952), *Land property and land tenure in Italy*, Bologna: Agricole.
- [24] Nykvist, J. (2008), Entrepreneurship and Liquidity Constraints: Evidence from Sweden, *The Scandinavian Journal of Economics*, 110(1):23-43.
- [25] Percoco, A. (2010), *Policoro: da villaggio di bonifica a centro ordinatore del Metapontino*, Potenza: Consiglio Regionale della Basilicata.
- [26] Percoco, M. (2014), *The Political Economy of Land Invasions: Evidence from Basilicata, Italy*, Università Bocconi, mimeo.
- [27] Percoco, M. (2015), Entrepreneurship, Family Ties, and Land Inequality: Evidence from Italy, *Growth and Change*, forthcoming.
- [28] Prinzi, D. (1956), *La riforma agraria in Puglia, Lucania e Molise nei primi cinque anni*, Rome-Bari: Laterza.
- [29] Romeo R. (1998), *Risorgimento e Capitalismo*, Bari: Laterza.
- [30] Vollrath, D. (2013), School Funding and Inequality in the Rural United States, 1890, *Explorations in Economic History*, 50(2):267-284.
- [31] Zagari, E. (1976), *Il problema agrario in trent'anni di meridionalismo*, Naples: Cooperativa Editrice Economia e Commercio.