The Other Halves of Fascist Italy: Income Inequality from Dynamic Social Tables, 1900-1950

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Abstract

This paper documents new, yearly estimates of overall income inequality for Italy, from the first industrial 'take-off' to the eve of the 'Economic Miracle', contributing both to the comparative literature on the evolution of inequality in the interwar decades, and to the historiography of Italian fascism and its distributive legacy. By constructing dynamic social tables, we are able to obtain the first comprehensive assessment of all major components of Italian society, shedding light on overlooked 'halves' (women, self-employed workers, capital earners), and to consistently compare these results to estimates available for Britain, Germany and Spain. We identify a steep decline in inequality (especially within-labour) after the Great War, followed by a reversal between 1922 and 1931, a relative stability, and a further increase during WWII, this time driven by capital income.

[1] Previous drafts benefitted from the comments of participants to the XVI AISPE Conference, "The rise of economic inequality. Contributions from the history of the social sciences", the Zurich Virtual FRESH Meeting, the Oxford Graduate Economic History Seminar, and the Third Inequality Meeting at Universidad de Zaragoza.

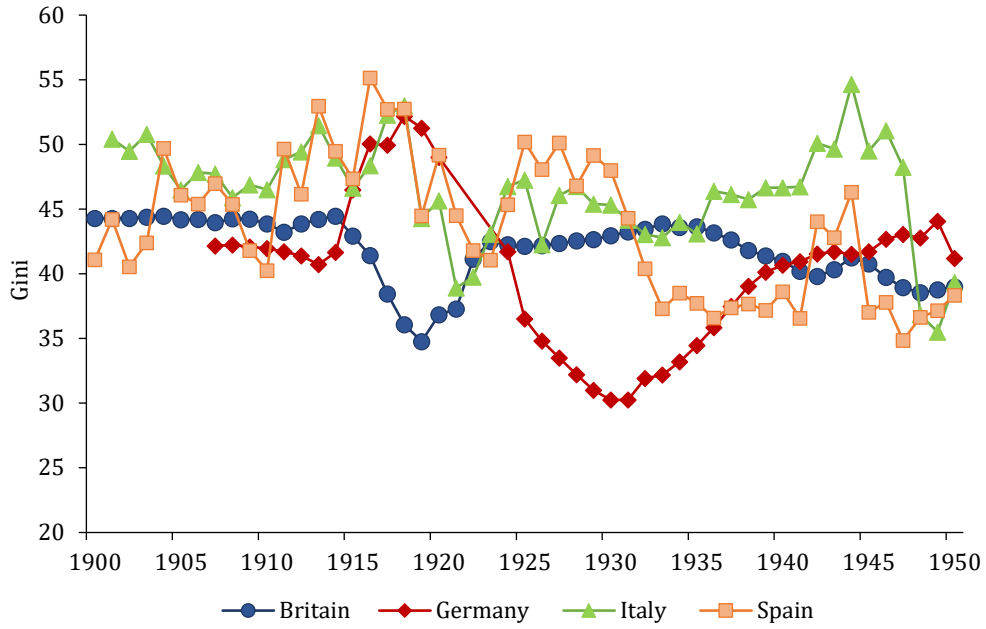
1. Introduction

In recent years, economic historians have been increasingly involved into an international, scholarly and public debate on the dynamics and causes of economic inequality. Economic inequality emerged as a crucial topic of research for both economists and historians, and engaged on the estimation of new, longer, more consistent series on inequality indicators, such as top income shares, factor shares, the Gini index. At the same time, following Kuznets' (1955) pioneering contribution, economists, historians, social scientists have advanced new, compelling hypothesis on what drives long run trends of inequality. While understanding inequality in the very long run is necessary to address fundamental questions regarding its causes, we should not neglect the importance of the short medium term to obtain a wider understanding of its dynamics. The late Tony Atkinson (1997), in his seminal paper arguing for a renewed interest for income inequality, already warned of not overlooking 'key distributive episodes'.

In this sense, despite the emergence of deterministic narratives on the 'egalitarian' impact of wars and depressions - and more specifically, the role assigned by Piketty (2014) to the interwar period, in which most of the 20th century inequality reduction in the advanced economies took place, recent research showed the existence of diverging distributional histories even in these decades (Bartels, 2019; Gómez León and de Jong, 2019). In this work, we contribute to this literature, by presenting new, annual series of overall income inequality in Italy, between 1900 and 1950 – that is, the whole period from the first industrialization of the country, to the dawn of the post-war 'miracle', covering both world wars and the rise and fall of the Fascist regime. Our estimates are constructed following the same methodology adopted by Gómez León and de Jong (2019) in their recent examination of the German and British case – the so-called dynamic social tables – making possible to consistently compare our series with existing ones (Figure 1). This methodology makes possible to obtain direct estimates on inequality (Gini), combining the data on the occupational structure from population censuses, with information on earnings linked to any of these categories distinguishing by work status and gender. Compared to other alternatives, the advantage of this methodology in economic history is not only to cover the whole range of the

distribution, and expanding the series to countries and periods where other sources are absent, but also the possibility to explore the origin of inequality changes, disentangling the contributions of individual components, such as within labour inequality, gender wage gaps, and the ratio between owners and workers' incomes.

Figure 1 - Inequality in Interwar Europe



Notes: Ginis are expressed in percentages
Sources: Gini estimates obtained from dynamic social tables for Britain and Germany are from Gómez-León and de Jong (2019), those of Italy have been estimated from the sources described in section 3; Gini estimates for Spain are from Prados de la Escosura (2008) whose approach is similar to that applied for the construction of dynamic social tables.

By revealing a steep decline in inequality after the Great War (driven by the within-labour component), and the sharp reversal that followed between 1922 and 1931, followed by a 'plateau', and again, an increase during WWII, our results support and qualify previous evidence on the short-term distributional trends based on labour and top income shares (Gabbuti, 2020a, 2021a), while at least partially revise the secular decrease of income inequality documented by Rossi et al. (2001) and Amendola et al. (2011) decadal Gini estimates. In this vein, results for Italy also support and extend findings for Germany and Britain (Gómez-León and de Jong, 2019) and Spain (Prados de la Escosura, 2008), highlighting the 'turbulent' dynamics of inequality in the interwar period, and pointing towards the role of

policies and shocks to drive inequality. Furthermore, our paper innovates also the historiography of Italian fascism and its distributional legacy, by including three relevant, 'missing halves' of the country's income distribution: non-labour incomes, accruing more than 50% of national income throughout these decades (Gabbuti, 2021a); the roughly half of working population that could be characterised as self-employed (small and medium entrepreneurs, shopkeepers, but also farmers, sharecroppers and tenants); and, most obviously, the even more overlooked contribution of women. Indeed, while the slow but constant tendence towards gender equality is one of the overlooked, driving forces of the long-run reduction of income inequality in Italy, the changing fortunes of capital income are crucial not only to fully appreciate the level of inequality, but also to determine its short-run dynamics. The rest of the paper is structured as following: section 2 places our work within the literatures on inequality and the economic history of fascist Italy; section 3 describes the dynamic social tables methodology; the sources and data adopted for building the Italian social tables are discussed in section 4; section 5 presents the results on within-labour inequality, focussing on the role of gender ratios, skill premia and the relative position of the middle classes; overall inequality, resulting from the inclusion of owners incomes, are discussed in section 6; finally, section 7 briefly concludes.

2. Inequality in Interwar Europe and Fascist Italy

As mentioned in the previous section, recent research has deepened the picture of inequality in interwar Europe. In particular, Gómez-León and de Jong (2019) showed the distinct, actually opposite trajectories of two advanced and highly unequal economies such as Britain and Germany. Indeed, despite being both affected by strong, 'malign' inequality-reducing mechanism (the 'horsemen of the Apocalypse', in the words of Scheidel, 2018), such as the two World Wars and the Great Depression, the two leading European economies followed alternative ways to the so-called 'Great Levelling' of the 20th century (Lindert and Willianson, 1985; Milanovic, 2016, p. 53). Top income series for Germany led also Bartels (2019) to conclude that "World War I did not act as the great leveler", but "brought a large-scale redistribution from labor to capital which the November revolution of 1918

intended to reverse". For Spain, Prados de la Escosura (2008) had already showed that the Kuznets-style relationship between inequality and development was broken by the Spanish Civil War, and its autarchic aftermath under Franco's dictatorship. Far from following simple, secular trends, national distributive histories crucially differed; not only because even long-run, common forces, such as globalization, hit different countries in different ways, but because of the different socio-economic and political histories of each country, that can explain sizeable differences in timing and extent, within an inequality-decreasing 'Kuznets wave' (Milanovic, 2016, pp. 50-53).

In this debate, Italy makes an interesting case, for its role as the cradle of the first fascist regime. Indeed, in the interwar decades, the country experienced several, important developments in distributive terms – a mix between external, 'exogenous' shocks, and policy choices. While not experiencing the hyperinflation that characterised Weimar Germany, Italy was still affected by severe distributional conflicts in the troubled 'red biennium' (Zamagni, 1991) and the following 'black' one, eventually resulting in Mussolini's seizure of power. After a brief 'liberal' phase (in which, however, the new fascist government dismantled labour unions[2] and promoted pro-business fiscal policies),[3] the mid-1920s marked the beginning of deflationary policies (the infamous 'battle for the lira', or Quota 90), and eventually protectionism (Giordano and Giugliano, 2015), even before the Great Depression impacted the Italian economy (Baffigi, 2015). Alongside with the sharp changes in relative fiscal burdens and prices, 'slower', economic and demographic forces were also at play: mass emigration, that had helped reducing social conflict and raising average wages, was strongly limited first by war, and then from the 'quotas' and restrictions imposed by destination countries (Gomellini et al., 2017). On the other hand, the fascist government tried to stimulate both population growth and 'ruralisation', with arguable consequences on both gender and regional inequalities.

At present, however, the empirical evidence on income distribution in Italy between the two world wars is still limited. A long-run decline of inequality (actually, in the absence of any 'Kuznets curve') has been documented for the

[2] Mattesini and Quintieri (2006).
[3] Fausto (1993).

country by Giovanni Vecchi and co-authors, that estimated decadal Gini figures from 1861 to 1931, based on an innovative database of historical household budgets.[4] Their results revealed a secular decrease in inequality,[5] but cannot shed light on crucial, shorter-term dynamics; most notably, what happened in the 1930s, when the dramatic recession was followed by more dirigiste economic policies, the shift towards 'autarky', and almost a decade of warfare following the aggression of Ethiopia (1935) (Gabbuti, 2020b). After the early contributions by Sylos Labini (1974) and Zamagni (1980a) (respectively based on census data and wage series), the only attempt to address the issue in quantitative terms was Gabbuti (2020a, 2021a), who presented new evidence on top income, and alongside with the labour shares series estimated from 1895. Both series, while pointing towards a 'regressive' nature of the fascist regime, as well as the existence of sizeable short-term distributive episodes, do not allow us to fully grasp the overall trends in income distribution.[6]

Moreover, the existing evidence is silent on important groups. A first major absence, in the relatively rich historical literature of inequality in Italy, is the condition of women. In fact, historical literature on inequality have often failed to include women participation and pay gaps in the picture, either because methodological issues, or source limitations.[7] A second relevant omission, addressed in this paper, is the relative position of self-employed workers, for which direct evidence on incomes is quite scarce. As discussed in section 4, by relying on so far overlooked fiscal sources, our paper is the first to systematically address these groups. More broadly, by assembling a broad set of series, we are able to discuss the evolution of the relative position of all the groups composing the heterogeneous 'middle classes'.[8] Finally, despite the great source limitations (not exclusive of Italy),

[4] See Rossi et al. (2001), Amendola et al. (2011), A'Hearn et al. (2016), and Amendola and Vecchi (2017).
[5] As well as an increase in absolute poverty. For a more extensive survey of the recent literature on cycle, wellbeing and inequality in fascist Italy, see Gabbuti (2020b).
[6] In particular, they show a striking fall of the labour share during WWI, followed by an even more impressive 'bounce' in the red biennium; an increase in top incomes in the 1920s and even during the Great Depression
[7] For instance, while factor shares are 'gender-blind', household-level information makes hard to include this dimension, while fiscal sources, such as those adopted by Gabbuti (2020a), do not tabulate women separately.
[8] Every social scientist is aware that the definition of 'middle-class' is a troubling field. In this paper, we simply aim at documenting the incomes of those groups that Italian historians (as well as

this paper also explicitly addresses the underestimation of capital income in historical estimates of personal income inequality in Italy[9]. Here our estimates are necessarily more tentative, and further research is definitely needed in this field.[10] Yet the dynamic social tables presented here can be seen an 'infrastructure' that make possible to integrate the overall structure of Italians' incomes: this methodology is the focus of the next section.

3. Methodology: The Dynamic Social Tables Approach

For periods prior the development of modern household surveys, scholars usually infer inequality trends from the evolution of indirect estimates such as wage differentials, the GDP wage-ratio, or the evolution of top income shares and labour shares. These alternatives have been particularly useful for filling gaps in inequality trends and the study of particular segments of the distribution. However, if one wants to examine changes in inequality levels and to cover the total distribution, in the absence of (historically rare) micro-datasets, the best possible alternative is the construction of so-called social tables. Social tables have permitted scholars to study income distribution in earlier periods for a range of societies in Europe, Latin America and Africa. Within Europe, we can find social tables for Britain (since 1688 to 1950), France (between 1788 and 1894); Germany (1900-1950) and some European cities after 1500.[11] Yet, it has been still little exploited for South-European countries.[12]

observers at the times) use to call *classi medie*. Rather than referring to the middling parts of income distribution, the expression seems to refer to the more classic definitions of 'mixed incomes' (those who were not wage labourers, although not fully 'capitalists') (see, for instance, Sylos Labini 1974), as well as more 'sociological' issues of power and status – indeed, dependent workers, such as white collars, that enjoyed higher wages and status, are normally included among the 'middle classes'.

[9] Gabbuti (2020a, pp. 28-32) discusses the issue of tax evasion at the top, but not the overall issue of capital incomes - explicitly addressed by Gabbuti (2021a) in his discussion of factor shares.

[10] Capital income is central in the recent inequality literature, in both developed and developing economies In particular, the efforts in defining and estimating 'Distributional national accounts' (Piketty et al. 2018).

[11] See Lindert and Williamson (1982, 1983) and Allen (2016) for Britain; Gómez León and de Jong (2019) for Britain and Germany; Morrisson and Snyder (2002) for France; and van Zanden (1999) for European cities.

[12] Some examples can be found for pre-industrial south-European cities in Milanovic et al. (2011) and Van Zanden (1999).

Essentially, social tables compile data on the number of people belonging to different social groups and the estimated average incomes that can be linked to these groups. The methodology, conceptually very similar to that applied for the construction of National Accounts, permits to cover a representative sample of the population, which moreover capture the whole range of the distribution. Notably, covering the total distribution is important when studying inequality in periods of rapid structural change (linked to sectoral shifts and inter-occupational inequalities), when changes in inequality are mostly linked to increasing differences between the middle and the bottom part of the income distribution. Limitations of social tables, however, are the lack of information on family structures (unlike household surveys) and the level of disaggregation within the richest group (unlike fiscal sources). Also, the potential underestimation of inequality when the number of groups is small, or when the members of a group are considered to share the same average income. These sources of bias can, however, be mitigated by introducing the largest possible level of disaggregation within each occupational group.

Conventionally, social tables have been used to estimate inequality at particular benchmark years. Yet a more recent approach initiated by Rodriguez Weber (2014), and applied by Gómez-León (2019) and Gómez-León and de Jong (2019), allows assessing inequality across longer spans, of time by letting both the population shares and income of different social groups move on an annual basis.[13] Following this approach, in this paper, we construct, for the first time, dynamic social tables for Italy from 1901 to 1950 – that is, for the half of the 20th century not covered by proper household surveys on income distribution. While not exactly comparable to modern household survey data, when built adopting the same categories, dynamic social tables permit consistent comparisons on income distribution across time and countries. Therefore, whenever possible, we applied a similar categorisation to the one used in Gómez-León and de Jong (2019).

To gather information on the number of individuals belonging to different social classes, and the average income that can be linked to them, one can make use

[13] Although not specifically mentioned, a similar approach to the construction of dynamic social tables have been applied before by Prados de la Escosura (2008) to assess inequality within Spanish workers from 1850.

of a range of sources such as consumption baskets, tax records or population censuses. In this article, we follow Milanovic and others, and construct social tables with information on the active population structure provided in the population censuses.[14] By using population censuses, we aim at obtaining a representative sample which captures the whole range of the distribution (from owners at the top, to unoccupied people at the bottom). In this sense, despite the clear limitations, starting from the absence of "truly" micro-data, the clear advantage of the dynamic social tables is to offer a full representation of the basic, macroeconomic, demographic and structural forces driving inequality, throughout the whole spectrum of the distribution, in their year-to-year development.[15]

Then, we compile nominal income data linked to each profession (by work status) from different sources, further described in the following section. Additionally, we use information from secondary sources to incorporate gender differences, also explained in the next section and further detailed in the Appendix. Notably, resulting social tables including information on the number of individuals by income group and their respective associated incomes on an annual basis allow us to compute yearly direct estimates on inequality, Gini coefficients, in a conventional way:

$$G = \frac{1}{\mu}\sum_{i<J}^{n} p_i p_j (y_j - y_i)$$

where n is the number of social classes; μ is the overall mean income, p_i is the proportion of people belonging to the i-th social class; and y_i is the mean income of people belonging to the i-th social class, with social classes ranked in ascending order ($y_j > y_i$).

[14] See Gómez León and de Jong (2019); Milanovic, Lindert and Williamson (2011); Lindert and Williamson (2016).

[15] If all sources and approaches have pitfalls, including the opposite representative issues posed by household budgets and tax records (Gómez León and de Jong, 2019, p. 6), and a comparison of alternative estimates seems preferable to relying on a single measure, dynamic social tables are clearly a valuable addition.

4. Source and Data: On the Construction of Italian Social Tables

Active Population

In order to build a dynamic social table for Italy, information on the active population structure by profession is obtained from the population censuses (*Censimento della Popolazione* of 1901, 1911, 1921, 1933, 1936 and 1951), along with inter-census headcount workers estimates at main sectors from Giordano and Zollino (2005).[16] Italian economic historians have heatedly debated on whether industrial censuses give a better portrait of the evolution of the employment structure,[17] but while those in favour of this source consider it, at most, as a proper proxy of full-time equivalent workers (a concept more suitable for productivity than distribution concerns), population census are the only source covering the whole Italian population (including those without any profession) and agriculture, still accounting for the lion's share of employment.

For the population censuses, individuals were asked about their main occupation and were grouped according to their work category and gender. The 1901 and 1911 censuses include the resident population in the Kingdom of Italy. The censuses of 1921, 1933 and 1936 include the territories annexed after the First World War (Trentino, Alto Adige, Gorizia, eastern Friuli and part of Slovenia and Croatia, and the city of Trieste), some of which were lost after the Second World War, and therefore not included in 1951. In order to avoid these territorial changes to affect our estimates, we followed the adjustment proposed by the statistician Vitali (1968), to obtain series homogeneous at present borders.[18] Moreover, to prevent the potential double accounting, derived from the inclusion of individuals who actually lived on a family wage, we have adjusted the sample by leaving out family assistants, housewives and students. Finally, given that historians have for long discussed the arguable underestimation of women working in agriculture (Patriarca, 1988; Mancini, 2018), we corrected original census figures, again following Vitali (1968), by equating the numbers of women employed on family-run

[16] See Direzione Generale della Statistica (1901, 1911, 1921) and ISTAT (1931, 1936, 1951).
[17] Most recently, see the debate between Fenoaltea (2015, 2016) and Zamagni (2016).
[18] This has the advantage of being consistent with most of the historical statistics available for Italy, from GDP (Baffigi, 2015) to the aforementioned labour inputs by Giordano and Zollino (2015).

farms to the corresponding males similarly employed.[19] Despite the aforementioned adjustments, differences between benchmark years are small in terms of both coverage and structure (see Table A1). The sample represents on average the 52 per cent of the total population (standard deviation equal to 1.1), with relatively stable proportions of the male and female labour force (67 and 33 per cent, respectively), and male and female unoccupied (64 vs. 36 per cent).[20]

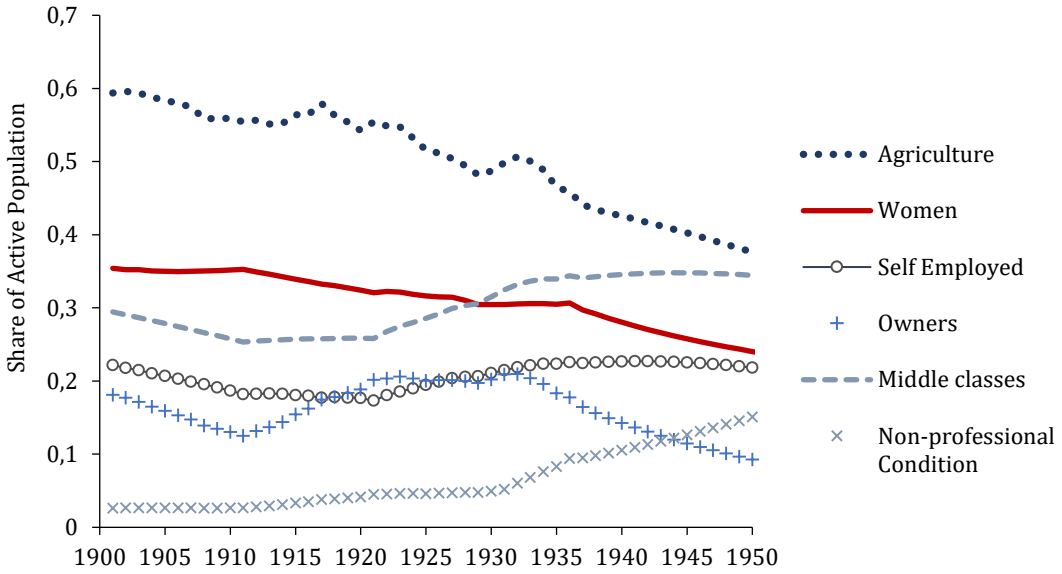
To make censuses comparable across time, the number of occupations has been standardised into 18.[21] Moreover, we have re-classified work categories into three for agriculture (owners, self-employed, and wage earners); one for owners in industry, commerce and transport; three for industry (self-employed, salary-earners and wage earners); three for commerce and transport (self-employed, salary earners and wage-earners); two for public administration and services (salary earners and wage earners); one for Liberal professions; and one for unoccupied. All of them disaggregated, in turn, by gender (male and female). All together results into 60 classes.[22] Once the censuses have been homogenised, we applied interpolation methods between the census benchmark years in order to obtain annual data on the active population structure of Italy between 1901 and 1950. To get more accurate figures, as well as for reasons of consistency with existing evidence, we adjusted our interpolations following the annual figures provided by Giordano and Zollino (2015) on the evolution of population occupied at main sectors. In fact, these changes do not alter much the overall inequality trends, but reassure us on the fact that they are not driven by artificial trends (especially during the war years), given that Giordano and Zollino relied on a great number of existing sources, in order to avoid linear interpolation for all sectors apart for agriculture.

As shown in Figure 2, the resulting series makes evident the strong structural changes experienced in this period, when the share of population employed in

[19] Although considered positively even by a gender historian such as Patriarca (1988), Vitali's correction is likely an underestimation; looking at the differences between agrarian and population censuses, Mancini (2018) adjusted even more the total number of women employed in agriculture. However, she did not provide separate figures for peasants, sharecroppers, and the like, making impossible to adopt her adjustment in social tables without losing these crucial distinctions.
[20] See Appendix, Table A1.
[21] See Appendix, Table A2.
[22] See Appendix, Table A2

agriculture in all occupational conditions declined from 60 to less than 40 per cent; compared to existing evidence, we can also document the evolution of female participation, declining throughout the period (from 36 to 30 per cent), but, as highlighted by Mancini (2018), with a partial reversal in the 1930s. Interestingly, as already discussed by De Grand (1976) and Pescarolo (2019), this overall reduction is mainly driven by agriculture (declining from 65% to 49%), while the smaller shares of women in services, professions, and even heavy industry grew more or less constantly, in this period. Moreover, we can highlight the sizeable portion of population in non-dependent positions – summing owners and self-employment, more than 40% in 1901, and still 30% half a century later, a reduction almost entirely due to the halved share of owners. At the same time, we are able to discuss the evolution of the heterogeneous group of 'middle classes' – including all self-employed, professional and salary-earner, irrespectively of gender and sector. Almost 30 per cent at the beginning of the period, their share had declined of some five points in the first decades of the century, but grew of almost ten in the following ones, peaking just below 35. Finally, censuses reveal an increasing share of 'active' population that is not in professional condition; an increase that, as already discussed by Toniolo and Piva (1988), is particularly strong after the Great Depression, most likely reflecting a strong increase in unemployment, hard to detect with 'official' sources (Alberti, 2018).

Figure 2 - The Evolution of Workforce in Italy, 1900-1950



Source: see Appendix, Tables A1-A4.

Incomes of Dependent Workers

Annual estimations on the average income associated to dependent workers in industry are mostly based on Zamagni (1976, 1984, 1995), from which we obtained data for dependent workers across 12 branches. Yet, for uncovered years, and differences by work status, we had to rely on other sources.[23] For instance, regarding income of salary-earners in industry, Zamagni (1980, p. 38) mentioned that this matched that of clerks in public administration or the lower ranked civil servant employees. Meanwhile, Rey and Vitali (1991) provide annual data (between 1900 and 1950) for State civil employees, across different categories (directive, executive and auxiliary careers), distributed, in turn, by work status levels (ten in total), from the highest to the lowest remunerated (e.g. general director, first manager, clerks, etc.). Therefore, we assigned to salaried-employees in industry the annual income of clerks provided by Rey and Vitali (1991). Since it was not possible to obtain separate information on income for salaried-employees across different industrial branches, salaried employees in industry were added and considered as a sole category. Nevertheless, given the small proportion of this group (compared to

[23] See Appendix Tables A2, A3 and A4 for detailed information by sector and work status.

self-employed and dependent workers), we do not think it would have changed inequality levels or trends, while the inclusion of a separate income for these 'middle class' workers, as well as for the self-employed, enriches our results.

For dependent workers in transport, public administration, liberal professions, services and commerce we rely on Zamagni (1980); for uncovered years, we extrapolated data based on the evolution of annual incomes at the most similar occupations in Rey and Vitali (1991) and Italy's Statistical abstract (1953), which, also provides annual data for central government employees across four categories (Division chief, vice-secretary, clerk and usher). For instance, the income for salary earners in transport associated to *ferrovieri* (railway workers) in Zamagni (1980), who estimate that for 1910, and from 1925 to 1938, has been extrapolated from the evolution of annual income of the managerial staff from 1900 to 1950 in Rey and Vitali (1991). Similarly, income for wage-earners, associated to *operai* in Zamagni, has been extrapolated from the evolution of annual income of the auxiliary staff in Rey.[24] The same methodology has been applied for the rest of occupations.

In the absence of comparably detailed evidence on women's wages, female earnings have been estimated from the gender ratios (female earnings as a percentage of male earnings) obtained from both secondary literature (most notably, Bettio, 1988; Felice 2005; Lasorsa 1931) and primary sources (in particular, the *Annuario Statistico Italiano*).[25] From these sources we have been able to identify material to build separate ratios for agriculture, industry (here distinguishing between heavy and light industries), transport, commerce, public administration, liberal professions and services. For these sectors, the sources provided us with information on gender gaps at 1901, 1911, 1914, 1918, 1925, 1938 and 1951. Annual series have been obtained by interpolating the ratios between available benchmark years, with the exception of agriculture, for with the statistical abstract provides us with annual estimates, from 1911 to 1950.

[24] See figures A3 and A4 in the Appendix

[25] For a full list of primary and secondary quantitative sources on female wages and gender pay gaps see Appendix, Table A6.

Incomes of the Self-Employed

While Zamagni and others had made available a large amount of information on wage and salary earners, almost nothing is known, in fact, on the incomes of the large section of the Italian workforce that was self-employed, that have always represented a large share of the Italian labour force, as shown in Figure 2.[26] A first, 'conservative' possibility, would be to impute the self-employed an income slightly above the ones perceived by those working as waged labour in the same sectors. Notably, this alternative inevitably excludes any variation in the relative position of self-employed, with respect to both waged workers and 'capitalists' in their same sectors. While this is not an issue when assessing inequality trends through the variation in labour shares, a better understanding on the variation within the group of workers is crucial for understanding the 'political economy' of the fascist regime. For this reason, we made our best efforts to come out with alternative estimates for self-employed.

For the self-employed in agriculture (small owners, share-croppers, and tenants) we use daily wages in agriculture (from the Statistical Abstract) and the assumption made by Giordano and Zollino (2015) on the number of working days for owner-occupiers, tenants and share-croppers.[27] Moreover, to avoid potential double counting, we are forced to treat as self-employed also the female owners, since the wives of owners were inconsistently recorded as owners themselves, or as labourers (Pescarolo, 2019, p. 58). Although unsatisfactory – especially because we are forced to impose the same income to a very heterogeneous group - this seems at the moment the only viable alternative.

For the self-employed in industry and services, we propose to use a different, innovative source: official fiscal statistics reporting individual taxpayers' incomes, assessed for the purpose of the *Imposta di ricchezza mobile*, the main direct income tax of the period. In particular, the *Direzione Generale per le Imposte Dirette* (various

[26] To our knowledge, the only exception is represented by Zamagni's (1981) work on commercial distribution, that included estimates for the incomes of different categories of traders for 1938, based on the statistics of the National Fascist Confederation of Traders, costs and revenues in the retail trade.

[27] According to Giordano and Zollino: male farmers (*i.e.* owner-occupiers, tenants, share-croppers) worked for 265 days a year; while landless male laborer's aged worked 220 days a year; *and* females and children worked 120 days a year, regardless of their status.

years) issued dozens of voluminous books, reporting the incomes declared by all private taxpayers (that is, excluding proper firms and 'fiscal persons'). While the tax did not work as a 'personal' tax, in practice, the great majority of the declarations for private taxpayers referred to a single individual and taxed separately each source of income, and can be used as a good proxy of the incomes of these categories.[28] For our purpose, we will focus on information provided under the Schedule B: the so-called 'mixed incomes'- the business incomes obtained by the combination of capital and work (unfortunately, excluding most of those in agriculture, subject to a different type of tax). In this sense, is worth to note that while some of the taxpayers in Category B were rich entrepreneurs (as the engineer Camillo Olivetti, founder of the homonymous type-writing machine producer), it excluded legal entities, such as the car-making FIAT, and their shareholders, members of the Agnelli family. Indeed, the vast majority of declarations was made by self-employed, family businesses, and similar categories, including those declaring less than the exemption threshold; their incomes should have not been far, on average, from those obtained by workers employed by larger firms. Therefore, while very imperfect proxy, we argue that the average income declared by these taxpayers can be used to proxy the income of the self-employed. Since these incomes are reported together for industry, services and transport, our baseline series for those three groups of self-employed will be obtained as an average of the declared incomes, adjusted by one third to take evasion and exemptions in consideration, and the average wage earned in the respective sector by wage earners. As shown in the appendix, the resulting figures are now able to capture the changing relative fortunes of this 'traditional middle class', that – as suggested by coeval anecdotal evidence – had lost ground in the post-war years of labour unrest and inflation, but regained their position after the March on Rome, and especially after the deflationary shift of 'Quota 90'.

[28] While contemporary observers lamented the low number of taxpayers included in these lists, it should be noted that the number of individual taxpayers and professionals included raised from 450,000 in 1889, to more than a million by 1922. Moreover, as discussed in Gabbuti (mimeo), both the intertemporal, occupational and provincial comparisons reassure on the relative quality of the source.

Incomes of Owners

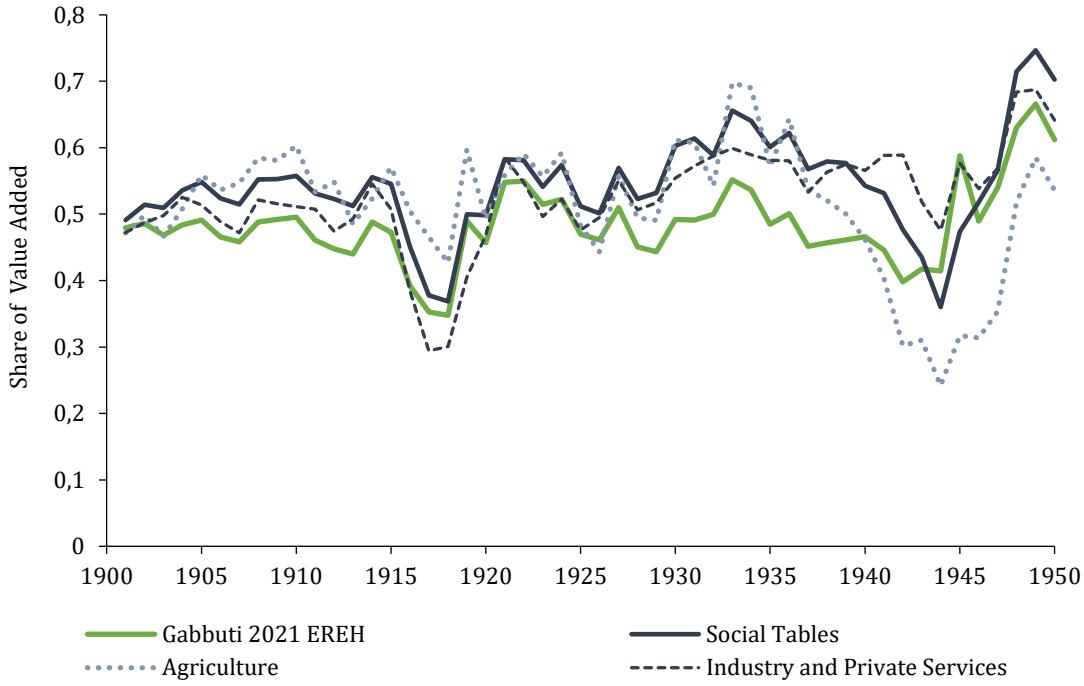
As mentioned in section 2, in Italy, as in many countries, historical estimates on the incomes of the rich are quite unsatisfactory. Contrary to all other groups, for owners we cannot directly estimate incomes on an annual basis. A good starting point would be the tabular data, available on the same fiscal records discussed for the self-employed, that makes possible to isolate the 'top' groups' incomes. However, these are available only for few years (1902, 1922 and 1929), and their interpolation over long periods, characterised by major shocks or sustained inflation, severely undermines any meaningful interpretation of the results. For this reason, while in the appendix we document a tentative alternative, made relying on these tabulations, our baseline estimate is based on the residual value added, obtained after subtracting all labour and self-employment incomes, divided by the number of owners (in line with Arroyo Abad and Astorga, 2016, p. 354).[29]

In fact, the sum of all the labour and self-employment incomes just described in this section is consistent, in trends and levels, with the overall labour share, estimated by Gabbuti (2021a) (Figure 3). Our labour inputs are based on the population censuses, while Gabbuti (2021a) is based on FTE figures, available only for the four main sectors of agriculture, industry, services and government, and do not distinguish between self-employed and dependent worker, nor between wage and salary earners, and not even by gender[30]. In this sense, given that our series overestimate the labour share by attributing it also the since part of self-employed income remunerating the entrepreneurial component, it is of some interest that the difference become negligible precisely in the post-WWI period, when, as just discussed, self-employed workers incomes were the closest to those of dependent workers in their sector.

[29] For alternative estimates, see Appendix, Figure A5.

[30] In this sense, our results support Gabbuti's (2021a, online appendix, pp. 16-18) argument that Italian labour share, already among the lowest in European and Atlantic comparisons, could possibly be overestimated rather than underestimated.

Figure 3 – The Labour Share: Social Tables vs. Existing Series



Source: authors' elaborations.

While it is not our goal to propose a refined version of the labour shares, the residual income can be used to obtain a first, yearly proxy of the incomes of the owners groups. As shown in the same graph, we can obtain separate labour shares for agriculture, and for industry and services - in this sense, obtaining a more accurate result than Arroyo Abad and Astorga (2016).[31] As discussed by these authors, this still could introduce a bias in the trends, in those periods (especially the Great Depression) in which the incomes of workers are overestimated, due to the impossibility, at the current state of the evidence, of taking into account the reduction in working hours (Arroyo Abad and Astorga, 2016, p. 354-355).[32] On the other hand, including all the residual income from the VA would lead to overestimate the owners share, since the discrepancies with disposable income (the concept we should aim at, in making personal income inequality estimates) are well

[31] While in agriculture they include, as motivated above, also female owners, the industry and service share takes out not only the imputed rental incomes, but also the miscellaneous services (those in which, as documented in Baffigi, 2015, pp. 109, are mostly related to professions – whose incomes are also excluded from the numerator - or non-business activities).

[32] Indeed, this is the period in which our labour share is more distant from those estimated using FTE, although imperfect, figures.

documented.[33] In line with Gabbuti (2020a, p. 20), in our baseline we will input only 80% of the residual income of agriculture and industry and private services, to the owners of the respective sectors; these levels are also in line with the evidence from tabulations in the less 'troubled' years[34]. While more direct and continuous evidence on these incomes will definitely improve our understanding of this period, at the current state of the evidence, this seems the most reliable way of treating owners incomes. Moreover, this has the advantage of explicitly linking our estimates to the macroeconomic trend from the capital shares.

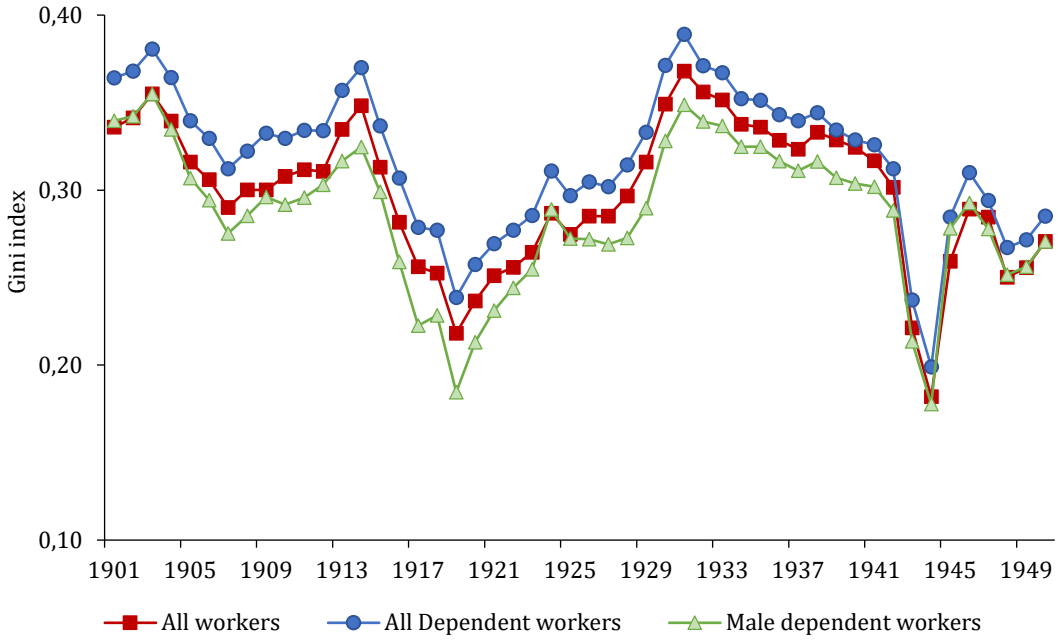
5. Inequality Within Workers

After discussing the construction of the social tables and the income sources, we are finally ready to discuss the evolution of inequality in Italy between 1900 and 1950. In this section, we start discussing inequality within workers between 1900 and 1950. As discussed in the previous section, here our dynamic social tables are based on the most reliable, annual income figures, for all kinds of dependent and self-employment, allowing us to fully capture the dynamics of inequality among workers, and to discuss, two of the major 'forces' driving inequality changes over time – gender and 'skill' differences. First, Figure 4 shows direct estimates on inequality obtained for all workers (including dependent workers and self-employed). Compared to the slow, long-run reduction in Vecchi (2017), our series are by construction more sensitive to the short-run variation in wages and employment structure, and therefore, already reveal some fluctuations at the end of the 'Liberal' age: while within-worker inequality declines between the census years 1901 and 1911, the years before the Great War already saw an increase in stratification among workers. The outbreak of the conflict, however, marked the beginning of a major compression of pay gaps: somehow surprisingly, this took place in the year, reaching a minimum in 1919. This could be surprising, given that the post-WWI was a period

[33] Even in top income shares estimation, it is customary to adopt only 80% of the personal income from national accounts (Atkinson and Piketty, 2007, pp. 29-30 and 535-536).
[34] While necessarily arbitrary, this choice has the advantage of obtaining, as will be clear in section 6, levels very similar to those of Vecchi (2017), and more reasonable in international comparisons. In the appendix (Figure A6) we document, together with the one obtained from tabulations, a series based on 50% of the residuals. Notably, the results of those two series are quite similar in level, while trends are only partially affected.

of increasing labour demands, in Europe as well as in Italy, where the years 1919-1920 became known as the *biennio rosso* ('two red years') for the intense labour unrest. In these years, especially industrial workers, managed to obtain substantial pay increases, as well as substantial concessions in term of 'work discipline, factory councils, right to dismiss workers and the like' (Zamagni, 1991), but also rural ones achieved important victories (Martinelli, 2015). The equalisation seems the result of an overall downward compression – indeed, between 1914 and 1919, the average wage of dependent workers in industry went down, in relative terms of those earned by rural labourers, from a ratio of 1.47, to almost parity (1.05). A 'rebound' took place between 1919 and 1922, mostly driven by the industrial component, and, in 1931, inequality within workers reached its absolute maximum. In the following years, inequality within workers went constantly down, significantly, also in the late 1930s, when the aggression of Ethiopia marked the beginning of a decade of warfare (Gabbuti, 2020b, pp. 45-46), as well as the economic recovery (Baffigi, 2015). While, for the early 1930s, the reduction is possibly biased by the imperfect accounting of working hours, also as the result of the 'work-sharing' policies imposed by the fascist government (Mattesini and Quintieri, 2006), after 1935 the regime (arguably in an effort of strengthening the 'internal front') partly «loosened the reins» of trade unions, making «some concessions to working classes» (Musso, 2016, pp. 276-279), including some long-waited adjustments of wages to inflation, after years in which wage compression, according to Zamagni (1975, pp. 547-548), was a «a deliberate economic policy», resulting in an overall wage dynamic worse than those of Germany, UK, USA, France and Japan.

Figure 4 - Inequality within workers (1901-1950)



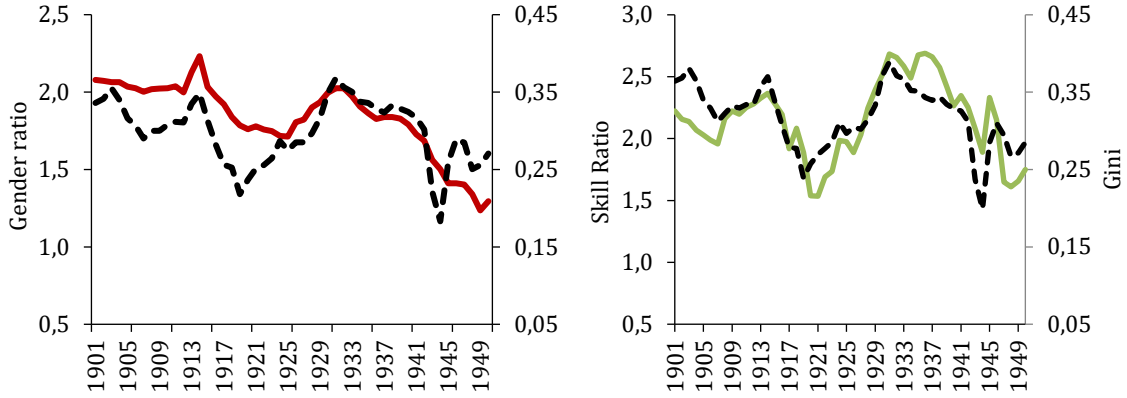
Sources: See section 3

Moreover, Figure 4 also makes clear that, when including the female labour force in the sample, inequality levels increase. This is not surprising, as a result of both the lower average incomes received by female workers (disproportionally employed in low-pay sectors and occupations), and the gender pay gap with respect to their male counterparts when employed in similar sectors, result in greater inequality levels. While in terms of trends, the exclusion of women does not change the story of within-labour income dispersion, the absolute difference decreased over time – from 0.024 Gini points in 1901, to just 0.015 half a century later, when the distance from the series becomes negligible. In fact, as shown by Figure 5, gender gaps are one of the major "inequality forces" contributing to the Italian 'great levelling' throughout the first half of the 20th century. Despite the source and methodological differences, our series, just as Federico et al. (2021, p. 15), show an increase of gender gaps (relatively comparable also in magnitude) in the first Italian industrialisation at the beginning of the century. However, in line with Bettio (1988), we observe that, not only the war, but also the early 1920s saw women benefitting in relative terms. In particular, the equalising effect of the Great War was strongest in heavy industry, but common to all sectors, including the various

services. This 'positive' equalisation had been reinforced by the wage compression imposed by fascists to industrial workers in the first year of fascist government (Bettio, 1988). Then, from 1925, we observe what looks like an effective attempt of reverting this declining trend, with gender gaps contributing to the overall increase in within-worker inequality, and rising until 1933. From this moment on, wage pay gaps will continue to decrease, mainly as the result of the changing composition of female work, less dominated by agriculture, as discussed in section 4. Reconstructing yearly series of minimum pay levels in Turin from 1929 to 1960, Musso (1992) shows that the collective bargaining imposed by fascists did not bring more equality to women, contrary to what had been experienced in the 1919-21, and actually, on top of sizeable and stable pay gaps, the regime imposed a discrimination through the provision, to male household heads only, of family allowances (that, however, we cannot integrate in an analysis of personal income inequality, such as the one based on dynamic social tables). Despite the fascist regime strong rhetoric against the employment of women, according to De Grand (1976, p. 968) «fascist policy toward women and their response to it can be seen as a struggle with no clear results», and the only sizeable decline in female participation was obtained «in the very sector, agriculture, in which fascism wished to keep women occupied» (Ibid., p. 959). As discussed by Pescarolo (2019, p. 237), in these years Italian women slowly but constantly increased their share among physicians, pharmacists, nurses, as well as in commerce and services: while in industry it was more volatile, this was due to the economic cycle, rather than to the success of discriminatory policies. Indeed, we already mentioned the increase in female participation between 1931 and 1936 (Mancini, 2018): as noted by the gender historian Pisoni Cerlesi (1959, p. 59), nominal restrictions on female employment in the Depression years were applied only to the public employment, in order not to harm employers and owners, who tended to turn to women (and children, also increasing participation throughout the 1930s) in order to further reduce labour cost, as already noted by Mortara (1978, p. 78). Only after WWII, with democracy and free trade unions, equality will be established on more positive basis, within general pay increases and economic growth – but then the female participation rate will collapse again, reaching its minimum in 1961 (Mancini, 2018, p. 55). In international comparisons, while the reduction of gender ratios

throughout the period is more substantial for Italy (that started at an intermediate level compared to the more equal Germany and the more unequal Britain), but the 1920s reversal is quite unique, given that these other countries experienced more gradual but constant declines,

Figure 5 - Inequality Forces: Gender and "Skills" Ratios



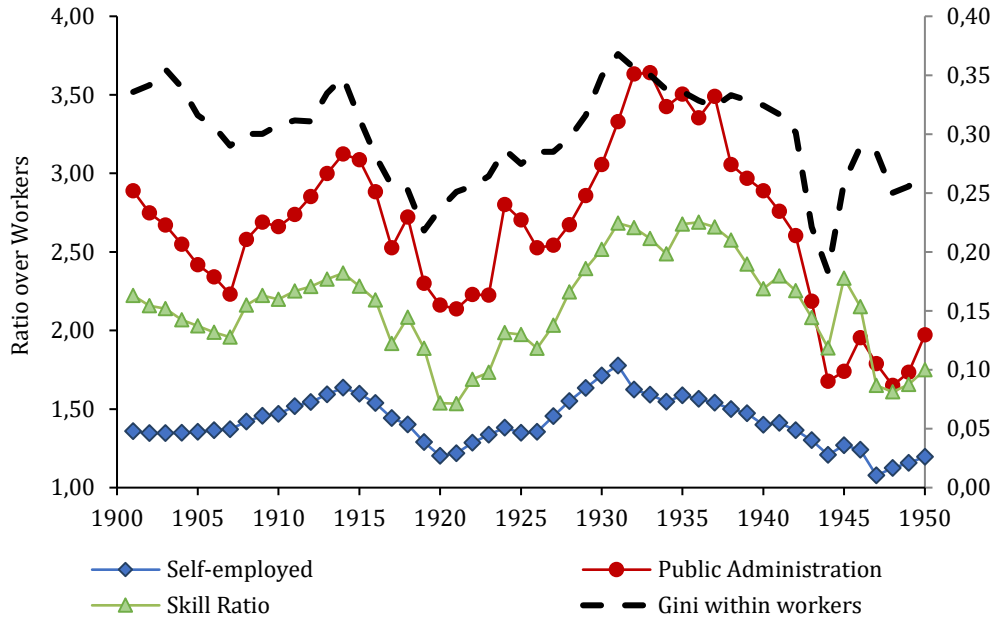
Sources*:* authors' elaborations.
Notes: Solid lines (represented on the left y-axes) show annual development of different ratios. Dashed lines (represented on the right y-axes) show annual trends in inequality. Inequality is measured by Gini coefficients.

In figure Figure 5, we also show the 'skill' ratio – that is, the ratio between the weighted average incomes of all salaried and waged workers, for industry, private services and public administration. Also in this case, our series show a trend substantially in line with the recent estimates by Fedrico et al. (2021, pp. 13-16), that showed a declining skill ratio from mid-19th century until 1912. Also for this indicator, however, after an increase in the pre-war years, the equalising effect of the Great war on dependent workers incomes is quite impressive. This time, this compression is clearly continuing also in the *biennio rosso*, when the incomes of the unskilled increased more rapidly (Zamagni, 1991, p.141). While such a compression partly occurred also in Britain (Crafts et al., 2007), also in this case Italy strikes out for the extent to which this ratio increased from 1922. Indeed, for Italian white collars, indeed, the 1920s represented a continuous increase in their relative position, contributing to the overall increase of labour income inequality. Consistently with what we have discussed about the concessions to trade unions and blue collars, the peak of this ratio is reached in the early 1930, but it seems to

remain high for most of the decade, until WWII leads to a new, abrupt compression. It is tempting to see in the trend of this ratio quantitative evidence of the way in which the fascist regime managed to constraint labour: from the mid-1920s, official, 'corporatist' trade unions became the only representatives of the workers, and in fact, most of the times, acted as a transmission mechanism of government policy decisions (Mattesini and Quintieri, 2006, pp. 418-422). Thanks to the dynamic social tables, we can stress that this did not simply mean the compression of industrial wages, but more generally, a widening of the gaps between waged and salaried workers, and moreover a reversal in the short-run reduction of labour income inequality determined by the Great War.

Another clear evidence in Figure 4 is that, while the trend remain similar also in this case when considering only dependent workers, the levels tend to increase. This is consistent with the fact that the self-employed are genuinely a 'middling' group in terms of income, since their average is only marginally above those of the dependent workers in their sectors.

Figure 6 - The Relative Position of Italian* Middle class*, 1900-1950



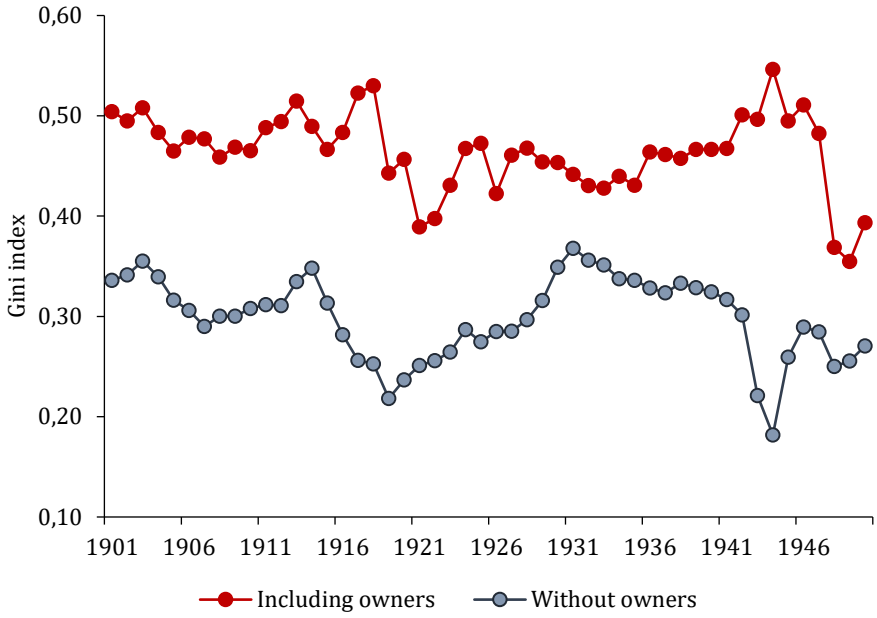
Source: authors' elaborations.

As shown in Figure 6, we are now able to show the varying, relative fortunes of both private and public employee, as well as those of the self-employed workers. The graph reveals that, whether or not the Italian middle classes experienced the 'red menace' (Acemoglu et al., 2020), they were likely feeling a relative impoverishment in the years of the so-called 'Crisis of Liberal Italy'. After a relative improvement in the first decade of the century, the 1914-1919 years saw all these groups losing grounds in comparison with the waged workers. On the other hand, with some differences in both timing and magnitude, the later period represented a 'restauration' of the previous differences, and even new maximum levels. Interestingly, a turning point seems the deflationary shift of 'Quota 90', in 1926: in the years of deflation, when wages and working hours were reduced by law, the Italian middle classes (both the wealthier white collars, and the more modest shopkeepers and artisans) seemed to prosper, at least relatively to the waged workers. Also in this case, establishing whether the move found its 'rationale' in the aim of consolidating the support of these groups goes beyond the scopes of this quantitative reconstruction, but we can conclude that this result, whether intended or not, was achieved. On the other hand, the fortunes seem to changes from the late 1930s, when, also as a consequence of increased public expenditure, Italy is eventually forced to leave the Gold Standard.

6. Overall Income Inequality: Italy in 1900-1950

Income inequality is not limited, however, to within-labour dynamics. Figure 7 shows the results for overall inequality, when we include also the incomes of the owners. In line with what would have been theoretically predictable, the inclusion of individuals at the top part of the distribution affects both inequality trends and levels. The inclusion of owners incomes 'delays' the fall of inequality to the red biennium; moreover, while limiting the extent of the reversal in the 1920s, it also show a later increase in inequality throughout the whole *Ventennio*, peaking in the troubled years of WWII, before a sizeable compression in the first years of the Italian Republic.

Figure 7 - Inequality Estimates With and Without Owners



Source: See section 3

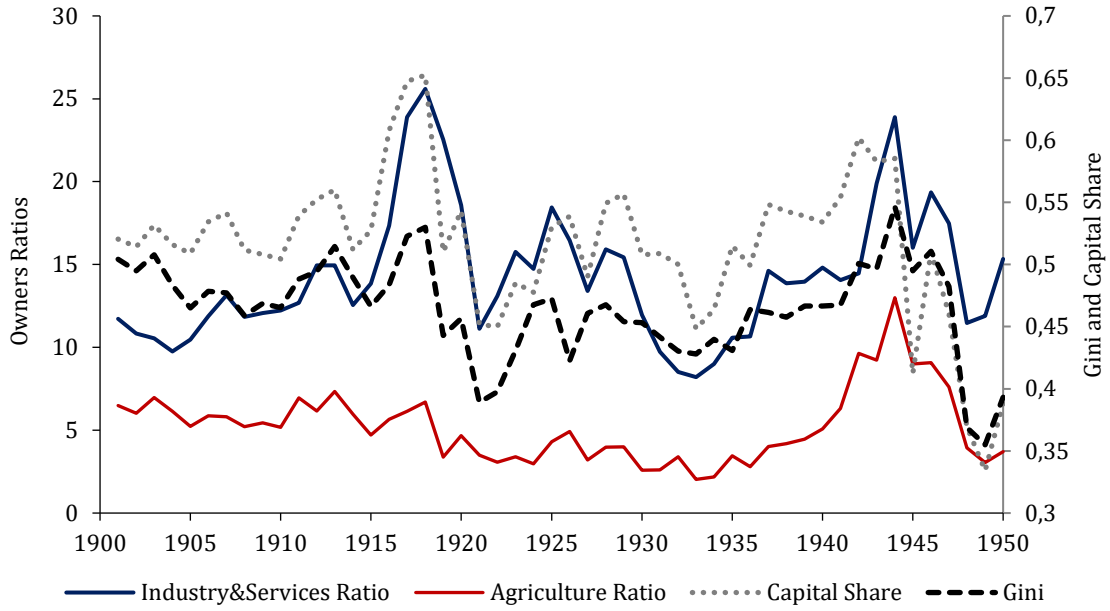
As better understanding of this dynamic comes from looking at the owners ratios, resulting from the residual VA, as discussed at the end of section 4: they are reported, separately for agriculture and industry and private services, in Figure 8, alongside the Gini and the capital share from Gabbuti (2021a). While clearly driving the results, it is interesting to note that the industry and services ratio is very similar not only to the dynamics of capital share, but also of the Return on equity estimated by Giannetti and Vasta (2006, p. 160), by means of micro-level data on firms balance sheets. The picture makes clear that, despite the 'British' fall in within-labour inequality, the Great War represented a great increase in capital incomes for owners in industry, as already evident from Figure 3; in this sense, Italy shows a 'German' side (since also there the owners ratio computed by Gómez-León and de Jong increases abruptly), whose net effect leads inequality to increase.[35] Industrial owners strongly recovered in the early 1920s, when the laissez-faire policies of Minister De' Stefani, combined with labour repression, explicitly aimed at making Italy attractive for Italian and foreign capitalists and to boost investment. Industry

[35] In fact, we decided to correct owners incomes in the years 1916-1918, attributing them only 60% of the residual.

seems to drive also the changing trend in the mid-1920s, and this time it is arguably due to the overestimation of labour income discussed above: notably, both the alternative Gini series included in the Appendix – not only the one resulting from tabulations, but also the 'conservative' one, in which we attribute only 50% of the residual to the owners, show a way smoother, constant increase of overall inequality, from 1921 to 1931.[36] In all specifications, including owners incomes compensate for the fall in within-labour dispersion, resulting into a 'plateau' of overall inequality. During WWII, capital income even lead inequality to increase - indeed, in this case, this seems to correct for the clear underestimation of top income shares, discussed by Gabbuti (2020a, pp. 22-25) in the light of fiscal evidence, with assessed incomes for tax purposes falling abruptly as a share of GDP. In this case, even more than the industrial one, it seems the agriculture ratio to show a more marked increase (that, moreover, is applied to a way larger group of owners). Interestingly, the last years of our series show a fall of inequality eventually happening, also for the broader inequality series, in the immediate aftermath of the war, during the "Reconstruction" years; but also a small increase, both in within labour and overall inequality, in the first years of the 'Miracle' - a period of sustained industrialisation and structural change, in which Italian economies and societies will be radically transformed, and that however remains an uncharted territory in term of income and wealth distribution, apart for the official factor shares series discussed in Gabbuti (2021a).

[36] See Appendix, Figure A8.

Figure 8 - Owners Ratios, Capital Shares and Inequality in Italy, 1900-1950

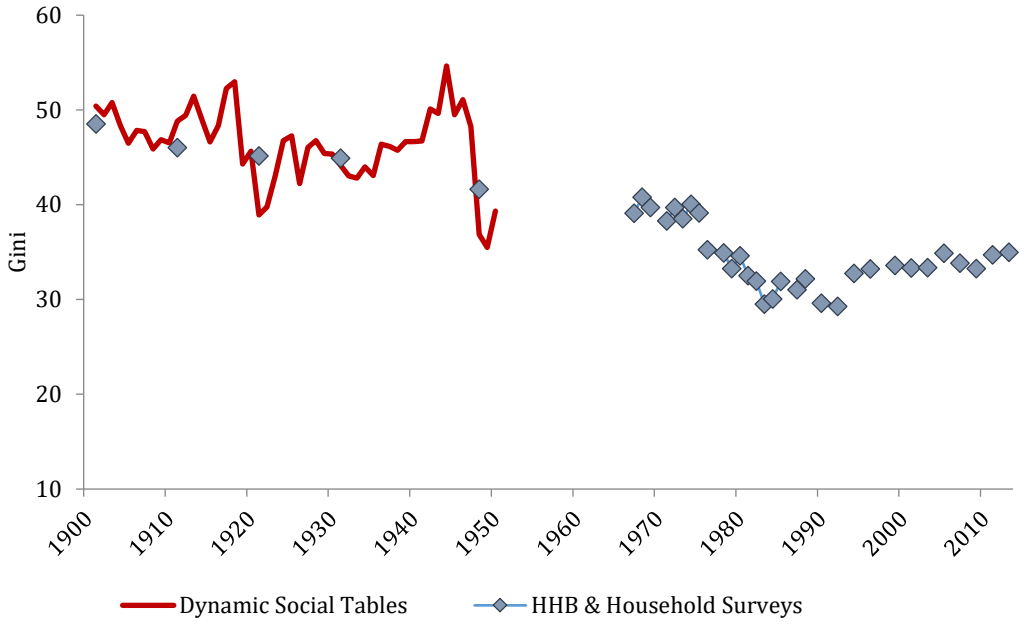


Source: authors' elaborations.

To conclude this section, we can compare our 'short-run' series of inequality, to the long-run picture, made available by Vecchi and co-authors, on the basis of historical household budgets (1901-1931) and modern household budgets surveys (1948, and then regularly from the late-1960s) (Figure 9). It should be considered that the comparison is only partially meaningful, given the different definitions (households vs. personal income) and sources. While our social tables are, by construction, able to reflect all the variation happening year by year between sectors and genders, and also considers the trend in capital incomes, they inevitably miss all the variation within each of our groups. That said, a positive aspect of the inclusion of owners' incomes, in our baseline and reasonable assumption of 80% of residual income, is to move the level of our estimates very close to those presented in Vecchi (2017). In fact, despite the great year-to-year variation, our overall estimates almost perfectly 'fit' the decadal estimates obtained by means of the household budgets. While not altering the long-run picture, of declining income inequality, dynamic social table revealed, indeed, sizeable short-run distributive episodes, such as the Great War, and the marked regressive nature of the fascist regime, that managed to partially revert this trend. Moreover, the discussion of inequality forces revealed some of the driving factors behind both the long-run

equalisation, and the short-run reversal, such as the skill and gender ratios. In this sense, while there seems to be a potential for combining the micro-level evidence from household budgets to make social tables more reflective of inequality, this analysis seems to reveal the way in which social tables can improve our understanding of short-run distributive dynamics, even in countries for which, as Italy, we can already rely on solid, micro-level evidence on historical long-run inequality.

Figure 9 - Inequality in 20th Century Italy: The Long and the Short Run



Notes: Ginis are expressed in percentages.
Source: Gini stimates obtained from household surveys are from Amendola, Brandolini and Vecchi (2011), those obtained from dynamic social tables have been estimated from the sources described in section 3

7. Concluding Remarks

This work aimed at contributing to the literature on inequality in interwar Europe, by providing annual estimates for Italy between 1901 and 1950. Following Gómez-León and de Jong (2019), we obtained direct estimates (Gini) by means of the construction of dynamic social tables, we obtained direct estimates (Gini). Our results confirm also for Italy a long-run decreasing trend in inequality during the first half of the twentieth century (Vecchi, 2017), part of the broader decline

witnessed by Western European countries and commonly referred to as the 'great levelling' (Lindert and Williamson 1985). Yet, in line with that observed for the cases of Germany and Britain (Gómez León and de Jong, 2019) and Spain (Prados de la Escosura, 2008), and with the evidence on top incomes (Gabbuti, 2020a), we showed that also for Italy, this decline was not continuous. On the contrary, Italy witnessed serious, short-run turbulences. While both within-labour and overall inequality seemed to be slowly on the rise already in the most intense phase of the first industrialisation of the country at the beginning of the century, the Great War represented a substantial, overlooked distributive shock. However, a very strong compression of inequality occurred afterwards; a trend that, more positively, continued in the red biennium 1919-20, when the mobilisation of industrial workers led their wage to increase with respect to all the groups of the variegated 'middle classes', and driving down overall inequality to a minimum in 1921. Then, the fascist regime clearly represented a watershed: within-labour inequality sharply increased throughout the whole decade, driven by gender and skill ratio, as well as the increased gaps between middle classes and workers. The inclusion of owners incomes partly complicates the pictures, especially in the years in which residuals more clearly underestimate their evolution, but makes clear that the partial compression of within-labour inequality in the 1930s did not lead to overall inequality reduction.

Future research will hopefully improve the reliability of some of our estimates – in particular, by directly observing the incomes of crucial groups, such as the owners, but also the various categories of self-employed in agriculture, that we could not fully take in consideration; more detailed work is needed also on the gender work, and to fully consider skill differential across different sectors and industry. Finally, a careful reconstruction of the evolution of working time is needed to better capture the evolution of labour shares and workers incomes, especially in the late-1920s and early 1930s. Moreover, while in this paper we combined, for the first time, wage and census data with fiscal sources, so far overlooked by Italian historians, the possibility of combining dynamic social tables with the rich household budget data made available by Vecchi (2017) for Italy could be pursued, in order to further develop this methodology.

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Appendix

1. Structure of the Sample

Table A1. Structure of the sample by work status and gender

Total Active Population						
	Sample		Occupied		Unoccupied	
Census benchmark years	(in thousands)	% of total population*	Males (%)	Females (%)	Males (%)	Females (%)
1901	17,134	0.52	0.65	0.35	0.63	0.37
1911	18,653	0.51	0.65	0.35	0.64	0.36
1921	20,139	0.53	0.67	0.33	0.76	0.24
1931	20,869	0.51	0.68	0.32	0.65	0.35
1936	22,674	0.53	0.67	0.33	0.55	0.45
1951	24,185	0.51	0.72	0.28	0.62	0.38

Sources: Direzione Generale della Statistica (1901,1911, 1921) and ISTAT (1931, 1936, 1951).*For percentages of total population we use: total population reported in Istat (Table 2.1- *Popolazione residente ai confini attuali ai censimenti 1861-2011)*.

Table A2. Number/ structure of occupational groups and classes

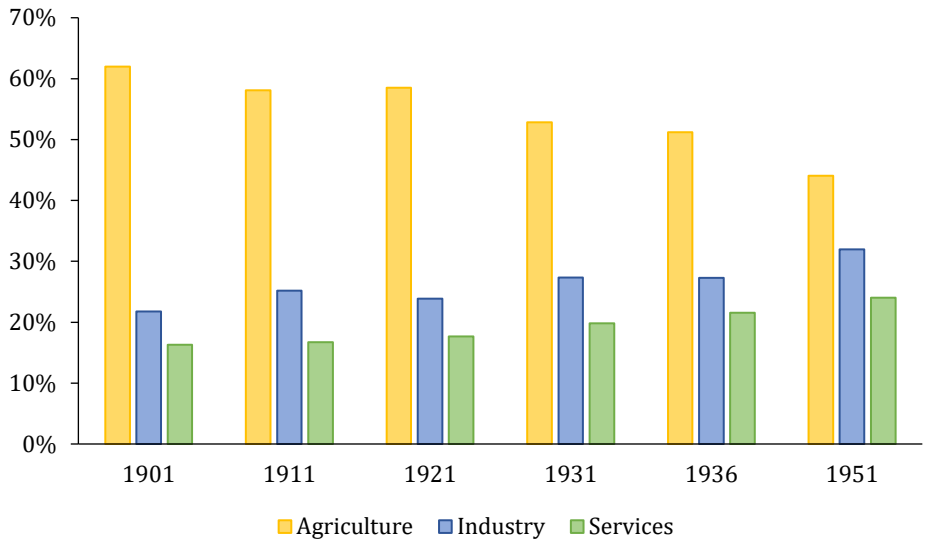
Sectors	**Work categories**					**Gender categories**	**Total classes**
	Owners	Self-employed	Salary-earners	Wage-earners	SUM	Males/females	**SUM**
Agriculture	1	1		1	**3**	All *2	**6**
Industry	1	1	1	12	**15**		**30**
Commerce & Transport		2	2	2	**6**		**12**
Public Administration			1	1	**2**		**4**
Personal Services			1	1	**2**		**4**
Liberal Professions			1		**1**		**2**
Without occupation				1	1		**2**
Total	**2**	**4**	**6**	**18**	**30**		**60**

Table A.3. Structure of the samples by work categories

Census benchmark years	Work categories (% of the total active population)				
	Owners	Self-employed	Salaried employees	Wage earners	Unoccupied
1901	0.11	0.26	0.04	0.56	0.03
1911	0.08	0.21	0.05	0.63	0.03
1921	0.13	0.21	0.05	0.57	0.05
1931	0.14	0.25	0.08	0.48	0.05
1936	0.11	0.26	0.08	0.45	0.09
1951	0.08	0.25	0.09	0.42	0.16

Source: See section 3

Figure A.1. Structure of the sample by sector



Source: See section 3

2. Reconstruction of Income Series

Income Sources

Table A4. Sources of income data for Italy (1900-1950)

Source	Period	Data	Type	Sectors and sub-sectors
Zamagni (1984)	**1900-14**	Daily wages *transformed into annual (270 days)	Workers	**Industry** Bricks Chemical Gas Mining Leather Paper Tobacco
Zamagni (1995)	**1900-39**	Daily wages *transformed into annual (270 days in industry)	Workers	**Agriculture** **Industry** Building Metal engineering Mining Textile Total industry
Zamagni (1976)	**1928-39**	Hourly wages *Transformed into daily then into annual (270 days in industry)	Workers	**Industry** Bricks Chemical Mining Paper Wood
Zamagni (1980)	**1910; 1925-38; 1929-37**	Annual income from employment	Salaried employees and Workers	**Commerce & Hotels** (clerical and operational staff) **Education** **Public Administration** (clerical and operational staff) **Railways**
Rey and Vitali (1991)	**1900-50**	Annual income from employment	Salaried employees	**Public Administration** Directors, managers and clerical staff
Italy's Statistical Abstract (1953)	**1911-50**	Daily wages *transformed into annual (270 days in industry)	Workers	**Agriculture** **Industry**
		Annual income from employment	Salaried employees	**Central Government** Directors, managers and clerical staff

Table A5. Source of estimations of income by sector and work status

Sector	1900-1913	1914-1927	1928-1939	1940-1950
Metal engineering	**Zamagni (1995)**			1939 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**
Building	**Zamagni (1995)**			1939 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**
Textile and Dress	**Zamagni (1995)**			1939 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**
Building	**Zamagni (1995)**			1939 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**
Mining	**Zamagni (1984)**	Extrapolated from Metal		1939 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**
Chemical	**Zamagni (1984)**	Extrapolated from Metal	**Zamagni (1976)**	1939 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**
Bricks, pottery, glass	**Zamagni (1984)**	Extrapolated from Building	**Zamagni (1976)**	1939 estimation projected forwards using the evolution of wages industry in Building
Wood, furniture	1913 estimation projected backwards using the evolution of wages in Building	**Zamagni (1984)**	**Zamagni (1976)**	1939 estimation projected forwards using the evolution of average wages industry in Building
Food, drinks and tobacco	**Zamagni (1984)**	1913 estimation projected forwards using the evolution of wages in Building		
Paper, printing	**Zamagni (1984)**	Extrapolation based on Lasorsa (1931)	**Zamagni (1976)**	1939 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**
Leather	**Zamagni (1984)**	11913 estimation projected forwards using the evolution of average wages industry in **Italy's Statistical Abstract (1953)**		
Agriculture	1911 estimation projected backwards using the evolution of unskilled wages in Fenoaltea (2002)	**1911-1950 Italy's Statistical Abstract (1953)**		

Table A5. Source of estimations of income by sector and work status (cont)

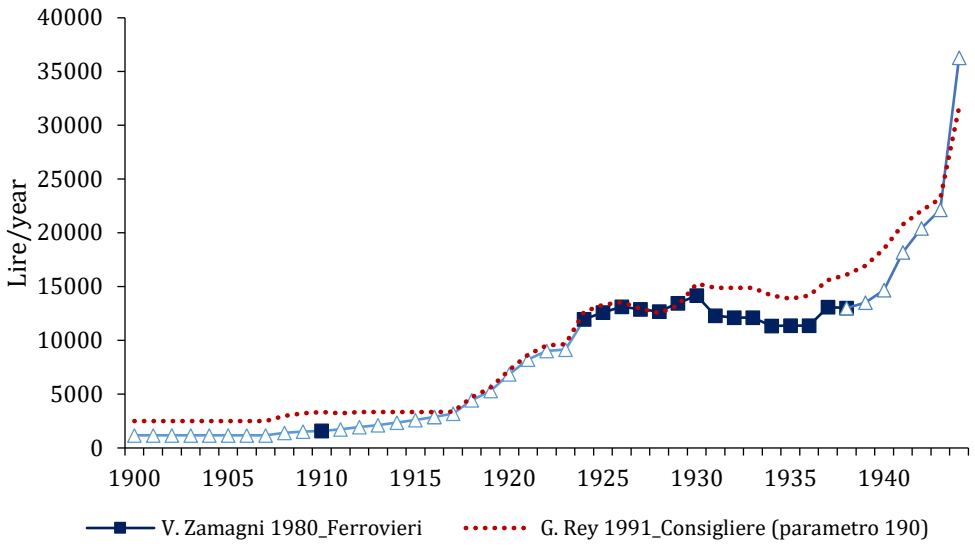
Sector	Work status	1900-1910	1910	1911-25	1925-1938	1938-1950
Industry	Salaried-employee	=Associated to salaries of the highest category of clerical personnel in the Central Government (*capo commesso*) in Rey and Vitali (1991), which are equivalent to the salary for employees in industry reported in Zamagni 1980 p. 38				
Transport	Salaried-employee	1910 estimation projected backwards based on the evolution of *Consigliere Parametro 190*, the lowest category of directive personnel in Rey and Vitali (1991)	Associated to *Ferrovieri* in Zamagni (1980)	Data interpolated	Associated to *Ferrovieri* in Zamagni (1980)	1939 estimation projected forwards based on the evolution of *capo commesso*, the highest category of auxiliary personnel in Rey and Vitali (1991)
	Worker	1910 estimation projected backwards based on the evolution of *Commesso Parametro 100*, the lowest category of auxiliary personnel in Rey and Vitali (1991)	Associated to *Operai* in Zamagni (1980)	Data interpolated	Associated to *Operai* in Zamagni (1980)	1939 estimation projected forwards based on the evolution of *Coadiutore parametro 133*, the intermediate category of managerial personnel in Rey and Vitali (1991)
Public Administration	Salaried-employee	1910 estimation projected backwards based on the evolution of *Consigliere Parametro 190*, the lowest category of directive personnel in Rey and Vitali (1991)	Associated to Civil servant of the State (*Impiegati Civile*) in Zamagni (1980)	Data interpolated	Associated to Civil servant of the State (*Impiegati Civile*) in Zamagni (1980)	1939 estimation projected forwards based on the evolution of *Consigliere Parametro 190*, the lowest category of directive personnel in Rey and Vitali (1991)
	Worker	1910 estimation projected backwards based on the evolution of *Capo Commesso*, the highest category of auxiliary personnel in Rey and Vitali (1991)	Associated to other employees of the State (*Dipend. altre)* in Zamagni (1980)	Data interpolated	Associated to other employees of the State (*Dipend. altre)* in Zamagni (1980)	1939 estimation projected forwards based on the evolution of *Coadiutore parametro 133*, the intermediate category of managerial personnel in Rey and Vitali (1991)
Professionals	Salaried-employee	1910 estimation projected backwards based on the evolution of *Commesso Parametro 115*, an intermediate category of auxiliary personnel in Rey and Vitali (1991)	Associated to *Insegnanti* in Zamagni (1980)	Data interpolated	Associated to *Insegnanti* in Zamagni (1980	1939 estimation projected forwards based on the evolution of *Commesso Parametro 115*, an intermediate category of auxiliary personnel in Rey and Vitali (1991)
Hotel, Catering and Pers. Services	Salaried-employee	1925 estimation projected backwards based on the evolution of *Usher*, in Italy's Statistical Abstract (1953)			Associated to "personale amm" of "commercio e settore alberghiero" in Zamagni (1980)	1939 estimation projected forwards based on the evolution of *Usher*, in Italy's Statistical Abstract (1953)
	Worker	1925 estimation projected backwards based on the evolution of *Usher*, in Italy's Statistical Abstract (1953)			Associated to "*albergui"* in Zamagni (1980)	1939 estimation projected forwards based on the evolution of *Usher*, in Italy's Statistical Abstract (1953)
Unoccupied	=the poorest category (unskilled workers in agriculture)					

Table A6. Sources and estimations of income differences by gender and sector

Sectors	**Estimated incomes:**	Source
Agriculture	1911-1951 actual data on female wages	Italy's Statistical Abstract (1953)
Heavy industry	1901, 1910, 1914, 1918, 1925, 1930, 1938, 1950 =43, 47, 46, 65, 65, 52, 50, 71% (respectively) of men	Annuario Statistico Italiano (1900, 1905-07, 1911, 1913, 1917-1918) , Bettio (1988), Lasorsa (1931),
Light industry	1901, 1910, 1914, 1925, 1930, 1938, 1950 =56, 64, 64, 77, 48, 50, 71% (respectively) of men	Annuario Statistico Italiano (1900, 1905-07, 1911, 1913, 1917-1918) , Bettio (1988), Lasorsa (1931),
Railway	1901, 1911, 1938= 45, 50, 55%(respectively) of men	Felice (2005)
Commerce	1901, 1911, 1938= 53, 55, 60% (respectively) of men	Felice (2005)
Credits	1901, 1911, 1938= 38, 40, 60% (respectively) of men	Felice (2005)
Various serv.	1901, 1911, 1938=55, 55, 60% (respectively) of men	Felice (2005)
Public Administration	1901, 1911, 1938=45, 50, 60% (respectively) of men	Felice (2005)
Liberal Professions	1901, 1911, 1938=50, 55, 60% (respectively) of men	Felice (2005)
Personal services	1911, 1938=70, 75% (respectively) of men	Felice (2005)
Salaried employees	1911, 1938=55, 60% (respectively) of men	Felice (2005)

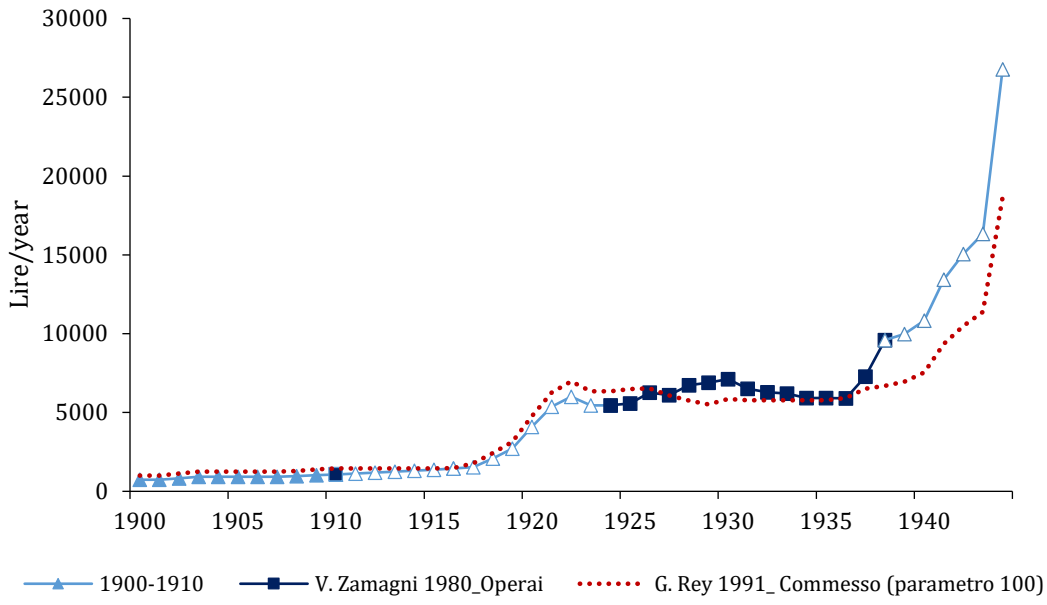
Reconstructing Incomes Wage and Salary-Earners

Figure A.2. Example: re-construction of incomes of salary-earners in transport (1900-1950)



Sources: See section 3 and tables A3 and A4 of the Appendix

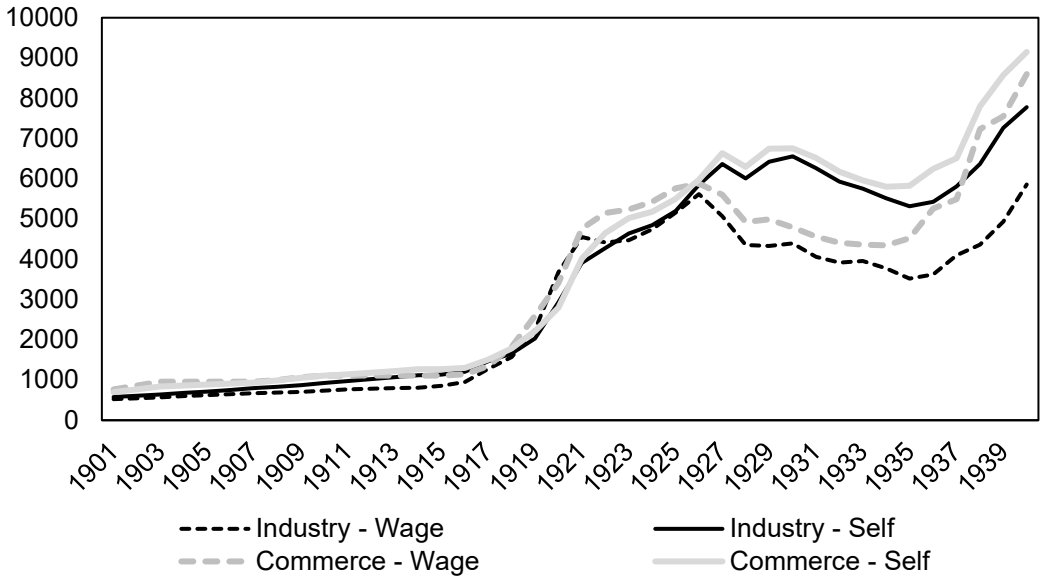
Figure A.3 Example: re-construction of incomes of wage-earners in transport (1900-1950)



Sources: See section 3 and tables A3 and A4 of the Appendix

Incomes of self-employed:

Figure A.4 – Self-employed in industry: alternative estimates



Incomes of owners:

Figure A.5 – Owners: alternative estimates

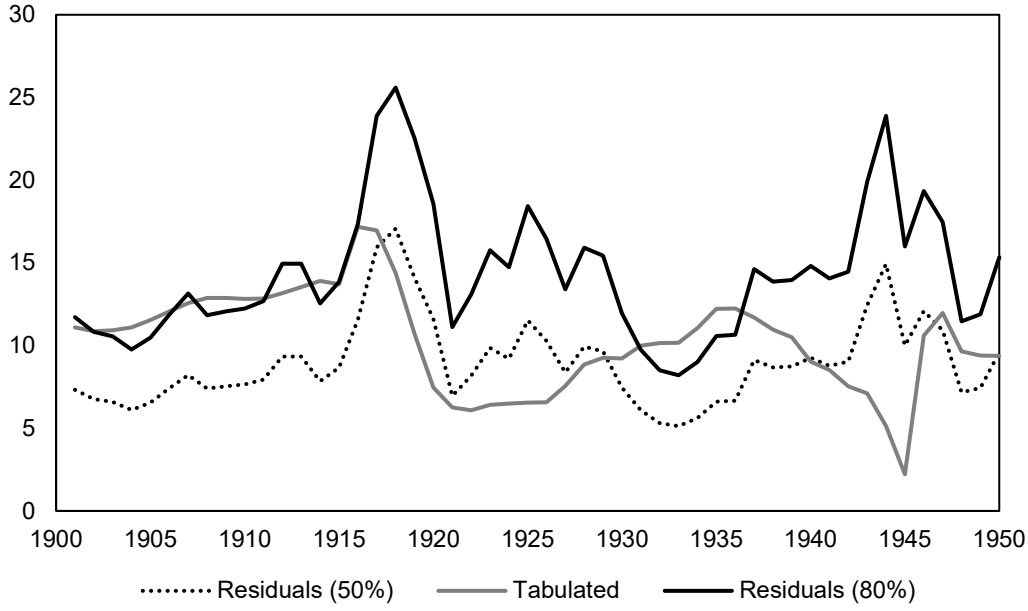
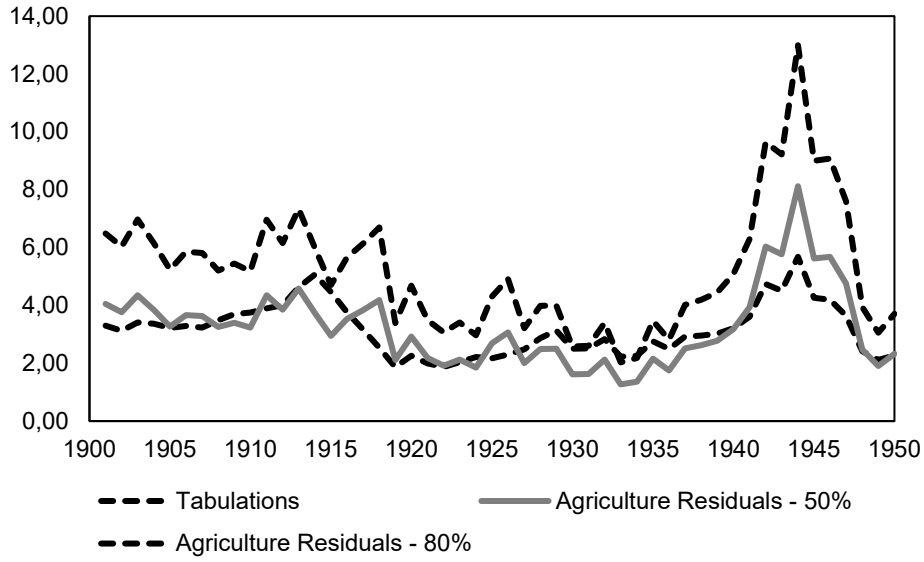


Figure A.6 – Agriculture residuals: alternative series



3. Alternative Gini Estimates

Figure A.7 – Overall Gini: alternative series