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Essays on Income Distribution and Labor Relations in Post-WWII Italy (1951-1991)

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Summary

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Introduction

Income distribution is one of the key factors to consider when analyzing an economy. Long neglected by neoclassical economics, which considers income shares as just the marginal remunerations of production factors, distribution has been considered a pivotal element in Classical-Marxian, and later post-Keynesian economic theory (Marglin, 1984; Hein, 2014; Blecker and Setterfield, 2019; Lavoie, 2022; Milanovic, 2023). According to these views, income distribution, radically shaped by class-interest, is intimately linked to growth (Bhaduri and Marglin, 1990; Baccaro and Pontusson, 2016), inflation (Rowthorn, 1977), economic policies (Kalecki, 1943; Boddy and Crotty, 1975; Epstein, 1992), political institutions (Bowles and Gintis, 1982; Streek, 2011), and is particularly relevant for understanding economic and political trends in history (Glyn, 2006; Mattei, 2022). Recently, following the 2008 crisis – which profoundly shook the foundations of contemporary capitalism – income distribution has been brought back to the forefront of economic theory by many scholars who consider inequality one of the key aspects to study the functioning of economic systems (Atkinson, 2015; Stiglitz, 2012; Reich, 2015). Notably, Piketty's (2014) book, "Capital in the Twenty-First Century," building on earlier significant studies on top incomes shares (Piketty and Saez, 2003; 2006), is regarded as one of the most influential works in contemporary economics.

The renovated interest has been particularly significant in the economic history field, where correctly estimating inequality trends is considered an important exercise to expand our historical knowledge of the phenomenon – very scarce or almost absent before the recent wave – and to investigate its causes (Jackson, 2023). The literature has generally found that, among the main causes of long run, typically oscillating trends in inequalities, we can mention wars, plagues, taxation and redistributive institutions (Alfani, 2025; Federico *et al.*, 2021; Scheidel, 2018). The term coined by Milanovic (2016), "Kuznets waves"[1], indicating historical phases of increasing or decreasing inequalities bringing to political overheating and institutional changes, has marked a reference point for the understanding of the impact of income distribution on economic-historical trajectories. This thesis is primarily inserted in this growing branch of literature, as it attempts to quantitatively analyze inequality trends and their causes within a historical framework and methodology.

According to many economic theories, income distribution is intrinsically shaped by labor relations. The "shares of the pie" deriving from production, namely wages and profits – as their within-class distribution – can be properly analyzed only in the context of labor market dynamics and their institutional arrangements. Pre-industrial economic historians devote

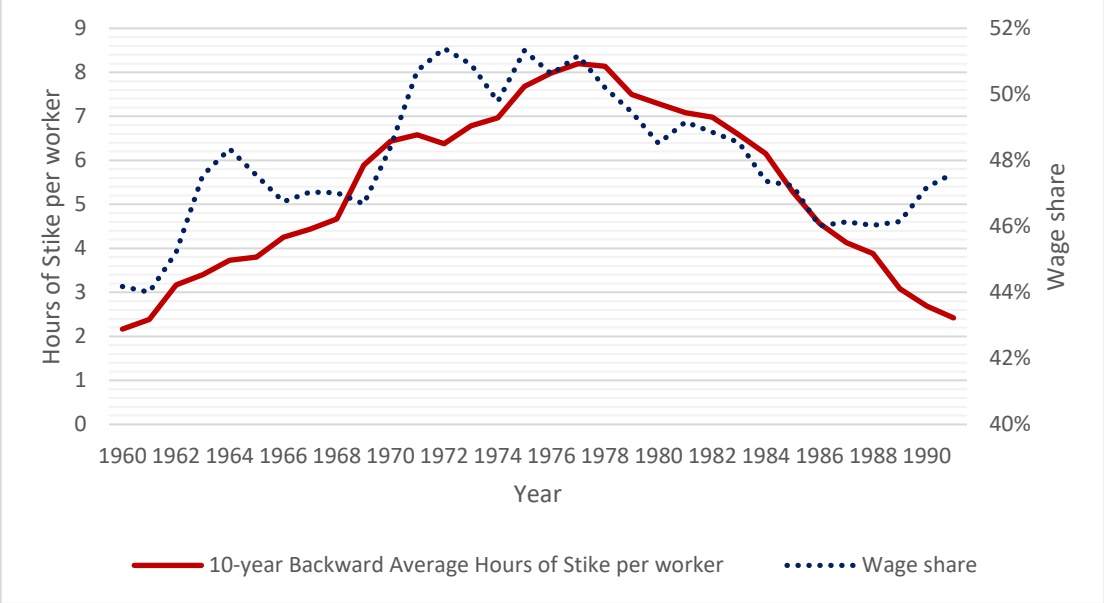
[1] Term inspired by the Kuznets' curve concept introduced by the foundational paper for this literature Kuznets (1955).

particular attention to the topic, for example, in explaining post-pandemics and post-wars inequality trends (Alfani, 2021). But, of course, this is particularly relevant for industrial and modern societies, where production booms pose the base for fast labor market changes. In this context, workers' bargaining power, and the mechanisms through which it is developed are pivotal drivers of the dynamics of functional and personal income distribution. The appropriation by different social classes of the benefits of growth are significantly involved in the social bargaining mechanisms – including direct bargaining over wages or social welfare measures. Moreover, many institutional settings, relevant arguments for modern theories of distribution and growth, are shaped by class-struggle and the relative power of different social classes (Piketty, 2015), which primarily manifest and interact in labor markets. This thesis intends to prominently focus on the link between labor relations and income distribution, as this is considered a relevant topic for the historical evolution of inequalities.

Against this background, it could be argued that Post-WWII Italian history represents a paradigmatic case for studying the consequences of labor relations on income distribution. The literature has generally emphasized how western countries in the Golden Age based their growth models on strong State interventionism, with several measures on demand management, redistribution, and wage bargaining (Eichengreen, 2006; Glyn, 2006; Crafts and Toniolo, 1996; Toniolo, 1998; Marglin, 1990). This strong interventionism led to a general period of decreasing inequalities, with growth paths based on increasing wages and mass consumption – the so-called wage-led growth. Contrarily, Italy followed a different path, where the generalized lack of State interventionism on labor issues and redistribution policies – at least until the 1970s – provides a good example of an abundantly self-regulating capitalist system in the 20th century (Toniolo and Rossi, 1996; Salvati, 2000; Boltho, 2013; Di Martino and Vasta, 2017). In a relevant book on the historical analysis of post-WWII Italy, Barca (1999) refers to Italy as a "compromise without reforms", where, along to a strong State interventionism on "extraordinary" issues – for instance State industries – there was the complete lack of regulation on "ordinary issues" – such as labor relations and "rules of the game" on taxation, redistribution and workers' rights. This was also tied to an export-oriented industrialization strategy, where the fixed exchange rates of the Bretton Woods system made labor costs the primary source of competitiveness. In the 1950s and early 1960s – a period of extraordinary growth often referred to as the "economic miracle" – the fundamental weakness of workers' movements, prompted by high unemployment rates, favored an unbalanced growth path. Thanks to strong productivity gains, profits outperformed stagnant wages. During the 1960s, due to the decrease in unemployment and marginality rates, the labor movement rose again, fostering a long season of conflict lasting until the late 1970s – probably the most important in Europe. This time, profits declined in favor of substantial wage gains and advances in labor rights. The late 1970s marked the beginning of a new phase, in which unions — pressured by high inflation, rising unemployment, terrorism, and a newly assumed institutional responsibility — definitively

abandoned their confrontational stance on labor demands. Consequently, the 1980s witnessed growing moderation in wage claims and labor rights, culminating in the 1990s reforms on labor market deregulation. Profits rose again, while certain workers' requests were curtailed through the expansion of the welfare state, particularly in the area of pensions, which led to the public debt boom and the following fiscal consolidation of the early 1990s. Figure 1 shows the wage share and the ten-year backward average of hours of strike per worker between 1960 and 1991, retracing what Aris Accornero (1992) called the "Union Parabola" in post war Italy and its effect on income distribution.

Figure 1. Wage Share and Ten-year backward average of Hours of Strike per worker in Italy, 1960-1991.

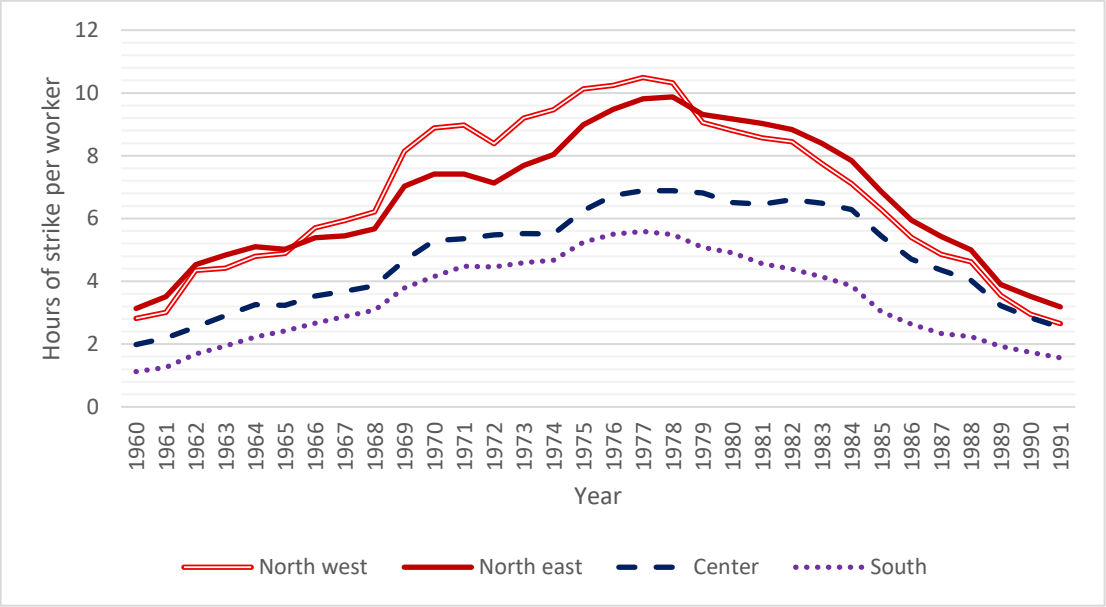


Source: Wage Share: Torrini (2015); Hours of Strike per worker: own elaborations from Istat sources and Chiaiese and Ciriotto (2025).

The Italian case is particularly interesting for studying the effects of labor relations on income distribution from an additional perspective. The highly diversified labor markets of the Italian peninsula, characterized by distinct economic and social structures, allow us to understand whether these differences could lead to markedly different outcomes – thus confirming the impact of labor relations on distribution. Figure 2 shows the ten-year backward average of hours of strike per worker for four different macroregions. It is evident that Northern regions, the more industrialized parts of the country, had conflict propensities two to three times higher than in the South all over the period. Indeed, Northern regions, where unemployment and marginal rates were quite low, were also the drivers of historical struggle over income distribution in Italy. For example, Vittorio Foa (1976), CGIL secretary from 1957 to 1970, clearly argued that trade unions usually set their claiming stances according to the unemployment rates – and, consequently, conflict propensity – of the Northwest. However, the effects of this particular regional divide and, concurrently, of the national wage bargaining mechanism are not commonly studied in the Italian historical literature. In particular, apart from the period

following the introduction of full wage indexation in 1975 – the so-called *Punto Unico di Contingenza* – the effects of the centralized wage bargaining system and, later, institutional reforms expanding labor rights and the welfare state have largely been overlooked. In sum, the Italian regional disparities of the post-war period have rarely been studied from this perspective, but they are clearly important to analyze historical trajectories relative to distribution.

Figure 2. Ten-year Backward Average of Hours of Strike per worker in Italian Macroregions, 1960-1991.



Source: own elaborations from Istat sources and Chiaiese and Ciriotto (2025).

This doctoral thesis develops four essays that fundamentally highlight the importance of income distribution and labor relations dynamics in shaping economic and historical events in Italy during the period 1950–1990. All the essays are interconnected by this perspective and exploit a regional or provincial focus. In the thesis, the concept of income distribution is not only related to the "classical" struggle between wage and profit but also encompasses a broader perspective. While the first and second essays are more traditionally framed, focusing on the measurement of income inequality and the impact of income distribution – shaped by labor relations – on inflation, the third and fourth essays expand the concept of income distribution to include the formation of the hidden economy and the occupational health and safety (OHS).

The first essay, coauthored with Giacomo Gabbuti, is aimed at measuring income inequality in Italy between 1950 and 1973 through a new methodology: dynamic social tables (DSTs). Dynamic social tables, recently endorsed by Milanovic (2023), reconstruct social classes year by year and assign them an income in order to compute inequality with synthetic indicators. They reframe a more classical approach to the study of personal income inequality, while also establishing a significant connection with functional income distribution. Considering the absence of previous inequality measures due to the lack of more traditional micro sources, the essay aims to shed new light on a period of major structural change, marked by mass

industrialization and the abandonment of rural areas. It ultimately assesses the effects of both short-term distributive episodes and long-term economic transformations originating from the labor market and affecting distribution.

The second essay studies the effect of labor relations and income distribution on inflation. The essay is theoretically grounded in "conflict inflation theory" originally formulated by Rowthorn (1977) and attempts to analytically examine the relationships underlying the well-known Philips curve – unemployment, labor conflict, wage and inflation – in the period 1952-1972. The main focus of the essay is centered on the historical contribution of workers' bargaining power in labor markets to inflationary trends, highlighting how the distributive struggle directly affected a key macroeconomic variable. All the relations are checked through the reconstruction of a panel dataset composed by provincial data, thus allowing for a deep detection of regional patterns.

The third essay, coauthored with Dario Chiaiese, studies the development of the informal economy in Italy and its regions in the post-war period (1951-1991). Its development fundamentally highlights the governments' tacit endorsement and the resulting "hidden profits" increase for entrepreneurs. This framework is situated within the debate on the historical weakness of Italian governments in enforcing taxation to fund redistributive policies, thereby contributing to a more unequal income distribution favoring particular class-interests — specifically, small entrepreneurs and the petty bourgeoisie. The essay fundamentally highlights how the link between labor relations, income distribution, and growth could be expanded beyond the usual conceptual limits, shedding light on a hidden part of the economy.

The fourth essay expands the concept of income distribution studying the reduction in workplace industrial deaths occurred in Italy between 1951 and 1991. Indeed, when governments and institutions demonstrate limited capacity to implement policies on occupational health and safety (OHS) — as in the Italian post-war historical context — these issues can be regarded as additional components of wage, freely bargained at workplace or national level through labor contracts specifically stipulating precise safety improvements or more general labor rights. In this essay, the study of the provincial level is essential in trying to uncover provincial patterns and convergence or divergence dynamics.

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Chapter 1

A Golden Age for All? Income Inequality and Social Classes in Italy, 1951-1973.

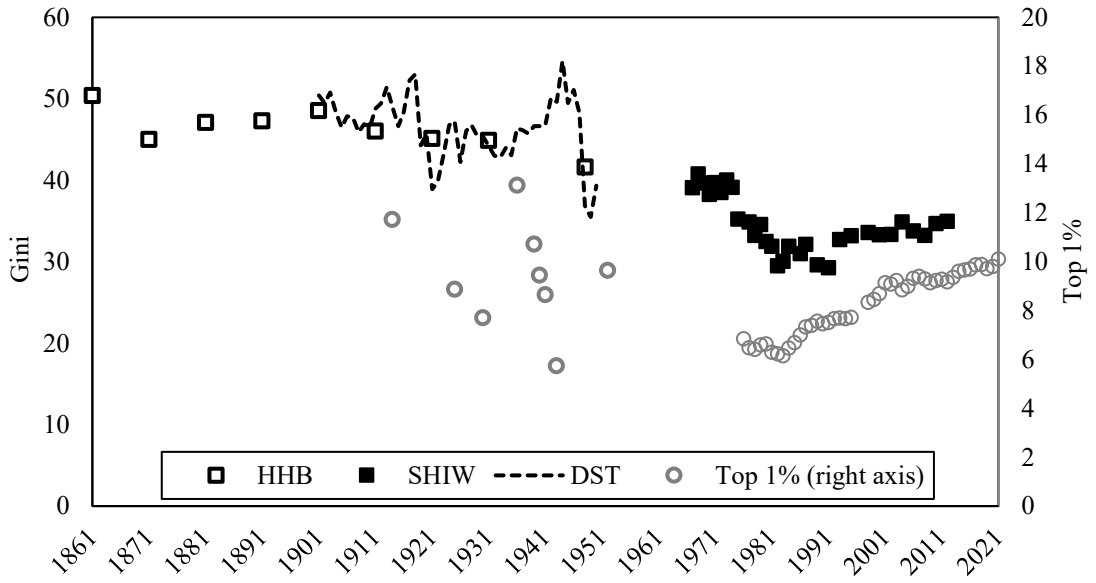
With Giacomo Gabbuti, Sant'Anna School of Advanced Studies.

Abstract: This paper presents the first reconstruction of income inequality in Italy during the so-called 'Golden Age', by building Dynamic Social Tables (DSTs) from 1951 to 1973, consistent with existing series for 1901-50. We reveal increasing income inequality between 1951 and 1961 (the 'proper' Economic Miracle). The first strikes in the metalmaking sector and a sudden recession then led to a stagnation in inequality. While within-labour inequality steadily declined after 1966, overall inequality reached a peak in 1969, to decline towards the levels recorded by household surveys by early-1970s. While showing a 'Kuznetsian' trend in the period of most sustained structural change of Italian history, we highlight socio-political developments, in line with the literature which links both the end of Italy's 'Golden Age', and the post-1968 reduction in inequality to the explosion of social conflicts. Somehow at odds with prevailing narratives, we also find an increase from 1951 in the share of income accrued by Italian working women.

1. Introduction

In the two decades after the tragedy of World War II and the reconstruction – which for Western Europe are known as the "Golden Age" (Kindleberger, 1967; Eichengreen, 2008) – Italy witnessed unprecedented change. As Rossi and Toniolo (1996, p. 442) put it, "changes in the structure of the economy and of society at large, which in the advanced countries of the West took several decades to be completed, were compacted into less than twenty years, during which Italy was abruptly turned from an agrarian economy (and society) into an industrial one." Economists and economic historians have debated the reasons behind what is commonly defined as an "Economic Miracle;" yet, we do not know anything about economic inequality in this period. As it is shown in Figure 1, the first Republican decades – and especially the crucial 1950-1970 period – remain a terra incognita in the otherwise rich history of inequality in Italy (Alfani, 2021; Vecchi, 2017).

Figure 1. Income Inequality in Italy, 1861-2021: The Existing Picture



Notes: Authors' elaborations on several sources: HHB and SHIW series from Vecchi (2017); DST from Gómez León and Gabbuti (2025); Top 1% series until 1952 from Gabbuti (2022), and then from Guzzardi and Morelli (2024).

This strongly limits our understanding of both Italian economic development, and its distributive implications. While the period clearly represents the most sustained period of structural change – calling for traditional, Kuznetsian interpretations of inequality dynamics (Milanovic, 2016) – most authors discussed the inability of Italian society to reach a compromise between growth and redistribution (considered a necessary condition of the European Golden Age) among the causes of the later difficulties of the Italian economy (Toniolo, 1998). Rather than a mere curiosity, an assessment of the distributive 'impact' of the Italian economic miracle is thus a crucial component, to evaluate its legacy, and possibly, to discuss the political economy of the subsequent decline.

In this paper, we advance the first, consistent yearly estimates on income inequality in Italy from 1951 to 1973. We do so by applying Dynamic Social Tables (DSTs), which Gómez León and Gabbuti (2025) just adopted to discuss income inequality in Italy from 1901 to 1950. While not based on micro sources, this methodology allows us to contribute in several ways to both the literature on the historical evolution of inequality, and Italian economic history. First, DSTs make it possible to investigate the distributive impact of structural change – adding the very interesting case of the Italian Golden Age to the long-standing debate on the link between economic growth and income distribution (Kuznets, 1955; Milanovic, 2016; Alfani, 2021). In fact, our paper is possibly the first work of historical inequality to focus on the European Golden Age, so far mostly covered by means of scattered evidence.

By construction, DSTs make also possible to investigate within-labour differences, which are often hidden by estimates focusing on top earners or household incomes. Despite the scarcity of sources, paradoxically more severe for these decades than for earlier periods, we contribute

to the literature on gender gaps, by providing estimates on both income and employment divides in a period in which female participation to the labour force reached its historical minimum, and the long-run convergence in wage continued (Bettio, 1988). Moreover, considering the persisting importance and relevance of social classes in accounting for income and social inequalities in Italy (Cetrulo et al., 2023; Fana and Villani, 2024), in this paper we also contribute to the literature by producing comparable evidence on the evolution of differences between blue and white collars, as well as between owners and employees across different sectors, and to normal and "precarious" workers within agriculture and industry, making it possible to appreciate the evolution of these class divides, over the long-run and in more detail for this crucial period of social transformation. Finally, the yearly frequency of our estimates makes it possible to discuss the evolution of inequality around crucial historical juncture – the kind of short-term distributive episodes, which Atkinson (1997) recommended inequality researchers to focus on, which, as will be discussed, were also a crucial component of the economic and social history of Italy in this period.

To appreciate institutional, political and social developments, section 2 provides the reader with historical background on both the evolution of Italian economy and society in the Golden Age, focusing on the distributive episodes most frequently mentioned in the literature, before discussing economic inequality in Modern Italy. Then, section 3 discusses how to apply DSTs to Italy after 1950, and summarises the extensive documentation of our sources, reported in the Appendix. Section 4 introduces our series for inequality – both within labour and overall – and place them in a long-run and comparative perspectives. In section 5 we then focus on the 1951-73 period, presenting Growth Incidence Curves (GICs), and discussing in greater detail the evolution of within-labour differentials. Before more general Conclusions (section 7), section 6 delves with the gender inequality aspects of the Italian Golden Age.

2. Background and Historical Framework

2.a. Italy in the European Golden Age

The so-called Golden Age is generally regarded as an extraordinary exception in the history of European and North American capitalism: "Between 1950 and 1973, the real per caput GDP of western Europe grew more than twice as fast as the secular trend and faster than any other comparably large group of countries" (Toniolo, 1998, p. 252). Compared with the troubled interwar decades, the post-1945 ones were relatively spared from inflation, depressions, and similar shocks, which are credited with redistributive effects in accounts such as Scheidel (2018). While advancing different explanations, authors from different disciplinary and theoretical background, recognise how most European countries experienced a sort of democratic compromise, made of increasing productivity and labour rights, progressive taxation and the expansion of the welfare state, allowing this exceptional period of high growth

to go hand in hand with falling inequality (Crafts and Toniolo, 1996; Eichengreen, 2008; Glyn, 2006). Indeed, after the divergent trends in the interwar period (Gómez León and De Jong, 2019; Gómez León and Gabbuti, 2025), the post-WW2 era is when all European countries experience the so-called "Great levelling" – a sustained decrease in income and wealth inequality (Milanovic, 2016; Piketty, 2014). As noted by Toniolo (1998, p. 265), which recalls Kuznets' emphasis on the "social acceptability" of growth, "during the golden age Europeans brought home the lessons of the interwar years and satisfied their desire for growth in ways that in the light of previous and subsequent history appear to be remarkably acceptable."[2]

Italy, however, represented an anomalous case within this framework. As summarised by Nardozzi (2003, p. 140), the "three specific features" of Italy's golden age are "its importance for our national history, its particular intensity, and its brevity." The first can easily be accounted by Italy's relative backwardness. After WW2 – which had brought widespread devastation, but also the fall in 1943 of Mussolini's Fascist regime, and the transition to a democratic Republic, marked in 1946 by a Constitutional Referendum and in 1948 by a new Constitution – Italy was far from being a fully developed country. Despite the absence of unemployment benefits, and the likely underestimation of "the underemployed and the 'hidden' unemployed," between 1,5 and 2 million people were registered as unemployed (Alberti 2018, p. 89), and large portions of the population to extreme poverty and deprivation.

As for the intensity, between 1950 and 1973, while the labour force in manufacturing increased from 23 to 28%, the share of agriculture more than halved, from 45 to 17%. Per capita GDP was in 1950 only 38% of the US and 50% of the UK levels; by 1973, it had jumped to 64 and 88% respectively. In 1948, more than one third of Italian families were in absolute poverty, while possibly half of the population was undernourished; by 1973, both figures had dramatically shrunken to some 12.5 and 5% respectively (Vecchi, 2017). In Nardozzi's (2003, p. 141) words, "Italy alone rose from the second tier to become, thanks to its economy, a permanent member of the select club of important nations." Especially between 1950 and 1962, but throughout the whole period, Italy "outperformed its European peer group," thanks to the "relatively large scope for catch-up" (Crafts and Magnani, 2013, p. 75), to the foreign aid of the Marshall Plan (Bianchi and Giorcelli, 2023; Martinez, 2025), a favourable external environment, a stable macro-economic outlook and a balanced budget, in turn, guaranteed by the very low public expenditure (Battilani and Fauri, 2008, p. 176). This resulted into unprecedented and fast social, cultural and economic transformations of everyday life, while "the North-South income gap narrowed for the first and only time since unification" (Toniolo 2013, p. 23).

[2] As will be discussed in section 4, however, direct statistical evidence on inequality in this period, while not entirely absent as in the Italian case, is still limited.

Another fundamental difference is that Italy lacked the institutions which, according to Toniolo (1998), explained the progressive nature and the success of the European Golden age. According to Boltho (2013, p. 115), Italy "broadly matched the growth rates of Germany and Japan in the Golden age," but was more backward in "the labor market and social policy areas." While "migration and urbanization were hardly uniquely Italian features," Boltho continues, what strikes out is the country's "inability to accompany rapid economic change with parallel changes in infrastructure and social welfare provisions," which in turn led to "an overreaction." Boltho (2013, p. 110), as well as Capussela (2018), stress how the political situation led to much smoother replacement of both economic elites and public administration in Italy, compared to Germany and Japan – thus reducing the scope for Olsonian interpretations based on changing distributional coalitions, and preventing more radical, Keynesian reforms. Crafts and Magnani (2013, p. 76) also note how, "unlike what happened in the United Kingdom in 1948 and later in Germany," the increasing international openness "was not accompanied by corresponding attempts to implement competition policies; corporate governance structures remained closed, and sectors sheltered from international competition (retail, professional orders, public utilities) remained highly regulated." Indeed, rather than on rational planning and regulation, the Italian miracle was based on a more "classic" export-led model, based on the containment of labour costs that was essential to the productive system (Battilani and Fauri, 2008, p. 203). Despite the centralised bargaining system inherited by the Fascist period, wage moderation was not the result of the "corporatist social contract" discussed by Eichengreen (1996) and Toniolo (1998), but rather of "weak union bargaining power where, as Lewis (1954) might have put it, labor supply was 'unlimited' as labor was redeployed out of agriculture" (Crafts and Magnani, 2013, p. 79). Not surprisingly, an intense season of labour and social conflicts was soon to end the Italian miracle, explaining its "brevity," while contributing to the puzzle of Italian income inequality in the period – made, as we have seen, of both structural change, and political and institutional factors.

2.b. Major Distributive Episodes

While growth remained sustained in 1963-73 – at 4,8% of annual growth rate, and productivity still well "above the secular trend" (Rossi and Toniolo, 1996) – by 1962, the gap between supply and demand in the labour market was almost rebalanced. A spontaneous wave of strikes, leading to sustained increases in nominal wages, opened a long "instability of industrial relations" which, while marking the end of the economic miracle, "confirms the absence of institutions of a coordinated market economy" (Crafts and Magnani, 2013, p. 75).[3] As discussed by Rossi and Toniolo (1998, p. 443), by the late 1950s also the "the equilibria at the centre of the political

[3] According to available estimates, the labour share – which had declined from 64% in 1954, to less than 61% in 1961 – increased by more than 4 points by 1964 (Torrini, 2015).

spectrum, which had guaranteed stability since 1948, gave increasing signs of weariness starting in the late 1950s." After the dominance of the Christian-Democratic Party, together with very junior partners, 1963 saw the creation of the first centre-left government, with the inclusion of the Socialist Party – which, "as a price for its participation in the government," obtained "the nationalization of the electricity industry." However, this encountered strong opposition by conservative elites – including "vast and often illegal exports of capital" in reaction to projects of fiscal reforms, which contributed to the "widespread fears of currency devaluation" (Capussela, 2018, pp. 131-132).

In 1963, Bank of Italy set very restrictive measures to stop inflation and rebalance the balance of payments, leading to the first, sudden recession of the post-WWII period – the so-called *congiuntura* of 1963-64, which greatly impacted the Italian public. For Kindleberger (1967, p. 41), it simply revealed the fact that "Italy had run out of its surplus labor and would have to grow in a different pattern." The recession increased unemployment and did not favour workers' movements, so that also the labour share went back to 61% by 1969. In the following years, unions had to endure a new moderation policy, while profits – and profit share – were reestablished thanks to industrial restructuring processes (Graziani, 1998).[4] The first prominent episode of the distributive struggle in post-war Italy (1962-1965) essentially concluded with a throwback – according to Capussela (2018, p. 136), dealing "a blow to the very idea that meaningful reform was possible." Indeed, Boltho (2013, p. 129) considered the "lack of substantial reforms in the reconstruction years," the "administrative inefficiencies," the "continuing underdevelopment of the *Mezzogiorno*" and the "near-permanent state of conflict in industrial relations" as the most "disappointing features in Italy's performance" after 1945.

The lack of State intervention on the topic of incomes and redistribution posed the basis for a new exceptional distributive event – the aforementioned "overreaction." In 1969, when unemployment had reached again the low levels of 1962, the contracts of some 70% of industrial workers had to be renewed: this triggered the so-called "Hot Autumn" (*Autunno Caldo*) (Battilani and Fauri, 2006, p. 211). Workers' protests managed to obtain 40 hours per week, and average 50% increase in manufacturing wages in just a few years (1969-1972) – also resulting from the equalisation, in these years, of bargained minimum levels, which have been previously differentiated by province to account for price differences (Rappa, 2025; Ramazzotti, 2024). In 1970, the introduction of a "Workers' Statute" (*Statuto dei lavoratori*) eventually "brought the Constitution into the factories," granting workers' new rights. Workers' movements were also able to carry out important battles at national level, aiming at broader reforms (Rappa, 2025). The period following 1969 was indeed one of broader social movements, which managed to finally obtain a truly progressive personal income tax (*Imposta sulle persone fisiche,* IRPEF), introduced only from 1973 (Bozzi, 2021), and an expansion of

[4] A brief, English summary of Augusto Graziani's influential interpretation is in Nardozzi (2003).

the welfare state (Giorgi and Pavan, 2021). On the other hand, the same 1969 marked the beginning of the so-called "strategy of tension:" neo-Fascist terrorist attacks, arguably supported by deviated secret services, aimed at favouring authoritarian handling of this social tension (Ginsborg, 1990). As noted by Capussela (2018, p. 138), while "Italy was never inflicted a coup," its occurrence was so likely that "both opposition and ruling parties adjusted their strategies to the threat."

All in all, while Toniolo (1998), reflecting on the European post-1945 growth, had emphasized the importance of institutional arrangements which had balanced the need for growth with social equality, analysing Italy Rossi and Toniolo (1996, p. 443) agreed with Boltho (2013) in depicting the unwillingness of Italian capitalists to adjust to the "most immediate political and industrial relations consequences" of full employment. As most commentators, they also point to conflictual nature of Italian unions, which "were not culturally and ideologically equipped to use their newly acquired power to foster growth rather than to push for drastic immediate changes in income distribution" (Rossi and Toniolo, 1996, p. 443). However, it should be considered that, as noted right at the end of the period by a foreign observer, after facing the aforementioned resistance to reform, Italian workers had "new objectives," which went "far beyond the traditional demands" on labour conditions, "involving confrontation not only with employers but also with the public authorities" (Pobdielsky, 1974, p. 42). For Pobdielsky, trade unions' "claims directly related to the quality of life of the working population," but also to "an increasing involvement with more general policy issues," from "workers' participation in economic and social policy decision," and "against the excessive inequality of the distribution of income and wealth between social classes, economic categories and regions, and the shocking contrast between pockets of opulence and misery". In this sense, a detailed investigating of the level, nature and trend in income inequality in post-1945 Italy is crucial to fully understand the limitations of its miracle.

2.c. Inequality in Post-WW2 Italy

Despite Toniolo (2013, p. 23), in the aforementioned references, added how "income distribution became steadily more egalitarian" during the Golden age, Figure 1 shows that we do not know much between 1948 and 1968 – when, in fact, income distribution seem relatively similar, just above 40 Gini points, despite the contemporary fall of absolute poverty from 34% to ca. 20% (Vecchi, 2017). The most authoritative labour share series from 1951 reproduce trends from real-time estimations by Istat, the National statistical institute, depicting a sustained growth of the dependent wage share, which did not translate into an equivalent increase in the overall labour share (Torrini, 2015). Brandolini (1999) critically scrutinised the reliability of the earliest household budgets surveys. While entirely discarding the early surveys by Istat, Brandolini (1999, p. 299) noted how also the pioneering survey run by the private institute

Doxa in 1948 "falls short of the minimum requirements for serious quantitative analysis."[5] As for the early waves of Bank of Italy's *Survey of Households' Income and Wealth* (SHIW), they arguably underestimated non-labour incomes (and thus, overall inequality): before 1973, the only income from property recorded was "cash rents of property;" even later, "data on financial assets have not been collected in a continuous manner and have undergone frequent changes of definition" (Brandolini 1999, pp. 203-4), while "income from participation in private companies" was recorded for the first time in 1989.

In any case, the "sharp fall" of income inequality is clear "only in the 1970s" (Brandolini, 1999), somehow postponing the Italian Great levelling. As shown in Figure 1, this can be confirmed only in part by the earliest reliable fiscal sources (Guzzardi and Morelli, 2024); in this case, however, the latest figure available in 1952 show quite higher share for the top 1% (Gabbuti, 2022) – almost 10%, a level would be reached again only recently.[6] In the absence of available archival resources, fiscal data cannot, however, can be used to bridge the gap.[7] To try to infer the trend in the 1950s, Brandolini (2000, pp. 218-220) showed also a simple Gini, obtained by the average dependent wage for the 21 sectors reported in the national accounts, weighted by the number of workers in each of these sectors. While confirming the "crucial episode" of the Hot Autumn, and the following "strong egalitarian push" throughout the 1970s, the 1950s and the early 1960s show slowly, growing divides within labour. Indeed, authors such as Gorrieri (1971), which talked about a "salary jungle" (*giungla retributiva*), and Sylos Labini (1974), which discussed "marginal" and "precarious" labour, shared the idea that most of inequality was taking place within labour.

In an opposite direction went the early results based on historical household budgets, which covered also the years 1951 and 1961, suggesting a statistically significant decline of inequality between these two years (Rossi et al., 2001) – a result which was not re-stated in later publications (Vecchi, 2017). Recently, Gómez León and Gabbuti (2025) bridged the gap between the decadal estimates until 1931, and the Doxa-based 1948 estimate: as shown in Figure 1, while obtaining similar level of overall inequality, their series strongly increased until 1944, dramatically declined after, and then increased again in 1949-50. In the next section, we will discuss how their methodology can be extended to the later decades.

[5] Among the reasons, Brandolini pointed at "the indirect way of estimating income, the lack of updated information on the demographic structure of the Italian population and the sampling procedure made the results of this survey very imprecise."
[6] Adopting the Gini index on the same source, Brandolini (2000) showed a more substantial decline in the mid-1970s.
[7] As discussed by Gabbuti (2023), it could be possible only to estimate the top 0.1% in few years in the 1950s. Preliminary findings suggest an increase between 1952 and 1955.

3. Data and Methodology

3.a. The Dynamic Social Table Approach

The discussion above would suggest inequality was all but stable in the Italian Golden age: intense structural change and a turbulent socio-political environment could have determined any trend within the 1948 and the late 1960s. There are also reasons to believe both estimates could underestimate the true level of inequality, which workers and their organisation perceived as very high. To try to address these issues, in this paper we will apply the DSTs approach. An authoritative scholar such as Milanovic (2023, p. 289) described DSTs as one of the "three remarkable developments in the work on inequality," together with Piketty (2014), and global inequality studies. After the first explicit adoption of the definition in the dissertations of Rodríguez Weber (2017) and Gómez León (2019, 2021) on Chile and Brazil respectively, DSTs-based estimates have been recently advanced for 1900-1950 for Germany and UK (Gómez León and de Jong, 2019) and Italy (Gómez León and Gabbuti, 2025). While not precisely DSTs, the earlier work on Spain since 1850 by Prados de la Escosura (2008), and most recent works on Eastern Europe and again Latin America by Nikolić et al. (2024) and Astorga (2024), adopt similar approaches. Works such as Rodríguez Weber (2023) stressed the possibility of estimating DSTs in period and geographical areas where fiscal sources – not to mention surveys – are not available. Also in presence of these sources, this literature showed how DSTs can deepen our understanding of inequality, covering gender, skill and class divides.

As described by Gómez León and de Jong (2019), DSTs are an 'extension' of the classic social tables, adopted since the earliest discussions on income inequality in economic history. Rather than relying on 'original' social tables obtained from historical sources, researchers build consistent social tables first, by relying on sufficiently detailed sources on active population – usually, censuses. For instance, in Gómez León and Gabbuti (2025), Italian population censuses from 1901 to 1951 were arranged to obtain 30 work categories – owners, self-employed, salary and wage earners across different sectors – in turn for both genders. Each of these groups was then attributed an income, relying on a range of different sources. By interpolating censuses, 'dynamic' social tables – with yearly information on the number of individuals within income groups and their respective associated incomes – are obtained, making possible to compute several yearly indicators of inequality. Most importantly, it is possible to obtain Gini coefficients by following the formula:

$$G = \sum_{i=1}^{n} G_i p_i \pi_i + \frac{1}{\mu} \sum_{i}^{n} \sum_{j>i}^{n} (y_j - y_i)\, p_i p_j + L \qquad (1)$$

$$\left\{ \begin{matrix} inequality \\ within \end{matrix} \right\} \quad \left\{ \begin{matrix} inequality \\ between \end{matrix} \right\} \qquad \{overlap\}$$

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 ($y_j > y_i$); G_i is the Gini among individuals belonging to i-th social class; and L is the overlap between classes, which is different from 0 if members of a lower class (i) have incomes exceeding that of members of a higher social class (Gómez León and Gabbuti, 2025). As in that paper, we follow the most conventional approach where the first term (inequality within classes) and L (the overlap term) are assumed to be zero. In other words, we assume that individuals belonging to a particular group earn the same mean income and, consequently, that incomes do not overlap across classes.

3.b. Extending Dynamic Social Tables to Post-WWII Italy

From the discussion above, it follows that DSTs allow us to measure inequality of individual monetary incomes among those who earn them – a good proxy of pre-tax, market inequality. While the potential underestimation of inequality can be mitigated by introducing the highest possible level of disaggregation within each occupational group, a clear limitation is the lack of information on transfers which becomes more problematic when government redistribution through transfers and taxes became important (Gómez León and de Jong 2019, p.1079). Importantly, the limited welfare state in the early Republican decades was largely based on workers' and employers' contributions, with limited government redistribution (Giorgi and Pavan, 2021). As for taxation, in 1945 state tax revenues accounted for only 15% of the GDP, up to only 18% by 1974 (Pobdielsky, 1974), when revenues from (not very progressive) direct taxation amounted to barely 7% of the GDP – placing Italy at the bottom of European comparisons. Only the introduction of IRPEF from 1973 led to an increase in both progressivity and tax revenues, converging to the OECD average (Bozzi, 2021). As for the absence of rental incomes, while the period saw a strong reduction of sharecroppers, whose remuneration should include imputed rents, national accounts point to an increase of this figure from some 4% to 7% during the 1950s, later stagnating around 6% (Golinelli, 1997): only from the 1980s housing rents rose steadily, getting close to 15% by 2010 (Torrini, 2015).

All in all, while these limitations should be considered especially in comparing DSTs with existing alternatives, this approach seem suitable to the case of Golden Age Italy. In this paper, we do not innovate on the methodology: as our aim is to fill the gap in Figure 1, we will follow closely the work by Gómez León and Gabbuti (2025), to ensure the greatest possible consistency: first of all, by building our DSTs with the same number of groups, and then following, whenever possible, the same assumptions. In section 5 and 6, we will exploit the unusual situation of a 'modern' statistical environment, in which some further statistical evidence became available, to bring further detail on labour market dynamics.

In section 5, we will also estimate the new indicator proposed by Neef and Robilliard (2021): the female share of labour income, defined as "the sum of labor income earned by women relative to the national aggregate of labor income within a country," inclusive of "wage and salaries as well as the labor share of self-employment income." As they notice, "female labor income at the national level is equal to the product of female employment and average female earnings:" this means this indicator provides historians with a useful, synthetic indicators of dynamics in income and labour force participation gaps, already applied by Bengtsson and Molinder (2024). In this paper, we highlight how DSTs make its estimation straightforward and adopt it to offer a novel perspective on gender inequality in Italy's Golden Age – when female labour force participation reached its secular minimum (Mancini, 2018), while wage gaps, after the short-run reversal of the Fascist period (Gómez León and Gabbuti, 2025), continued their long-run decline (Bettio, 2015).

While full details are reported in the Appendix, the rest of the section describes the main sources and assumptions behind our DSTs.

3.c. Population Data

Compared to works on earlier periods, our DSTs are built combining many different sources – censuses, labour force surveys, wages, national accounts – mostly provided by public institutions, both in 'real time' and in the following decades. Consistently with Gómez León and Gabbuti (2025), population census (carried on in 1951, 1961 and 1971, simultaneously with industrial censuses) represent the main source to reconstruct population figures. In this period, censuses classify the active population into 24 main sectors (agriculture, 18 industrial sectors, and 5 services sectors); for each sector, workers were reported by 5 occupational categories – entrepreneurs, self-employed, clerks and managers, dependent workers, and helpers – in turn by gender. To interpolate these figures between census years, and after 1973, we rely on sectoral employment figures from Istat (1976), based on labour force surveys. The only exception is entrepreneurs in agriculture, due to their abrupt reduction between the 1951 and 1961 census, which we preferred to linearly interpolate, to avoid a dramatic shift in 1960-61.[8]

[8] The direct evidence from Labour Force Surveys, collected from 1954, but until 1963 together with managers, also show dramatic changes from year to year, suggesting the sample was probably too limited.

Table 1. Structure of the Sample by Work Categories and Sectors

Year	Population					Work categories (% of Active)					Sectors (% of Act.)	
	Active (% Pop.)	Of which, women	Unoccupied	% Act.+ Unocc.	House wife	Entr.	Self	Helpers	Salaried workers	Waged workers	Agr.	Ind.
1951	42	25	12	54	26	2	23	17	9	48	41	31
1961	39	25	18	56	27	2	21	10	12	55	29	40
1971	36	27	21	56	25	2	21	5	20	52	17	43

Sources: authors elaborations on ISTAT, various years.

To obtain the greatest consistency with Gómez León and Gabbuti (2025), we first aggregated some industrial sectors (metallic and non-metallic mining; chemicals and rubber; food and tobacco; some very small sectors, such as the movie industry, were included among miscellaneous industries). Then, we grouped white-collar and self-employed workers in one group each for industry, and two groups each for services. Helpers – separately reported by censuses only from 1931 (Gabbuti and Licini, 2025) – were grouped with the self-employed, as it is (implicitly) done in historical national accounts (Golinelli, 1997; Torrini, 2015), despite these figures were not formally entitled with any labour income. As will be shown for women in section 6, this is arguably biasing not only the level, but also the trend of labour shares.

While our series are built following these standard assumption, Section 5 documents the changing nature of the Italian labour force in the period, not only in terms of structural change, but also with a broader shift towards stable, dependent employment. Building on the earlier work by Sylos Labini (1974), we exploit the difference between population and industrial censuses (caused by the difference in the respondent: the household head, and the employer, respectively) to obtain a proxy of "precarious workers" – those who were employed in irregular, or short-term occupation, when not, by modern standard, unemployed.

Indeed, censuses did not capture unemployment, for which reliable series become available only after 1977. This is relevant also for another group, which Gómez León and De Jong (2019) define as "unoccupied." In the DSTs logic, these people, while not properly 'active,' should be considered as earning some money: following Gómez León and Gabbuti (2025), we include in this group retirees, students and people in search of first employment. As shown in Table 1, this group massively expanded as a result of Italy's structural change. Attributing the same income (as will be discussed below, low, and necessarily questionable) to such growing share of the population, while ensuring consistency with Gómez León and Gabbuti (2025), might affect the reliability of our estimates. For this reason, in the appendix, we document alternative series which include only retirees – the only component of this group which unarguably perceived monetary incomes in this period, considering that unemployment benefits have never been available for Italian first job seekers, and that in an increasingly affluent Italy, even adult students could have increasingly depended on their families.

What is possibly the harder figure to reconcile with earlier figures, is the number of entrepreneurs and professionals (*imprenditori e liberi professionisti*), both in agriculture and in the rest of the economy. The joint organization of industrial and population censuses lead to more consistent, but also much smaller, figures in our DSTs, compared to those in Gómez León and Gabbuti (2025). In agriculture, also due to the lack of this category in earlier DSTs, and the difficulty of assigning them a separate income, we decided to include the few managers and white collars reported by censuses in this sector among the entrepreneurs. On the other hand, we did not include the "wealthy" among industrial and service owners, as in Gómez León and Gabbuti (2025): this category also suddenly shrank, according to the 1951 census, and was not reported at all in 1971. As a result, this group is quite smaller than in Gómez León and Gabbuti (2025). While this inevitably poses issues of comparability, we preferred to rely only on industrial and service entrepreneurs classified as such in the censuses, and to avoid our results to be driven by sudden changes in the size of this small, top category.

3.d. Labour and Capital Incomes

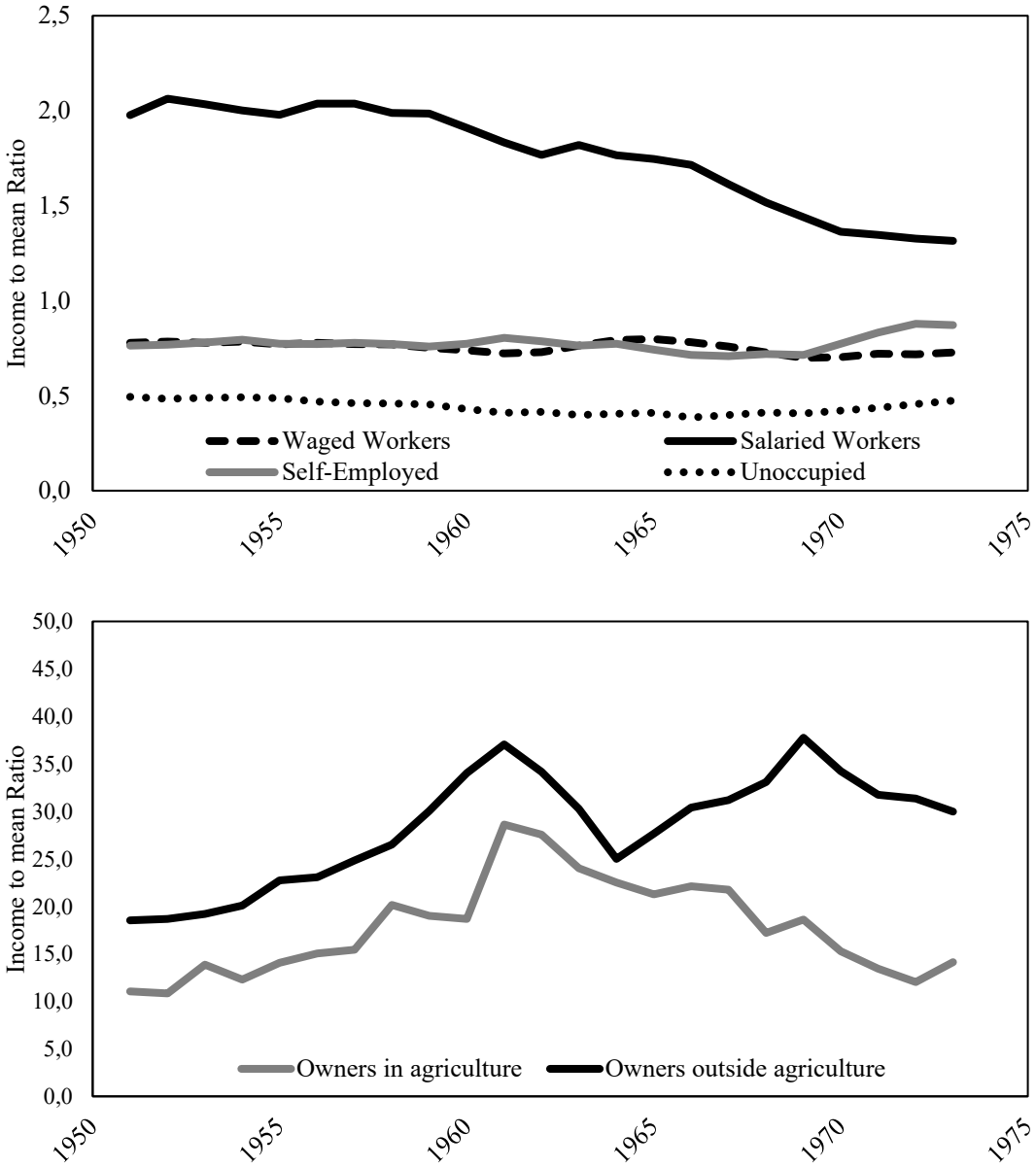
As discussed in section 2, there are reasons to believe that intra-industry differentials were among the major driving forces of income inequality in the Italian Golden age. In this sense, it is reassuring that we can rely on a number of detailed sources, especially for industry and services. For these sectors, gross wages – containing net wages and small amount of taxes without social contributions – are obtained directly from industrial censuses, broken down into clerks/managers and dependent workers. Dividing the total amount of gross wages by employment figures – from the same censuses – we obtain the gross average yearly wage for all sectors. Inter-census years are interpolated following minimum wage trends – differentiated for different sectors – collected from Istat (1976).

For the Public administration, which was not included in the industrial census, incomes were obtained from Istat (1976). First, we assigned to waged workers the average wage of the three lower workers categories (*carriera ausiliaria*). For the white collars, we assigned the average of the wages of the three categories of "executive career" (*carriera esecutiva*) plus the first three categories of "directive career" (*carriera direttiva*). Finally, for agriculture, as only daily agricultural wages are available, we decided to assign 250 days to dependent workers, reaching levels very close to those of Gómez León and Gabbuti (2025) in 1950, and then applied to women a constant 75% wage gap, as the one recorded in the late-1940s, but surprisingly no longer available for later years.

As in Gómez León and Gabbuti (2025), in our baseline series, we also assigned this lowest income to the unoccupied as well, which, as shown in Figure 2, thus always earned something less than half of the average of the economy in this period. In the appendix, we include alternative series, obtained by assigning this figure only to retirees – as discussed above, the

only category which certainly earned some monetary income; also, we assign them an alternative, much lower figure, the average pension resulting from the statistics of the National social insurance institute, INPS.

Figure 2. Income-to-mean Ratios by Work Categories, Italy, 1951-73



Source: authors' elaborations. Owners' ratios are reported for the 50% version.

Unfortunately, information on gender gaps is highly deficient for this period. The same problem affected the later years of Gómez León and Gabbuti (2025), when, as discussed in greater detail in Gabbuti and Gómez León (2024, p. 147), the number of sources available for gender gap strongly decreased, and trends had to be inferred from arguably overestimated sources, possibly leading to an excessive reduction of gender gaps during the 1940s. For waged work in agriculture, as already mentioned, we have to keep constant the only direct evidence: for industry, we are able to obtain a satisfactory picture, by combining two different sources. First, for the period after 1961, we can rely on the News on Labour Statistics (*Notiziario di Statistiche*

del Lavoro), issued by the Ministry of Labour – the source behind Bettio (2015). From this source, we were able to gather data on male and female wages for 17 different industrial sectors until 1973 – a detailed, highly reliable measure of the gender gap, to be applied on our gross data obtained by the industrial census, differently for each industrial sector in our sample. To cover the first decade, we are also forced to retropolate our gaps by means of the minimum bargained wage of mechanical workers, differentiated by sex – it was only in the early 1960s that different minima by sex were abolished, leading to equality, at least in this 'minimum' sense. In the absence of direct evidence on gender pay gaps in services, the average of gap in industry was applied also to these sectors.

Having discussed dependent labour, as clear from Table 1, we are still left with a relevant share of Italian population which was self-employed. In calculating the labour share, economists assume these workers earned at least the average compensation in the relevant sector (Gabbuti, 2021). By assigning them this average, the idea is that the average wage is going to remunerate their labour input, while the positive difference with their unobserved, total income, is correctly going to the capital share. However, in historical Southern Europe, as in developing countries nowadays, self-employment is often better understood as an alternative to unemployment or underemployment: it would be incorrect to assume these workers earned as much as their counterparts in dependent employment, as well as to have their incomes following the same trends, especially in a period in which wage labour, through unions, managed to significantly improve its position – something which we have no reason to assume would automatically translate into higher self-employment incomes. For this reason, we expand the approach experimented in Gómez León and Gabbuti (2025). As in that paper, we first obtain a series of average fiscal declaration for independent workers, inflated by a third to account for under-reporting.[9] As shown in the Appendix, we then compared this average with the earliest evidence on individual incomes, obtained from SHIW. While the two sources – clearly independent – result into almost identical levels in the 1960s, the SHIW show a very marked increase in the early 1970s. We thus decided to obtain a series of independent workers incomes, as the retropolation of the SHIW evidence by means of the average fiscal declarations. As shown in the same Appendix, these levels are interestingly close to the weighted average of salaries and wages for the three groups in which we grouped self-employed workers: as in Gómez León and Gabbuti (2025), we thus obtain three different series, by averaging our new series with each sectoral average. In this way, while allowing for overall trends which are different from those of the dependent labour in the same sectors (as clear, for the 1960s and early 1970s, in Figure 2), we also allow for differences across sectors within the self-employed.

[9] That is, the B-category of the Imposta di Ricchezza Mobile: see Gabbuti (2023) for an extended discussion.

Finally, we follow Gómez León and Gabbuti (2025) also on the imputation of entrepreneurs' incomes. Direct evidence on this group is extremely scant in Italian economic history (Gabbuti, 2022), and fiscal sources on top incomes cover a very limited number of years in this period (Gabbuti, 2023). For this reason, we also imputed them the residual obtained after subtracting the respective labour bill from the national income, separately for agriculture and the rest of the economy. Considering the previous discussion on the very limited number of entrepreneurs registered by industrial censuses in these years, 'splitting' the residual is going to produce very high incomes for this restricted group – arguably unrealistic, even for the very top percentiles of our distribution.

It should also be considered that in post-1945 Italy, while progressivity and redistribution were still limited, the share of the residual which was appropriated by the state, either in form of 'flat' and regressive taxation, or directly as profits by SOEs, substantially grew. For this reason, despite clearly unrealistic in the levels, instead of making arbitrary assumptions, we will follow Gómez León and Gabbuti (2025) – that is, splitting the 80 and 50% of the residual among the entrepreneurs in the two macro-sectors. The result is shown in the second panel of Figure 2 for the 50% series, which already shows higher ratios than in Gómez León and Gabbuti (2025), especially for agricultural entrepreneurs. Below, we will show the results for both series: reassuringly, both series show the same, parallel trend. While better, direct evidence would greatly improve the picture, our DSTs will reflect not only within-labour differentials, but also the capital-labour trend.

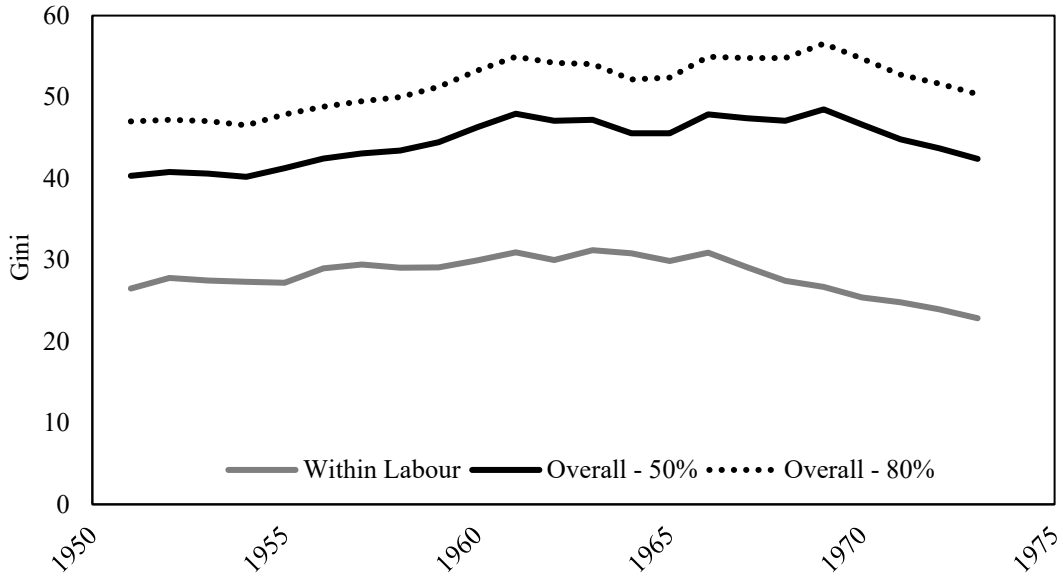
4. Income Inequality in Italy: The Golden Age in comparative Perspective

After the long discussion of methodology and sources, we are finally able to appreciate the results. Figure 3 shows the inequality level observed both within-labour, and overall, when applying the 50 and 80% assumptions on the incomes of entrepreneurs. First, within-labour inequality confirms the early results by Brandolini (2000): the 1950s were a decade of increasing, rather than decreasing, differentials within the employed. Our Gini grows from almost 27, to slightly less than 31 in 1961, to then fluctuate around that level until the mid-1960s. Within labour inequality started to decline only in 1965, down to 22.8 by the end of the period.

As anticipated, including entrepreneurs' incomes has the same impact on the trend, whether at 50 or 80% of the residual. In both series, adding capital income reinforces the 1950s increase in inequality (from some 40 in 1951, to almost 48 in 1961, according to our preferred series), confirming the disproportionate growth of profits. After 1961, the sudden explosion of distributive struggles, and moreover, the 1963-64 recession, drove down profits, leading to a short-term decrease in overall inequality. From 1965, however, profits counterbalanced the decline in within-labour, leading inequality up to the peak of the period according to both series

in 1969 (almost 49 in the 50% version). The Italian Great Levelling eventually started only after the Hot Autumn – well after the end of the Miracle, and at the end of the Golden Age.

Figure 3. Overall and Within Labor Inequality in Italy, 1971–1973



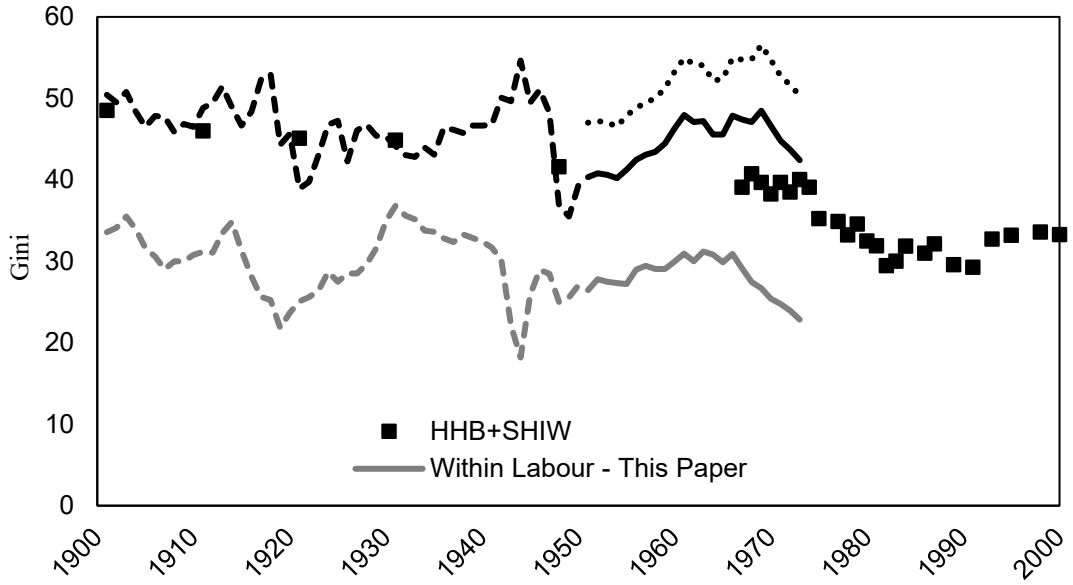
Source: authors' elaborations based on the sources listed in Appendix. Overall estimates attribute 50 and 80% of the residual to entrepreneurs, as discussed in section 3.d.

These results support those who argued the fruits of Italy's growth had not been distributed equally. It is tempting to link these trends with statements, such as the famous 1962 *Note* by the economist Ugo La Malfa (1973), who, as Budget Minister, argued for a substantial change in economic policies, towards explicit redistribution, stressing how the "tumultuous development [had] left persisting sectoral, regional and social backwardness" across the country. If we go back to the analysis of authors such as Boltho and Capussela, discussed in Section 2, the strong push for the increase in labour compensation, which had its first episodes precisely at the turn of the decade, to explode at the end of the 1960s, was all but an "overreaction."

Before investigating these trends in greater detail, it is interesting to discuss how they fit in the broader historical picture. Figure 4 places our new series in comparison with the existing figures for Italy. A first, reassuring result is that both the within-labour series, and the 50% overall inequality series, almost perfectly continue the series by Gómez León and Gabbuti (2025). As for the latter, while it starts from level compatible with the 1948 Doxa survey, it would point to higher inequality in the late 1960s, compared to the estimates based on SHIW: nonetheless, by the end of the period, the two series converge. Considering the existing series are based on household level, microdata, as in Gómez León and Gabbuti it seems reasonable to use the DSTs to infer short and medium-run trends, while substantially confirming the established levels, except for the late 1960s-early 1970s. Indeed, it is tempting to read our 50% series as the lower-bound estimate of inequality in Golden Age Italy: while the 80% series levels are arguably too high, they remind us that, due to the likely underestimation of capital incomes discussed in

Section 2, actual levels of inequality might have been even higher than those registered by the 50% series.

Figure 4. Inequality in Italy, 1901-2000



Sources: Figure 3, Gómez-León and Gabbuti (2025), and Vecchi (2017).

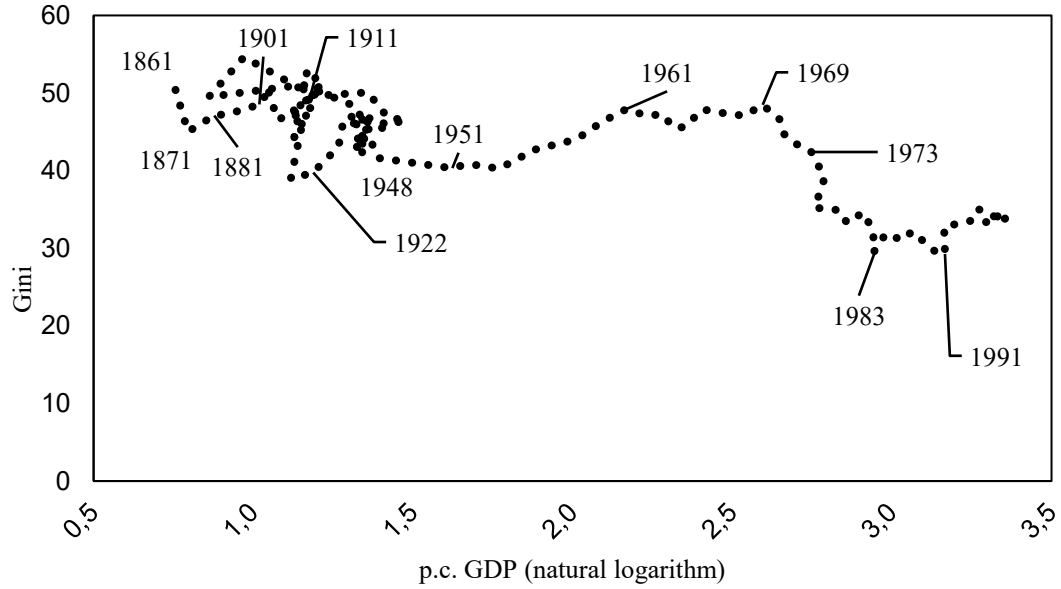
On a more substantial level, this long-run perspective would lead to consider the 1950s as a period in which pre-war inequality levels were restored, after the only temporary compression induced by war and inflation. The Reconstruction period, were already Gómez León and Gabbuti noted a recover of inequality, marked a renewed period of what Zamagni (1975) defined as "wage repression": according to the economic historian who had estimated wage series for both the liberal and fascist period, the Economic Miracle had been nothing new, "but a (better) repetition" of the old combination of external demand, and "wages below productivity growth" (Zamagni, 1975, pp. 547-9). By extending the analysis to the entirety of labour incomes, and then including profits, our DSTs allow us to appreciate how – rather than 1963, as in Zamagni's account – it was the later period of labour, and then more broadly social unrest, to represent "something new:" for Zamagni, "the first crisis provoked by mainly endogenous factors," and as we have seen, a radical change in industrial relations.

In this sense, the almost secular perspective offered by DSTs bring an interesting comparison between the late-1960s and early 1970s, and the other period of sustained within-labour inequality compression, occurred between the Great War and the following 1919-1920 "Red biennium" (Gabbuti, 2021). While the 1950s and early 1960s did not bring equalisation, despite the radical changes in the economic and political institutions, the following period represented the only period of wage compression which could entirely be attributed to "benign", redistributive forces, and not to world wars or major recessions. The resulting low level of inequality was maintained until the early 1990s – that is, before the period of sustained decline opened by the 1992 currency crisis.

It would be tempting to read Figures 3 and 4 as a Kuznets curve: when discussing its absence for the Italian case, Rossi et al. (2001) had not accounted for the period of most sustained structural change in the history of the country. This stands out very clearly from Figure 5: the sizeable, at times dramatic changes experienced by Italian income distribution before 1948, occurred when the country moved only slowly in terms of per capita GDP. Almost half of the overall improvement in Italian incomes since 1861, indeed were realised in the 25 years between the Doxa survey and the end of the Golden Age.

The first, more sustained increase in mean incomes was associated to rising income inequality, which during the 1960s was around the late-19th century levels (but below the peaks reached in the early 20th century). The timing and extent of the decline, however, are only partly consistent with the drivers discussed by Kuznets (1955), and rather seem to call into question socio-political developments. In this long-run perspective, it is important to note that the post-1973 decades were still characterised by relatively fast growth: the more effective redistribution of these years did not seem to effect income growth: on the contrary, Italy's second "Kuznets wave" took place in the period of prolonged stagnation and relative decline which followed 1992.

Figure 5. Income Inequality and Per Capita Income in Modern Italy



Source: Gini obtained by combining estimates from Vecchi (2017) for the years 1861 to 1901; Gómez-León and Gabbuti (2025) from 1902 to 1947; Vecchi (2017) for 1948; Figure 3, Overall – 50% from 1951 to 1973; Vecchi (2017) from 1974 to 2012. The graph shows the natural logarithm of p.c. GDP, 2010 euros, from Baffigi (2017).

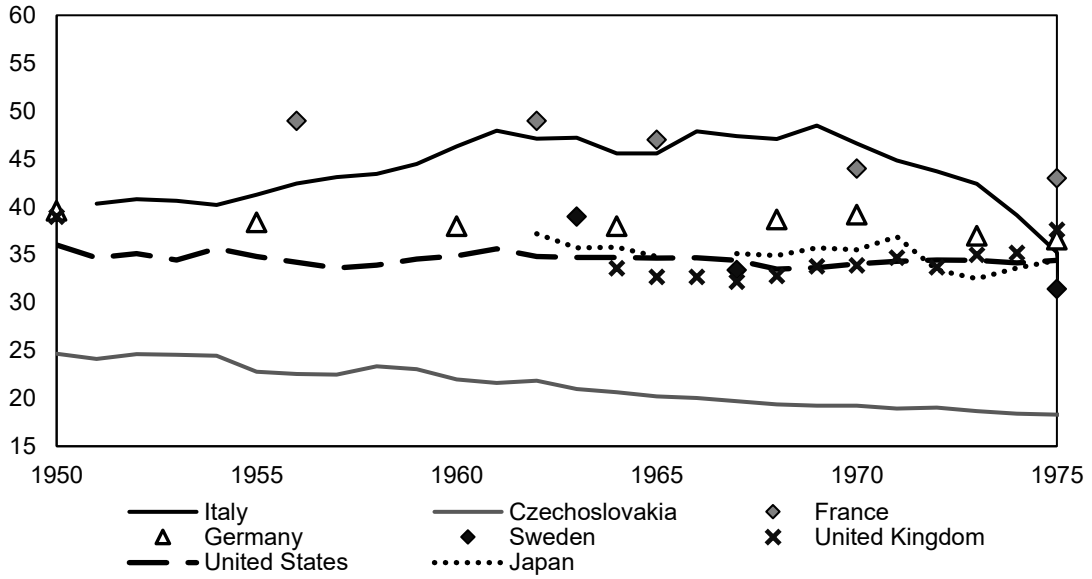
Is the Italian story exceptional in international comparison? As mentioned, the evidence on inequality during the Golden Age is somehow limited. To overcome the fact that most modern databases, including the LIS and World Bank data, start in the late 1960s, Branko Milanovic assembled the "All the Ginis" dataset, which includes datasets crated by institutions such as WIDER and CEPAL, as well as some academic studies, with some coverage from the early

1950s. In their insightful work on Latin America, Alvaredo et al. (2025) noted how the estimates for this period often "combined information from the first household surveys with other sources, including censuses and the (then incipient) national accounts computations" – which could possibly relax the concerns about the comparability of these figures with DST-based ones. Since the dataset last update in 2019, few paper proposed novel evidence on these decades – for instance, the aforementioned longer-run accounts by Gómez León (2021) and Nikolić et al. (2024).

Building on this evidence, Figure 6 compares our baseline series with some of the most continuous and historically relevant evidence available for the 1950-1975 period, starting from the new and old "leaders." By 1945, the US had already reached the "historically low level of about 35 Gini points," maintained until the end of the 1970s (Milanovic, 2016, pp. 71-72). While the last estimate by Gómez León and De Jong (2019) is slightly higher, when the first modern statistics became available, the same held for the UK. Both countries had experienced pronounced Kuznets curves during their (early) industrialisations: however, interestingly, the US Great Levelling had occurred only after 1933, and especially in the "booming" 1935-1950 year, alongside doubling average incomes (Milanovic, 2023, pp. 193-196). In this sense, it is interesting to compare Italy with the other two post-1945 "Miracles." Germany, somehow surprisingly, seem to have stabilised just few points below the 40 recorded just before the Great War, and most of all, the 41 reached at the end of World War 2 (Gómez León and De Jong, 2019). Japan, on the contrary, had already reached levels similar to the US one – that is, some 10 points below our Italian estimates – by 1963.

Extending the comparison to other European countries, while not showing any increase, France seems to have experienced a slower decline of inequality, from relatively high levels. Indeed, alongside the well-known trends in top income and wealth shares (Piketty, 2014), the Gini in household income was still 47 in 1965: it was only later, and especially in the 1970s, that French income distribution became more egalitarian, although historical estimates show wide fluctuations. Czechoslovakia was at the opposite extreme: in this highly industrialised Eastern European country, inequality had dramatically collapsed during the war devastation and the transition to socialism; nonetheless, it continued to decline for the whole period. In between, a Nordic social-democracy like Sweden, after showing "German" levels in 1963, had converged to the UK and US by 1967, to become one of the most equal (non-socialist) European countries by the end of the period.

Figure 6. Income Inequality in the Golden Age: Italy in International Comparisons



Source: authors' elaborations. Italy from Figure 5; Czechoslovakia from Nikolic et al. (2025); United Kingdom in 1950 from Gómez León and De Jong (2019); other countries and years from the All the Gini Dataset. For comparability issues, we excluded the German figures for 1963 and 1969.

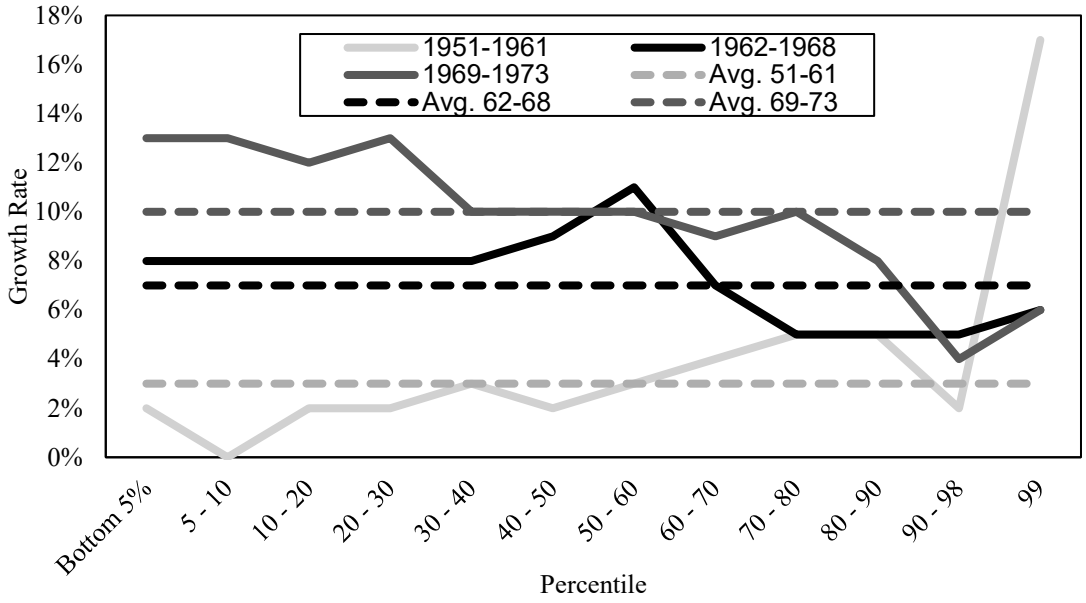
While other evidence from the Golden Age, such as the one for Latin American countries, is less clearly relevant for the Italian case, more recent economic history offers interesting cases, such as the Spanish transition from Francoism to democracy in the mid-1970s. Contrary to the picture offered by official household surveys, by correcting them by means of national accounts, Torregrosa-Hetland (2016) argued for a "quite persistent" level of inequality. In this sense, the failure of Italian democracy to immediately deliver equality could not be historically unique. What seems more peculiar, even in later comparisons, is the regressive outcome of the "boom" period: according to Hong et al. (2025), South Korea's rapid development was accompanied by further inequality reduction, after the substantial, "malign" collapse experienced in the interwar decades.

5. Zooming in the Miracle: Income Inequality and Social Classes

After discussing the long-run and cross-country comparison, it is time to explore in greater detail what our new evidence reveals about the Italian Golden Age. To consider shorter-run dynamics, as in Gómez León and Gabbuti (2025) and Vecchi (2017), it is useful to discuss the so-called growth incidence curves – that is, how the average income of the different parts of the distribution changed in the period, compared to the average growth in incomes. While the Appendix (Figure 6.a) report the GIC for the whole 1961-1973 period, Figure 7 report 1962-1968 and 1969-73 separately. During the whole Golden Age, incomes clearly increased for all groups. However, the 1951-61 GIC is "growing;" that is, poorer deciles did worse than richer ones. Moreover, while average incomes grew by 3% annually – that is, less than half the 7%

yearly increase in GDP from Baffigi (2015) – the bottom half of the income distribution earned less than this level, with the top percentile (represented by the capital earners) earning way more than the average. DSTs, by not combining individual incomes into households, and possibly underestimating other sources of income, could underestimate the growth of the lowest percentiles: on the other hand, the cumulated growth in the 1950s, and especially between 1961 and 1968, is probably enough to explain the strong poverty reduction occurred in the period. In any case, the graph vindicates Zamagni's interpretation: the incomes of wage earners grew less than the average, and way less than GDP, during the Miracle years. The very opposite story held true for the following years. Despite the slow-down of GDP growth (6% in the whole period), average incomes increased yearly 7% until 1968, and 10% in 1968-73. In both periods, the bottom 50% of the distribution earned at least as much as the average, while the contrary held true for the richest percentile.

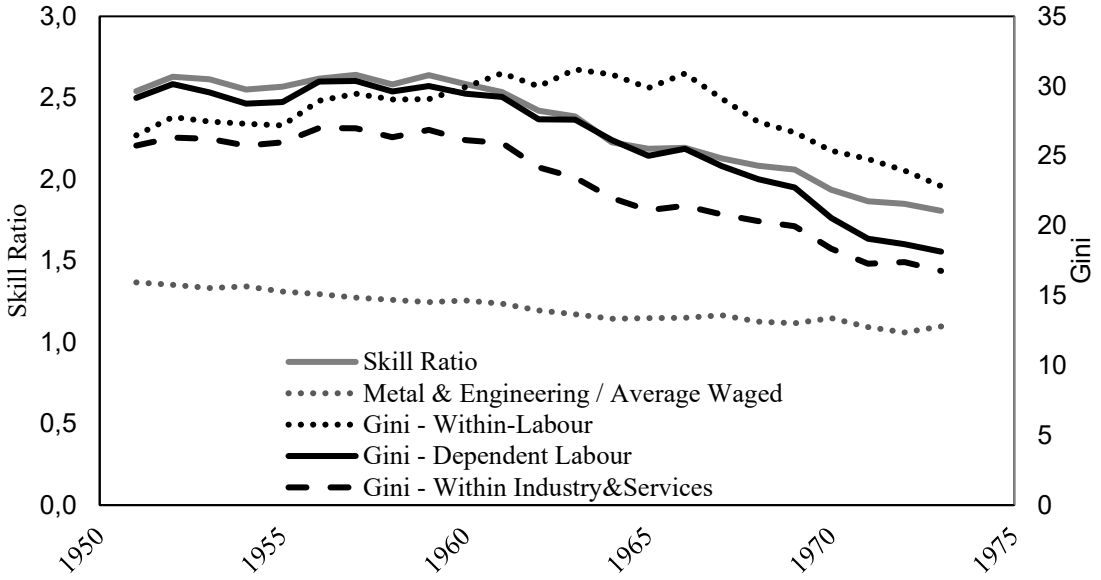
Figure 7. Growth Incidence Curves in Italy, 1951–1973



Source: authors' elaborations. The y-axes show the average annual compound growth rates of real incomes (expressed in %) at different fractiles of the distribution (drawn on the X-axes) between two benchmark years. Continuous lines show average annual growth for different segments of the distribution; dashed lines show overall average annual growth. All series expressed in real terms, excluding students and in search of first employment.

One of the mechanisms behind these trends is shown by Figure 8. The 1950s saw the stability of the skill ratio – the difference between the average blue- and white-collar workers' incomes – around 2.6. Then, it declined to 1.8 in less than 15 years. This trend is substantially reflected by the trend in inequality within both dependent labour, and industry and services only. Considering Figure 2, it is likely the changing size of self-employed, especially in agriculture, rather than their relative fortunes, to drive the result, together with the later increase in agricultural wages from mid-1960s, so few years after the 1962-63 wave of strikes in industry. The same figure shows the declining relative status of white collars from the 1960s, contributing to the fall in both the skill ratio and the dependent labour Gini.

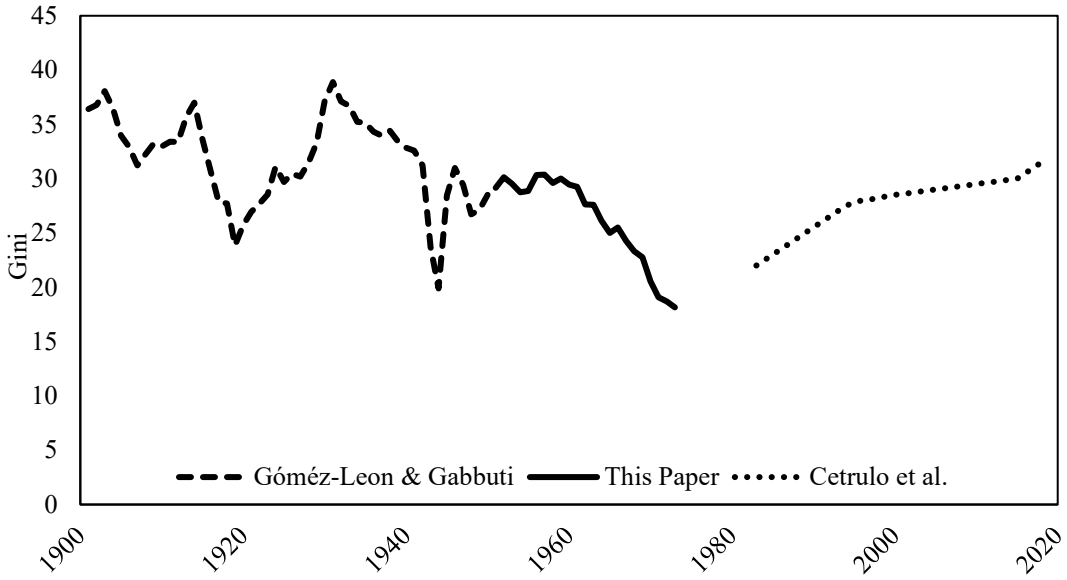
Figure 8. Skill Ratio and Within-Labour Inequality, 1951–1973



Source: authors' elaborations. The skill ratio is a weighted average of salary versus wage earners, by sector. The Metal & Engineering / Average Waged series report the ratio between waged workers' incomes in these sectors, and their average. Gini series for overall within labour, dependent labour only, and industry and services only, are reported on the right y-axis.

In Figure 9, we better appreciate the historic extent of this compression. After the very high levels of the early 20th century, and the sudden decrease during the Great War and the subsequent period of labour unrest, early Fascism marked a period of strong increase in inequality within dependent workers, peaking in 1931 at 38.9. The following compression, accelerated in inflationary periods, was partly reverted in the 1950s: by 1973, this indicator had reached its absolute low, just above 18. This is just few points below the Gini computed by Cetrulo et al. (2023) by means of INPS data, available from the early 1980s, capturing the increase in within-dependent labour differences in the most recent decades – even before the increase in overall inequality, but in line with the trend in top income shares (Figure 1).

Figure 9. Within-Labour Divides in Italy in the Long-Run: Dependent Workers, 1901-2018



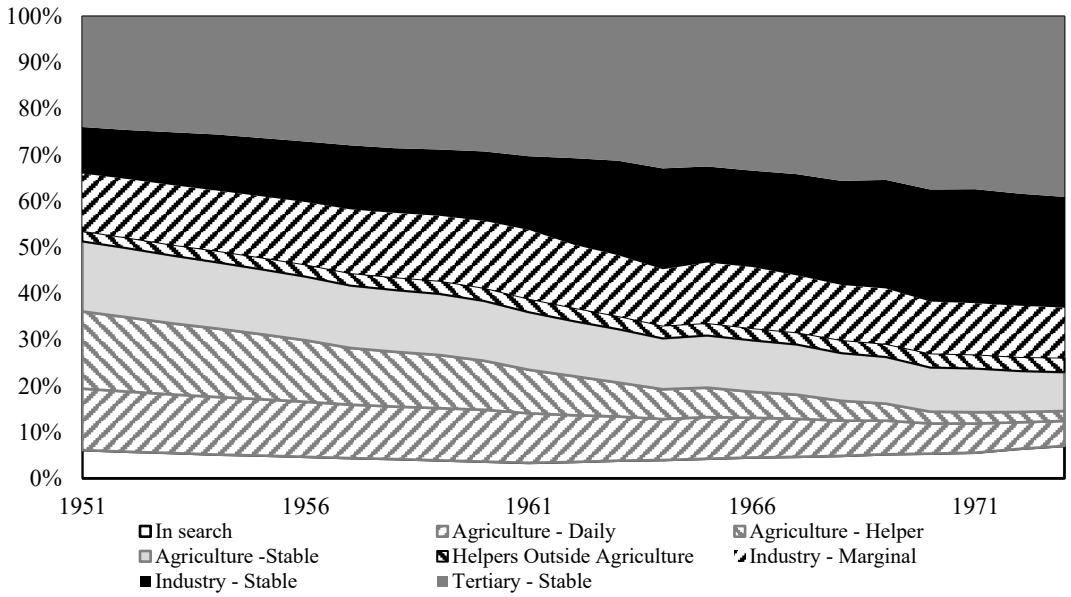
Source: authors elaborations on Gómez and Gabbuti (2025), Cetrulo et al. (2023), and Figure 8.

As discussed in section 3, however, this story does not fully capture how the Golden Age represented, for a great number of Italian workers, the way out of precarious work – together with "underemployment," a very common feature of the post-1945 period (Betti, 2019), and actually, most of modern Italian history (Alberti, 2018). From 1951, the contemporaneous collection of information by industrial and population censuses, provide us with a potential proxy of the extent of irregular or precarious employment, as noted by Sylos Labini (1974). The difference between population and industrial census figures for industrial workers, could indeed be seen as a proxy of marginal workers in secondary sector. For agriculture we were able, thanks to the sources discussed in the Appendix, to compute separately the number of yearly waged, from the daily labourers. While, as discussed in Gabbuti and Licini (2025), gender historians argued to include helpers among an enlarged definition of "entrepreneurs," as they share some of their functions, helpers were clearly marginal figures from our perspective, as they were not entitled with a contractual wage, nor could benefit from any sort of welfare state provision. This component of the labour force, somehow natural in the Italian economy, characterised by the widespread presence of small, family firms, rapidly contracted in the Golden Age (Table 1), driving most of the reduction in self-employed and, as we will see, in female employment.

In Figure 10, by reporting stable workers, precarious workers, and helpers by sector of activity, together with people in search of first employment, we show how structural change – the strong reduction of the labour force in agriculture, from almost 50% to less than 20% – went hand in hand with a decline of marginal positions. Within agriculture, daily labourers decreased their relative relevance, but by far the greatest reduction was the one from the helpers, which almost disappeared from this sector, while remaining stable in the rest of the economy. Industrial stable jobs increased, but the relative weight of marginal work did not decline much, even at the end

of the period. While the strong economic growth led to an increasing share of stable workers in industry and services – which, by 1973, account for slightly less than two third of the total – and the great reduction of helpers (that is, workers which did not formally receive a wage), a sizeable number of marginal, or precarious, workers remained within the Italian labour force even at the end of the Golden age. All together, these categories accounted for 47% of the total in 1951, and still some 29% in 1971.

Figure 10. The Role of Marginal Labour



Source: authors' elaborations on the sources discussed in the paper and the Appendix.

6. The Other Side of the Miracle: Gender Inequality in Incomes and Employment

The Golden Age is generally regarded as a period of decreasing female labour force participation (FLFP). For the US, the literature has mainly highlighted the male breadwinner culture and supply-side issues to explain the phenomenon (Goldin, 2006). In the Italian long-run story, first unveiled by the seminal contribution by Mancini (2018), after a short reversal in the late 1930s, the Golden age is the period when FLFP reached its minimum. That paper, as well as Betti (2010), Barbiellini Amidei et al. (2023), and others, reveal however the unclear perspective offered by available sources on female labour, when we want to consider the short-run dynamics.

As discussed in the introduction, among the motivations for applying DSTs to the Italian Golden Age is precisely the possibility of exploring gender inequality. By construction, DSTs make possible to consider not only gender pay gaps, but also the changing participation of women to the labour market, and its sectoral composition (Gabbuti and Gómez León, 2024). Of course, our main population source, censuses, suffer from well-known biases against female work (Humphries and Sarasua, 2012). Interestingly, however, in this paper they offer a rosier

picture than the one from the earliest labour force surveys. As shown by Table 2, our DSTs record the lowest FLFP level in 1961 (26%), and a partial recover already by 1971.

Moreover, as already shown by Gabbuti and Gómez León (2024) for the pre-1950 period, aggregate figures hide wide sectoral differences. Within the inactive, housewives (*casalinghe*, a crucial, and hotly debated category, as discussed by Patriarca, 1998) decreased their relevance in the period, by almost 10 percentage point, as shown again by Table 2. At the same time, the share of female students increased. Going back to the active, most of the reduction between 1951 and 1961 is due to (agriculture) helpers: while this group more than halved, waged workers only slightly decreased, and 'proper' self-employed and salaried workers increased. Among marginal workers, the share of women decreased from 14% (1951) to 8% (1971). All in all, during the Golden Age, Italian working women slowly moved to a more central, better remunerated part of the labour force.

Table 2. Female Employment in the Golden Age: The Census Perspective

Year	FLFP	The sum of:					Plus:		Women as % of employment in		
		Self	Salaried	Waged	Helpers	In search	House wives	Students and other	Agric.	Industry	Services
1951	29%	3%	3%	14%	7%	2%	69%	2%	41%	28%	31%
1961	26%	3%	4%	13%	5%	1%	67%	7%	31%	31%	38%
1971	28%	4%	7%	12%	3%	2%	60%	12%	18%	33%	49%

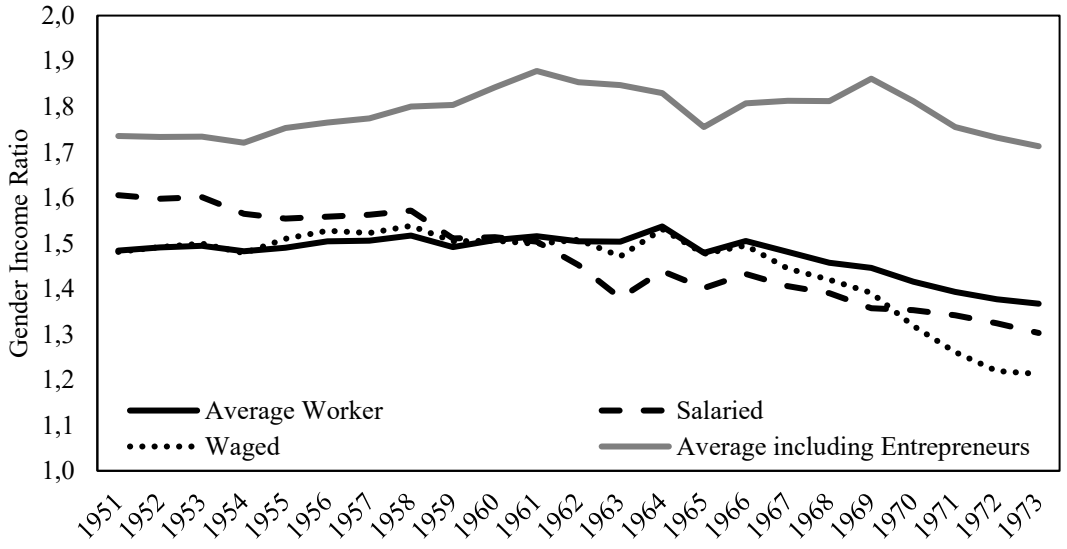
Source: authors' elaborations on Istat, various years.

Usually, this literature also described the decline in FLFP as brought by the structural change and the transfer of big portions of labour force from countrysides to cities. Indeed, looking at the share of women by sector, reported in the last column of the same Table 2, confirms this idea. Female agriculture workers declined from more than 2 million in 1951 to less than 1 million in 1971; in relative terms, they went from 41% of the total, to 18% in just two decades: for instance, the *mondine* – Northern day-labourers in rice harvesting – almost disappeared during the Miracle, replaced by machines. The opposite trend can be observed in industry, were women increased from 1.3 to 1.6 million female workers, and most of all, services (from 1.5 to almost 2.5 million). While women increased their relative share in both 'light' and 'heavy' industries, reinforcing a trend in place since the interwar period (Gabbuti and Gómez León, 2024), they came to account for half of the total labour force in services.

On top of the reduction of marginal employment discussed above, jobs in industry and services were typically less precarious and better remunerated. Indeed, while these were hardly the best remunerated, nor the most skilled or technologically advanced sectors, it should be noted that, contrary to labour within the family farm, or even traditional domestic textile production, the new industrial and service jobs available for Italian women tended to be performed outside the house – thus contributing to overcome the "separate spheres."

Despite the limitations discussed in Section 3, these trends seem to be reflected in our gender pay gap. In Figure 11, we show the average gender gap for workers, computed over all sectors in the period 1951-1973. We also add separate ratios for salaried and waged workers only; and also one including entrepreneurs. Interestingly, despite the latter are assigned the same income for both women and men, is their great gender segregation, together with their very high incomes, leads to an increase in the overall income gap for most of the period. The story is quite different if we focus on workers only. Starting from 1.48 – slightly above the final level recorded by Gómez León and Gabbuti (2025)[10] – gender pay gaps slightly increased, together with within-labour inequality, until 1964, when it reached 1.53. In the later decade, the ratio went down to 1.37. Also in this period, as already highlighted by Bettio (1988), women benefitted from the egalitarian culture of Italian trade unions. Interestingly, this result is mostly confirmed when looking at waged workers – whose gaps, however, declined even faster from the late 1960s. More unambiguously, gaps among skilled workers steadily declined, from 1.61 in 1951, to 1.30 in 1973. This is also the result of compositional change, with women leaving the less remunerated white-collar positions in agriculture to men only.

Figure 11. Gender Income Ratio in Italy, 1951-73



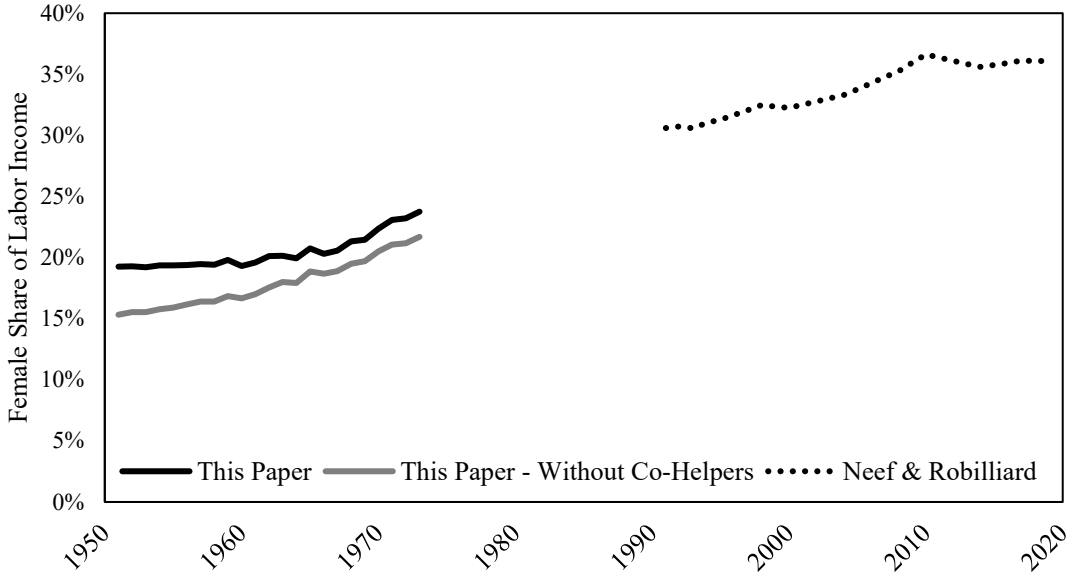
Source: authors' elaborations. Ratios computed as weighted average of male over female incomes, by sector and position.

As anticipated in section 3, DSTs also allow us to 'factor in' the trends described in Table 2 and Figure 11 – that is, the changing number of working women, their different sectoral composition, and the evolution of gender income gaps – by means of a 'synthetic' indicator of female power in the labour market, the female share of labour income. Figure 12 shows the first historical evidence of this indicator for Italy, together with the series computed from 1992 by

[10] As mentioned, sources on gender pay gap are less abundant in the 1940s, forcing Gabbuti and Gómez León (2024, p. 147) to adopt the same ratio for more sectors, possibly exaggerating overall convergence.

Neef and Robilliard (2021). Interestingly, the share of labour income accrued by woman remained stable around 19% during the 1950s. While we lack historical comparisons, this level would match contemporary India.

Figure 12. Female Share of Labour Income in Italy, 1951-2019



Source: Neef and Robilliard (2021), and authors elaborations.

From 1961, when FLFP started to increase, and eventually pay gaps were reduced, Italian women started to increase their share of labour income, reaching 23.7 by 1973. At this point, indeed, both components headed in the same direction: FLFP increased, and most of all, sectoral composition of female employment improved, with more women working in sectors where average wages were higher, resulting in a further reduction in gender-pay gaps. While more work is needed to bridge the gap with Neef and Robilliard (2021), and possibly, to improve the consistency between these series, the comparison between the two would suggest a steady increase of female labour income from the 1960s to 2010, followed by some later stagnation.

The story becomes even more positive, when we take into account that helpers were not paid: in a second series in Figure 12, we exclude their incomes from the estimation of the share.[11] In this way, 1951 Italy shows levels in line with contemporary MENA countries – that is, the lowest shares recorded so far: from this moment on, however, the increase is constant, leading to 21 in 1973.

[11] As a male household head was most likely accruing both female and male helpers' incomes, we keep male helpers incomes in the denominator.

7. Conclusion

In this paper, by combining industrial and population, wages and fiscal sources, labour force surveys and national accounts, into new DSTs, we presented the first evidence on income inequality in Italy during the crucial period of the European Golden Age. In the years between 1951 and 1973, while Europe experienced unprecedented growth and historically low levels of income inequality, Italy enjoyed its economic miracle. In two decades, a prevalently agricultural nation became a fully-fledged industrial, and tertiary, economy. Millions of people came out from poverty, and the mass of Italian workers enjoyed consumption levels which were dreamt of by the elites of previous centuries.

Was this Golden Age the same for all Italians? The new evidence presented in this paper reveals how most Italians had to wait until the mid- or late-1960s to get a fair share of the Miracle. During the 1950s, wages increased less than average GDP, and both within-labour and overall income inequality increased, together with gender income gaps. Notwithstanding a wave of strikes in 1962-3, which provoked a temporary "wage shock," and marked the start of a sustained wage compression, especially among dependent workers, profits drove overall inequality back to high levels until 1968. It was only later, in the "Hot" post-1969 years that inequality started its sustained decline: from that year, labour shares finally increased, to reach their maximum levels in the 1970s (Torrini, 2015), and also private wealth inequality declined (Cannari and D'Alessio, 2018). In this period, the share of labour income accrued by women finally also started to grow, steadily, although slowly, towards the levels recorded in most recent decades. This was eventually the result of sustained union activity, and eventually was to obtain 'proper' redistribution, in the form of both progressive taxation and universal welfare state, during the 1970s.

The application of DSTs made also possible the role of labour markets and unions in shaping income distribution. During the early 20th century, and especially after the Great War, labour unions had managed obtain an equalisation in wages which benefitted the unskilled (Gómez León and Gabbuti, 2025) – and thus, as first noted by Bettio (1988), by working women. This trend had been violently reversed by the Fascist period: however, after the "malign" impact of war and inflation, divides had been restored in the early Republican years. It was only later, when the industrial areas of the North-West started to face full-employment, that labour unions managed to push for higher equality, with broad effects in the country, thanks to the centralised bargaining model inherited by the Fascist period. While replicating, in one of the most spectacular Golden Age economic booms, a Kuznets-like relationship between income inequality, structural change and per capita GDP, the Italian story points at different causal explanations, in line with works such as Farber et al. (2021), which showed the role of labour power in the New Deal and later US trends, and Jaumotte and Osorio Buitron (2020), which linked the post-1982 increase in inequality experienced by most OECD countries to declining

union density. These results call for the importance of linking labour history and inequality studies, and to adopt measures and concepts of inequality which allow researchers to understand what happened to the working population.

While contributing to both the economic history of the Italian and European Golden Age, and the debate on historical trends in income inequality, our results should be expanded by further research, in at least three directions. First, new archival work is needed to improve the underlying evidence, regarding at least gender income gaps outside industry, and the incomes of entrepreneurs, and more generally the rich. As discussed by Gabbuti (2022), a more extensive exploration of fiscal archives could bring fresh evidence, which in turn could help us refine our DSTs. Second, future research should address the link between personal and regional inequality in Italy – not only, but especially, in the period of most sustained reduction of income differentials between the North and South (Felice, 2011) – possibly by extending our same approach. Finally, international comparisons revealed how, for most countries, we still lack consistent, continuous series for the post-1945 period. In countries such as France and Germany, the Great Levelling can hardly be attributed to either World Wars, or the Golden Age, when we consider the existing evidence on overall distribution: more research is needed to investigate these trends, and, most importantly, their underlying causes.

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Appendix

1. Active Population

In order to enrich our understanding of the evolution of social classes in Italy during the Golden Age, we created two different workforce datasets with 1 agricultural sector, 18 industrial sectors and 5 services sectors. While the first dataset is based on population censuses (1951-1961-1971) representing the active population and is used to build DSTs, the second is based on the industrial censuses (1951-1961-1971) representing employment. All the censuses were reclassified to match the 1951 industrial census sectors.

A. The population censuses split the active population in different sex (M/F) and positional categories: entrepreneurs, self-employed workers, clerks and managers, blue-collar workers and helpers.

   The sub-classifications for "Public Administration" and "Various Services" widely changed in the different censuses. For instance, in 1951 and 1961 public schools' employees were inserted in Public administration, while in 1971 in Various services. We coherently reclassified the different subsectors to have consistent sectors during time, trying to approach the employment figures on public servants (PA) from Istat (1976).

   Moreover, as explained in section 3, in order to create the Dynamic Social Table, we reclassified the occupational categories consistently with Gómez León and Gabbuti (2025), considering helpers part of the self-employed category.

   Once we gathered censuses data (1951-1961-1971), inter-census years were linearly interpolated and adjusted for sectoral (men, women, agriculture, industry, services) employment trends collected from Istat (1976). We multiplied the linear interpolations by the yearly employment growth rate over the average of the decade:

$$\text{linear interpolation} \cdot \frac{\text{yearly growth rate}}{\text{Average growth rate of intercenus years}}$$

   We essentially applied a "leverage" on the linear interpolation in years when the growth rate of population was higher (or lower) than the average for the period.

   The 1972 and 1973 population figures were created by increasing our 1971 data with the same sectoral trends from Istat (1976).

   From the population censuses, we also gathered data on the unoccupied part of the population. Consistent with Gómez León and Gabbuti (2025), we classified as unoccupied: retirees, in search of first job, and students. Let us notice that unemployed people with previous occupation are included in the active population.

   Moreover, only to discuss the evolution of social classes in section 5 – not to create the DST – we further disaggregated agricultural workers into two main branches: stable workers (self-employed and stable waged workers), and Daily workers (*braccianti*), the precarious workers in the sector. Daily workers category was created by subtracting from dependent workers the full-time workers (*salariati fissi*) registered in *Elenchi Nominativi*

dell'agricoltura – nominative lists for agriculture. *Elenchi Nominativi dell'agricoltura,* which can be collected from *Annuario Statistico* (Istat), are a serial source produced by the social insurance body INAM, which reported the population of several categories of agricultural workers. While other groups might be under-represented, it seems fair to assume that these workers had to be insured. From this disaggregation, we observe that daily laborers were the bigger group of agricultural dependent workers in 1951, declining over time. From the same source we could disaggregate independent workers and sharecroppers – subtracting sharecroppers INAM figures from independent workers from the census. If we disaggregated the two categories, we would observe that the strong decrease in stable employment from 1951 to 1971 was brought by the drop in sharecroppers – probably the poorest part of agricultural self-employed population.

B. The industrial censuses divided the employed workers into entrepreneurs (with no distinction for self-employed workers), white-collar workers, blue collar workers, apprentices, helpers, and "other staff" (guards and cleaners).
   In 1951 helpers are included in the entrepreneurs' category, so we used population census data to disentangle the two positional categories.
   We gathered the data and inter-census years were interpolated in the same way as population census figures. The "other staff" and apprentices are considered dependent workers (blue collars).

Mimicking Sylos Labini (1974), the availability of two different censuses in the same years gives us the possibility to collect data on the marginal workforce. Subtracting the data from industrial censuses (employment) to population censuses (active population) we obtained the Precarious Employment composed of unemployed people, homeworkers and underemployed. Unfortunately, we could use this technique only for industrial sectors and transports (results are visible in figure 9). For other services like trade, various services, public administration and agriculture, the data from the industrial census are non-existent (Pa and agriculture) or incomplete (other services and trade). So, for these sectors we just used the population census figures without considering marginal workers. This information is useful to discuss the evolution of social class in Italy and to create a more complete framework on the real condition of Italian population during the Golden Age.

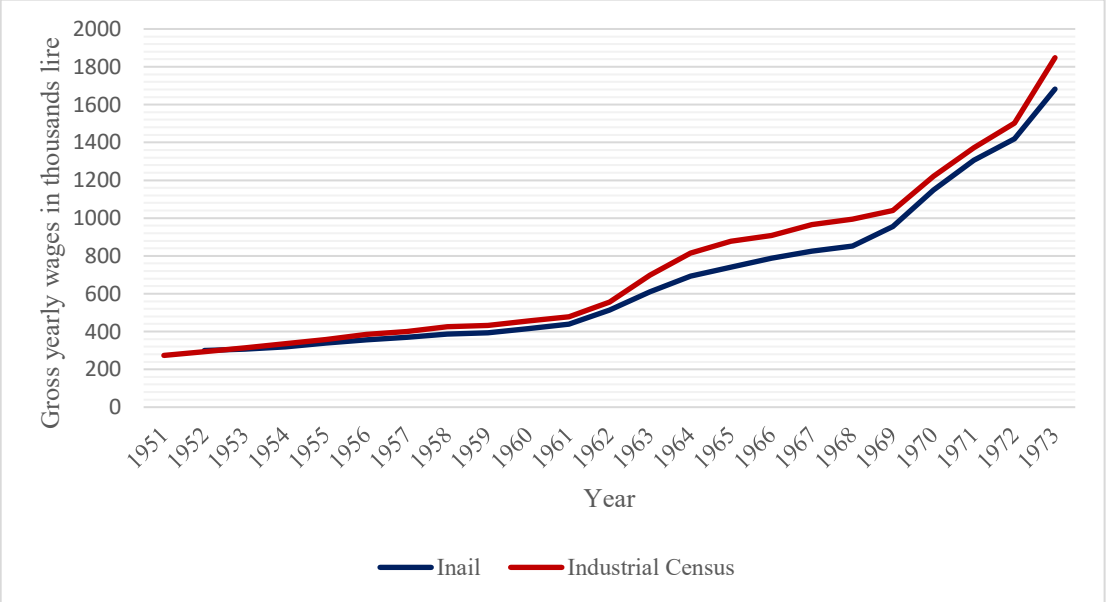
2. Incomes of Dependent Workers

Yearly agricultural wages were collected from Annuario Statistico Istat (different years). The Annuario contains information on minimum bargained wages of daily laborers in all the provinces. The minimum bargained wages of this specific category, indeed, were bargained at provincial level. So, to obtain the national series, we computed a simple average of the minima

at provincial level. Considering that it is very difficult to reconstruct provincial weights in this field, we rely on the "simple average assumption", but it is possible that our estimates of agricultural wages are slightly upwardly biased. Then, considering the unavailability of observed wages in agriculture for the period 1951-1973, we multiplied these hourly wages for 250 days. According to Gorrieri (1971), agricultural wages in 1970 were stuck to minimum bargained wages, so we considered a reliable assumption to get the minima for the whole period.

Observed wages in industry for the period 1951-1973 are reported by three different sources: first, the publication of the Ministry of Labour, Statistiche del lavoro, reported observed wages collected from big firms for many different sectors and, after 1961, disaggregating for gender. Average observed wages were also collected by INAIL – the public body insuring workers against labour injuries – based on the wages of the injured it assisted. The tables, regularly published in INAIL Notiziario statistico, report the information disaggregated for 10 different sectors (but do not disaggregate by gender and consider only waged workers, at least until 1966). Then, observed gross wages both for industry and services – including wages and taxes to be paid by workers, without pension payments – are present in industrial censuses, differentiated between salaried and waged workers. Unfortunately, industrial censuses data lack gender disaggregation. However, considering the wide sample available – theoretically including the whole industrial and tertiary workforce, thus avoiding the comparison between different sources – we decided to use the third source, relying on the Ministry of Labor data for the computation of gender gaps to apply. As visible from figure 1.a., these data are very similar compared to those produced by INAIL for waged workers in industry – the only reliable sources at national level considering that the Ministry of Labor data are highly "inflated", reporting industrial wages only for big firms.

Figure 1.a. Comparison of INAIL and Industrial census wages for waged workers in Industry



Source: own elaborations from sources enlisted in the appendix.

So, wages in industry and services for all the different sectors were gathered from the industrial censuses (1951-1961-1971) and refers to the previous year of the census (1950-1960-1970). The "various service" sector wages were equalized to the trade sector because of their unreliability – as explained in the previous section, the subsectors within it widely changed during time. The inter-census years wages were derived applying the growth rates of the minimum wages differentiated for different sectors and collected from Istat (1976). The interpolation method is equal to the one applied to population figures, exploiting the rates over the average of intercensus years. The years 1951-1952-1953 were interpolated for the average of the decade 1950-1960 because of the absence of data. The wages of the years 1971-1973 were derived increasing the 1970 figures by the growth rates of the indexes of minimum wages collected from Istat (1976) for different categories.

Unfortunately, industrial censuses do not distinguish between male and female wages. The Gender gap was reconstructed starting from the data of Notiziario di Statistiche del Lavoro (Ministero del Lavoro) after 1961 and from Annuario di Statistiche del Lavoro (Confindustria) before 1961. We took the real gender gap of different industrial sectors from 1961 to 1973 from Notiziario di Statistiche del Lavoro. In the case of services, we took the arithmetic average of industrial sectors. Then, we retropolated before 1961 with growth rates of minimum bargained wage data of mechanical workers from Annuario di Statistiche del Lavoro (average minimum bargained wages F/M). So, we transformed the sectoral men wages in this way:

$$\frac{\text{Census MF wage}}{\frac{\text{M employment}}{\text{Total employment}} + \text{Gender gap} \cdot \frac{\text{F employment}}{\text{Total employment}}}$$

If in a sector male workers are the majority, the wages are closer to the aggregate with respect to a sector where female employment is predominant. Once we obtained male wages, we applied the usual gender gap to obtain female wages. Due to the unavailability of sources on real gender gaps in agriculture, we assigned to female agricultural workers the wage recovered from our sources multiplied by 0,7 – as in Gómez León and Gabbuti (2025). Indeed, in agriculture, the gender gap on bargained wages – which is our primary source – is evident only from 1951 to 1963, when the gap was abolished by law.

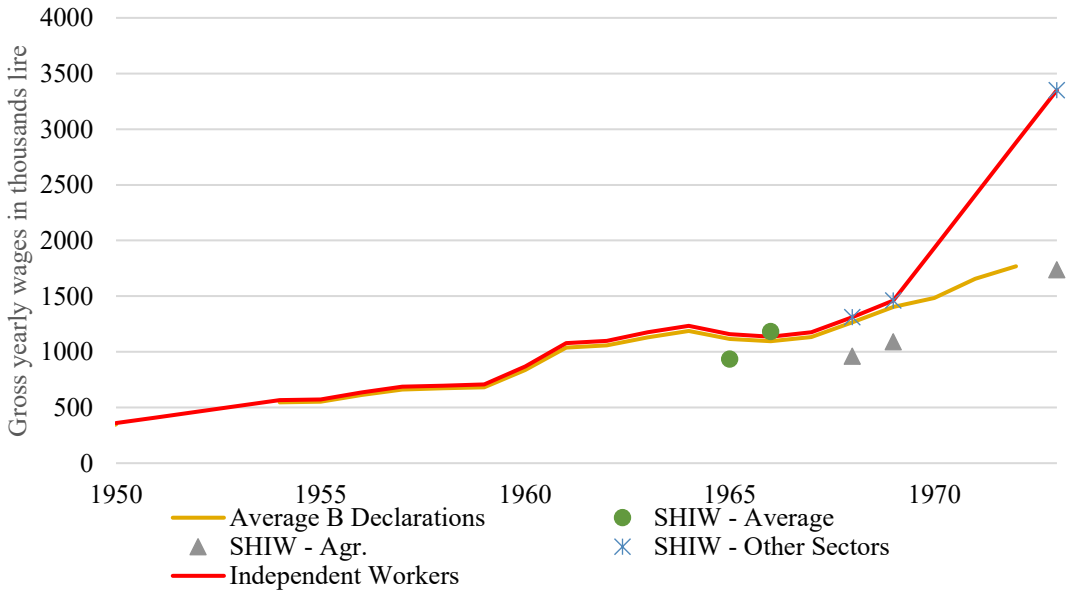
Public administration wages were collected from Istat (1976). For the blue collars we assigned the average wage of the three lower workers categories ("carriera ausiliaria"). For the white collars we assigned the average of the wages of the three categories of "Carriera esecutiva" plus the first three categories of "carriera direttiva".

Following Gómez León and Gabbuti (2025), wages for the unoccupied are equalized to the lowest category in our social table: agricultural daily laborers. However, we were able to collect data on INPS pensions from Istat (2011), then linearly interpolated for missing years. Notwithstanding the very low levels of these pensions, we use these data as a robustness check (figure 4.a.).

3. Self-Employed Incomes

As discussed in the main text, the estimation of dependent workers' incomes covers only a part of Italian working population. While in most analysis, including the national accounts, independent workers are assigned the same wage of dependent workers in the same sector, this is likely to miss part of the within-labour differentials. Indeed, part of the structural change experienced by Italy in the Golden Age was precisely the shift of workers from self-employment to dependent labour – which, one could argue, signal that the first was not much of a choice induced by the possibility of greater earnings or autonomy, but rather a necessity. Unfortunately, we are not able to make independent estimates for rural self-employment, which is treated as in Gomez Leon and Gabbuti (2025).

Figure 2.a. Self-Employed Incomes: Fiscal Sources and Household Surveys



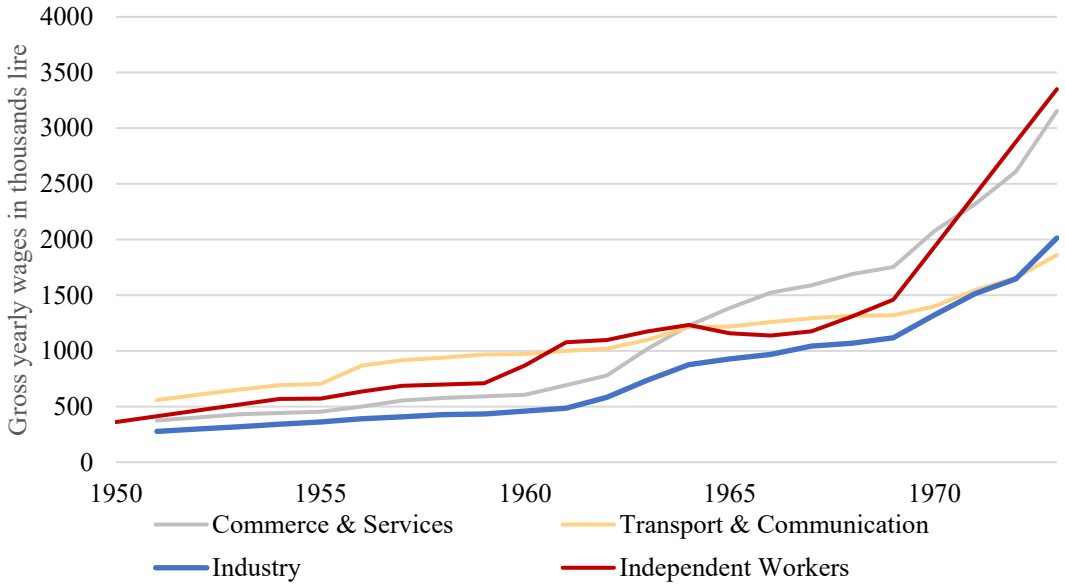
Source: authors' elaborations on MEF (various years) and Bank of Italy (various years).

For independent workers outside agriculture, however, we can expand the approach experimented in Gómez León and Gabbuti (2025), by means of series of average fiscal declaration for independent workers in the B-category of the *Imposta di Ricchezza Mobile* (Gabbuti, 2023). As in that paper, we inflate these nominal figures by a third, to account for under-reporting and fiscal deductions. As shown in Figure 2.a, we then compared this average with the earliest evidence on individual incomes, obtained from SHIW.

While the two sources – clearly independent – result into almost identical levels in the 1960s, the SHIW show a very marked increase in the early 1970s. We thus decided to obtain a series of independent workers incomes, as the retropolation of the SHIW evidence by means of the average fiscal declarations. In figure 3.a, we show this series, together with the weighted average of salaries and wages for the three groups in which we grouped self-employed workers. Interestingly, the level is quite similar, revealing that our series is not unrealistic. To obtain incomes which are different not only for self-employed and dependent workers, but also by

sector, as in Gómez León and Gabbuti (2025), we decided to average our new series for independent workers, with each sectoral average. In this way, while allowing for overall trends which are different from those of the dependent labour in the same sectors, we also allow for differences across sectors within the self-employed.

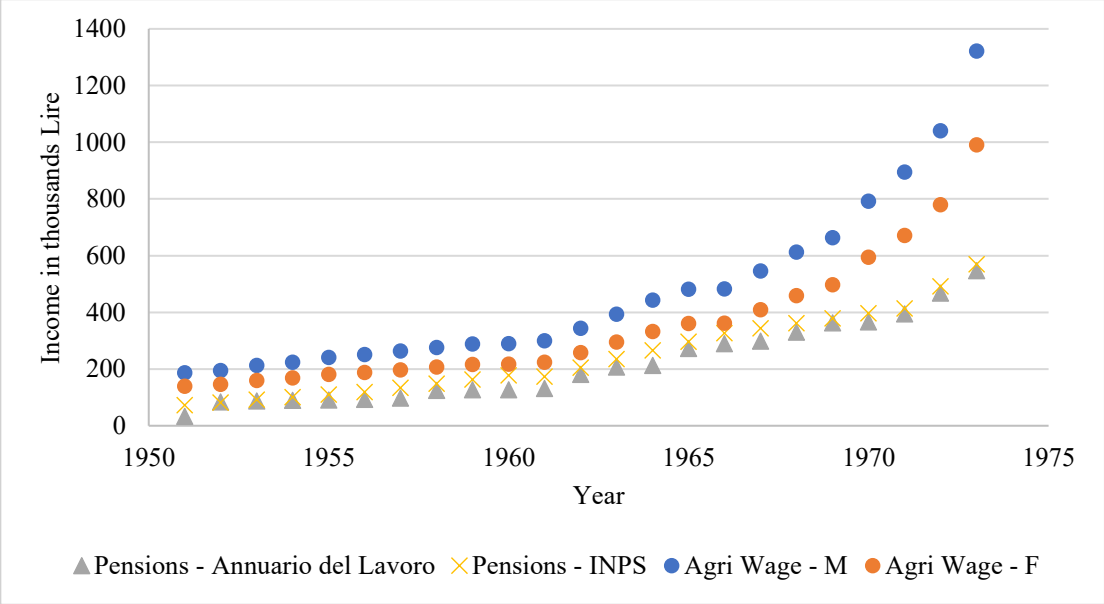
Figure 3.a. Self-Employed Incomes and Average Compensation by Sector



Source: authors' elaborations on MEF (various years) and Bank of Italy (various years).

4. The Incomes of Unoccupied: Alternative Assumptions

Figure 4.a. Different assumptions on the Incomes of Unoccupied



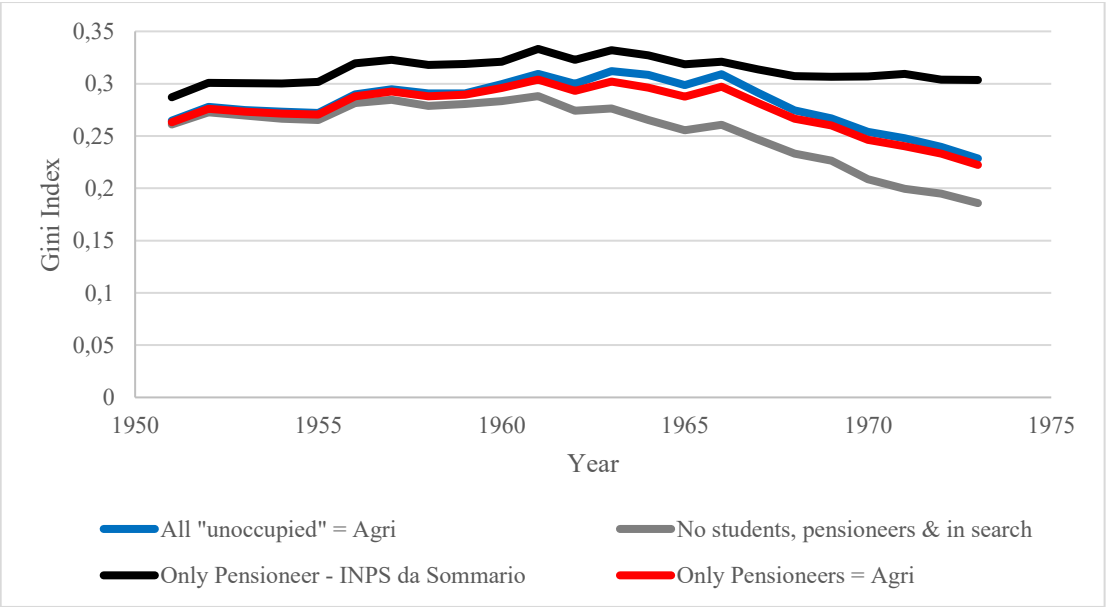
Note: Own elaborations from the sources enlisted in the main text and in the appendix (Gross wages).

Following Gomez Leon and Gabbuti (2025), wages for the unoccupied are equalized to the lowest category in our social table: agricultural daily laborers. However, for this period, we were able to collect data on INPS pensions, both from ISTAT (2011) long-run reconstruction,

and year by year from the *Annuario di Statistiche del Lavoro* Istat, then linearly interpolated for missing years. As shown in Figure 4.a, however, both sources report extremely low incomes for pensioneers, which could hardly maintain them in the absence of other income sources. For this reason, as for the aforementioned need of consistency with Gómez León and Gabbuti (2025), in our baseline series we use the agricultural wages for the unoccupied.

However, in order to test for different possibilities and make a robustness check, we estimated within labor inequality with our different assumptions on the incomes we could assign to the unoccupied population – represented in Figure 4.a – and with varying population size. The blue line in figure 5.a is our within labor inequality as shown in the main text, so including pensioners, people in search of first job, and students, comparing their income to daily laborers in agriculture. The red line maintains the same assumption on income but uses only pensioners for the computation, while the grey line completely excludes all these categories. What we can notice is that this low-income group is quite relevant in the determination of inequality dynamics after the early 1960s. In particular, the trends diverge between 1962 and 1966, as agricultural wages did not particularly increase in this period with respect to wages in industry and services, while this specific set of population extremely increased as a result of the modernization of the country (table 1). When, instead, we use for the computation only pensioners with an income collected from official Istat (2011) statistics (black line), we have much higher inequality, not particularly decreasing during the 1960s. This is due to the fact that, according to this latter assumption, the increasing unoccupied branch of the workforce kept gaining a very low income with respect to the average. However, we believe that these data are quite unreliable because of their incredibly low levels, so, to be conservative, we prefer to continue to use the assumption on income made by Gómez León and Gabbuti (2025).

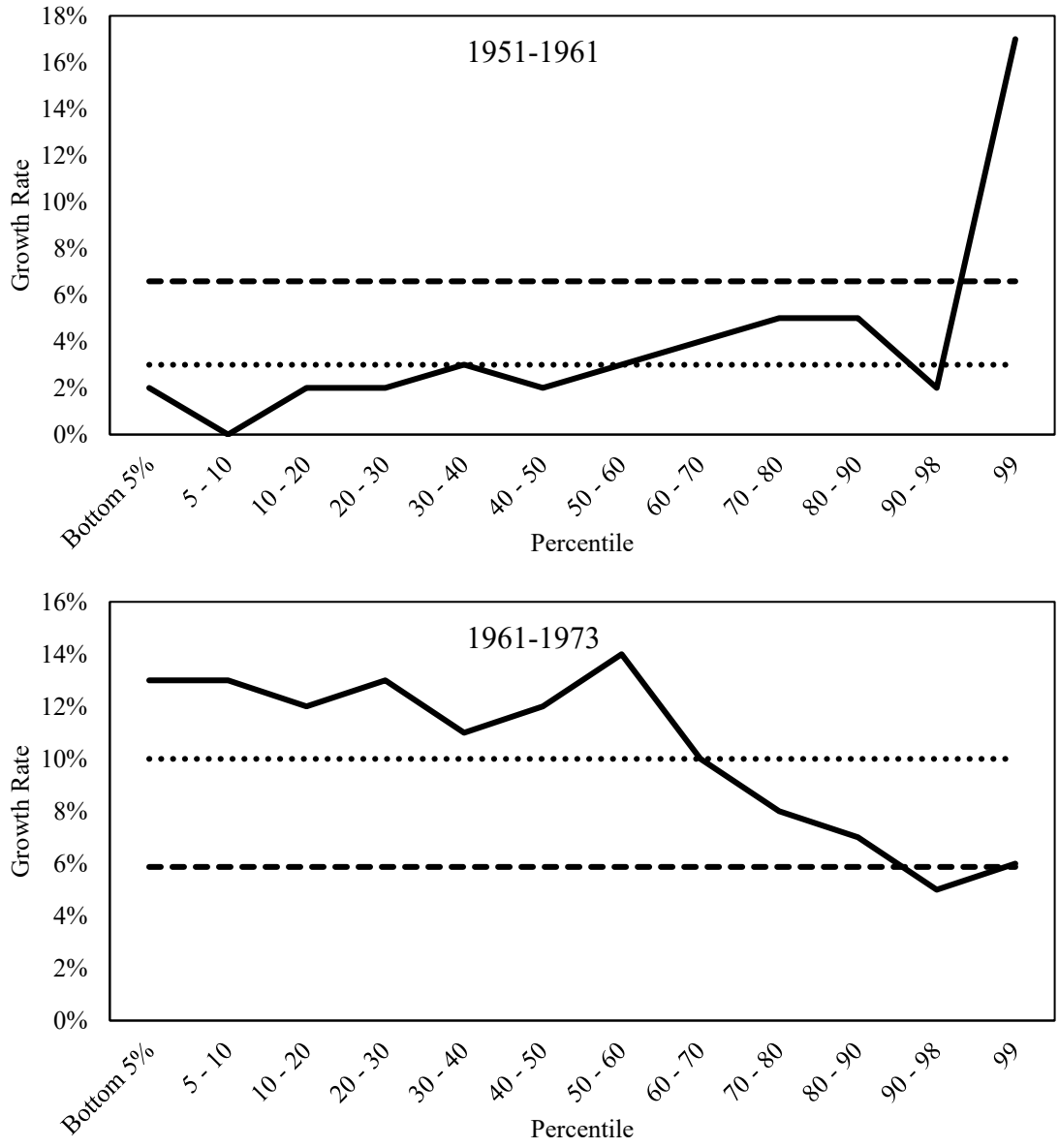
Figure 5.a. Alternative Within Labor Inequality estimates depending on different assumptions on the Incomes of the Unoccupied.



Note: Own elaborations from the sources enlisted in the main text and in the appendix.

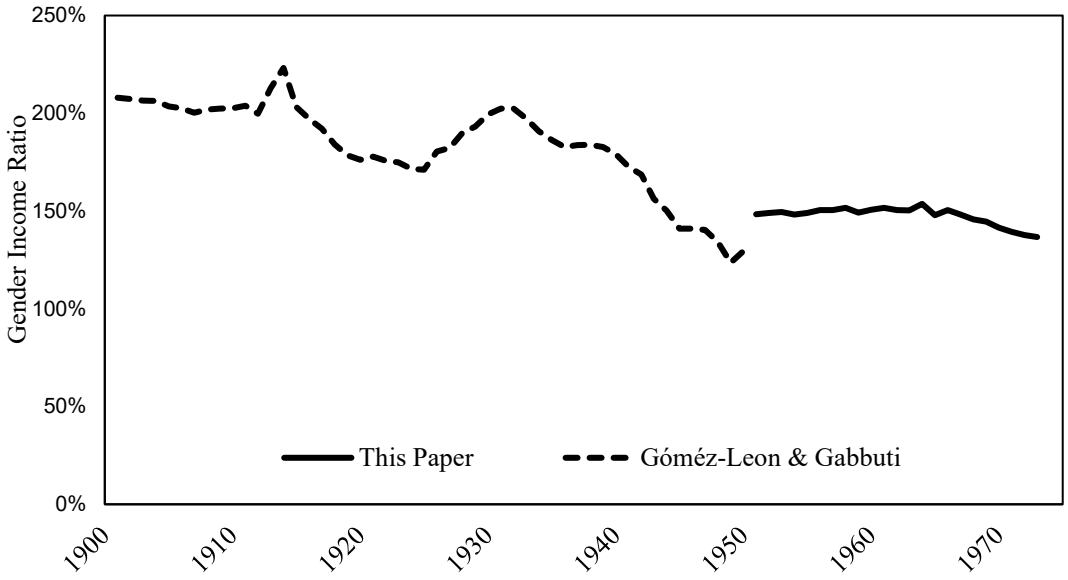
5. Further Materials

Figure 6.a. Alternative Growth Incidence Curves for Italy, 1951-1973



Note: Own elaborations on DSTs.

Figure 7.a. Gender Income Ratios in Italy, 1901-1973



Note: Gómez León and Gabbuti (2025), 1900-1950; Own elaborations on DSTs, 1951-1973.

Chapter 2

Conflict Inflation in Italy during the Golden Age. Evidence from Provincial Data, 1952-1972.

Abstract: The Italian Golden age (1952-1972) was characterized by a chaotic growth path, in which alternating phases of wage restraint and strong workers' claims for redistribution regularly led to broad increases in inflation. In this context, Conflict inflation theory, which interprets inflation primarily as a cost-push phenomenon triggered by wage demands, perfectly fits the historical framework. This paper analyzes the history of inflation in Italy during the Golden Age through this approach and evaluates its validity by examining the underlying "causal chain". Provincial data are employed to exploit the wide variability of Italian regional labor markets and to assess whether different unemployment rates and conflict propensities led to divergent patterns of wage growth and inflation. The results generally confirm that economic conflict is associated with increases in wages and inflation. However, macro-regional analyses reveal that the centralizing nature of Italian unions limited variability in wage growth across the country, producing broadly similar inflationary patterns.

1. Introduction

The Golden Age (1952-1973) represents a crucial period in Italian economic and social history. While GDP and industrial production boomed, the country passed through very important economic and political events marked by a high degree of internal conflict and social fragmentation. In particular, two main periods (1962-1963 and 1969-1970), characterized by workers' protests and widespread wage growth, led to rising inflation and economic slowdowns. Many economists and policymakers concluded that these inflationary trends were primarily cost-push phenomena driven by distributive conflicts (Sylos Labini 1972; Graziani 1998; Salvati 1984; Savona 2018, 168; Modigliani 1999, 221-222). In this context, conflict inflation theory (Rowthorn 1977) arises as a convenient framework to understand the forces at play. The theory essentially claims that low levels of unemployment support new wage claims and economic conflict, which, in turn, lead to wage increases prompting capitalists to raise prices in order to recover profits.

During this period, Italy was also characterized by huge regional gaps. Southern and peripheral regions, where economic and living conditions were particularly harsh after WWII, began to converge in the 1950s and 1960s but were never able to fully catch up with the rest of the Country (Felice 2019). Due to the structural weakness of the working class, economic conflict was less intense in these regions. Marginal working activities were widespread, and local sections of labor organizations were usually unable to enforce strikes and secure better wages. In the light of conflict inflation theory, we could wonder whether the lower conflict propensity

of “marginal Italy” influenced wages and inflation differently than in more advanced areas of the country.

The aim of the paper is twofold. First, it reconstructs the history of inflation during the Golden Age, trying to highlight the link between distributive conflict and inflation. Second, it empirically tests the relations between the variables composing the “conflict inflation causal chain”: *unemployment->economic conflict->wages growth->inflation*. The research particularly inspects different regional paths to understand the inner mechanisms of the Italian economy. Namely, it seeks to determine whether varying unemployment rates and conflict propensities led to different wage growth and inflation rates. To perform this empirical exercise, a new provincial level dataset has been assembled, combining various official but also unpublished sources. The dataset is composed of almost 2000 observations per variable (93 provinces over 20 years).

The results confirm the existence of a long-run conflict inflation “causal chain”. However, considering different unemployment rates and conflict propensities across the country, the results fail to detect significant variations in wage growth and inflation between provinces. The “anomaly” could be explained by the centralized nature of Italian unions and the wage bargaining system.

Section 2 presents the theoretical framework of conflict inflation theory. Section 3 describes the historical context of the Golden age. Section 4 explains the methods used for reconstructing the provincial dataset and conducting the econometric analysis. Section 5 discusses the results of empirical analysis. Section 6 concludes.

2. Theoretical Framework

Conflict inflation theory mainly explains inflation as a cost-push phenomenon[12] (Rowthorn 1977; Stirati 2001; Stirati and Paternesi Meloni 2018; Lavoie 2022; Lavoie 2024; Morlin and Pariboni 2024). Price increases are essentially determined by the struggle over income distribution between the main social groups – usually identified as workers and capitalists – involved in the production process[13]. For given levels of productivity, workers and capitalists have one “weapon” on each side to increase respective income shares. Workers can use wage bargaining and labor conflict – for example strikes and unionization – to increase wages and,

[12] On the other hand, demand-pull theories formulated by neo-Keynesian and monetarist economists, in their simplest form theorize that inflation is a byproduct of a wrong expansion in money supply. An incorrect interest rate, indeed, generates a gap between actual and potential output, thus excessively increasing aggregate demand and (subsequently) inflation. Central banks must target inflation rates through correct interest rates.

[13] Differently from neoclassical models, in this framework factors marginal productivity does not determine income distribution in equilibrium.

consequently, wage share. Capitalists, instead, can use prices to increase profits and, consequently, profit share. In sum, if workers are able to bargain better wages, which can be thought as a "cost shock", capitalists can increase prices to recover profits. Changes in income shares (real variable changes) will only be visible at the end of this process.

As Rowthorn (1977) highlighted in the canonical model, the two classes are fundamentally constrained by demand in their claims. For capitalists, demand is represented by commodity demand. If capacity utilization in the economic system is below normal utilization, which usually depicts periods of slow economic growth, firms cannot deliberately increase prices because competitors can always invade their market by maintaining old prices. If, instead, capacity utilization is over the target level (high economic growth), firms are confident that competitors cannot invade their markets, and they can easily increase prices. Moreover, if firms have high market power the competition constraint diminishes. For example, supply-side bottlenecks may create temporary market power, leading to price increases and higher profits for firms (Weber and Wasner 2023).

For workers, demand is represented by labor demand, where the Marxian concept of the "Reserve labor army" becomes pivotal. Assuming constant labor supply, if labor demand increases causing a decrease in unemployment ("reserve labor army" shrinks) [14], workers are better positioned to demand wage increases. If, instead, labor demand decreases causing an increase in unemployment ("reserve labor army" expands), workers are less able to ask for wage increases. The theory underpins the empirical evidence found in the Philips curve on the downward relation between unemployment and inflation (Philips 1958). However, differently from neoclassical models where the Philips curve is present, increases in wages are not byproduct of an automatic market mechanism, but are the result of conflict and labor relations. Lavoie (2022, 594) writes: "For mainstream authors, the Phillips curve is an example of the impact of scarcity and market forces. For post-Keynesian authors, higher levels of activity that give rise to lower rates of unemployment, or to falling unemployment rates, give labor more bargaining strength".

In conflict inflation theories, some important additional elements typically shape demand constraints and distributive conflict. First, capitalists can escape the "demand trap" and increase profits in the long run by rationalizing production methods – augmenting productivity. In this manner, they can both recreate excess supply in the labor market (unemployment) and increase capacity utilization (Rowthorn 1977; Vianello 1979). Second, as reported by Epstein (1996), when exchange rates are fixed, entrepreneurs cannot fully pass the increasing costs on prices, as this would undermine their international competitiveness. When exchange rates are flexible, instead, devaluations and depreciations are possible, and the price channel becomes more

[14] This is usually correlated with periods of high economic growth, such as the Italian Golden age.

"available". Third, as highlighted by Rowthorn (1977) and Kalecki (1943), restrictive monetary and fiscal policies reintroduce "market discipline" (the demand constraint) and curb rising inflation creating unemployment and GDP stagnation[15]. Fourth, institutional, historical and political factors shape the relative bargaining position of social classes. For instance, social welfare measures, extracting and redistributing resources from the production process, remodel the distributive conflict between social classes reducing the demand constraint for workers [16].

3. Wages and Inflation in the Italian Golden Age: A brief History

In the early 1950s, large segments of the Italian population lived in extreme poverty and deprivation (Ginsborg 2006). As documented in three parliamentary inquiries on unemployment, poverty and working conditions (1952-1955), over two million people were unemployed (Alberti 2024). These issues were particularly acute in southern and peripheral regions. Indeed, a peculiar dual economic system, in which only small parts of the workforce were employed in the advanced sectors – primarily located in the North-west – while many others were employed in marginal and traditional sectors characterized by low and unstable incomes, amplified regional differences (Lutz 1962; Sylos Labini 1964; 1970). In the historical context, weak unions struggled to establish strong connections in marginal areas and sectors, where legal protections for workers were scarce or absent. As a result, the distributive conflict became concentrated in the modern industrial parts of the country.

Despite unfavorable initial conditions, Italy experienced its "economic miracle" during the late 1950s and the early 1960s, achieving yearly growth rates around 5-6% (Baffigi 2015). The outcome was the result of post-war authorities' decision to "bet on" industrialization and trade liberalization, integrating Italy in European and international markets (Barca 1997; Rossi and Toniolo 1996; De Cecco 1971). The price competitiveness of Italian products, which formed the backbone of the export-led model, was solidly based on two elements: low labor costs and low inflation (Ciocca *et al.*, 1975; Graziani 1998). Low labor costs firstly derived from the availability of a large "reserve labor army" for the industrial system, a consequence of the structural transformation of the Italian economy and society from agriculture to industry. Mass migration from the South to the North and from rural areas to the cities always guaranteed the availability of new workforce in highly productive zones where big industries were located, such as the "industrial triangle" (Milan-Turin-Genua). Labor market conditions and political

[15] More recently, Mattei (2022) considers the argument from a historical perspective, particularly examining Italy and England during the 1920s and 1930s.
[16] The threat to be unemployed becomes less stringent thanks to the availability of public services such as hospitals, schools, unemployment benefits etc. Moreover, the wage portion used to buy other goods and services on the market increases.

internal fragilities weakened unions' range of action (Turone 1992), compelling them to accept wage moderation and endure political repression in the workplace (Gallo and Loreto 2023). Moreover, small firms – often operating as subcontractors – sustained the low labor costs' structure by exploiting the non-unionized, marginal labor force and taking advantage of an ambiguous regulatory and tax system (Di Martino and Vasta 2018; Barca 1997). The second pillar, low inflation, was preserved by Bank of Italy. Donato Menichella, Governor of Bank of Italy (1948-1960) and a strong advocate of monetary stability, kept cautious monetary policies during his governorship, favoring a growth path based on exports and investments in a fixed exchange regime (Gelsomino 1998). In summary, the absence of wage conflict and prudent monetary policies favored low inflation, which, in turn, reinforced Italian exports competitiveness.

During the miracle, the absence of economic planning favored a chaotic growth path[17]. In particular, the government's lack of involvement in bargaining and labor relations (Foa 1976a; Cella and Treu 1989) provoked a turbulent distributive pattern. Profits, gaining from the widening gap between growing productivity and flat wages, steadily increased in a process accompanied by rising investments and growth[18] (Convenevole 1977). In many cases, social and welfare structures did not coherently grow along with modern needs, creating big inequalities and social discontent pockets (Ginsborg 2006). Cities like Milan, Turin, Rome or Naples saw an influx of thousands of migrants, who were forced to live in harsh conditions because of the absence of basic infrastructures and social housing. Moreover, the miracle per se did not satisfactorily solve regional imbalances (Napoleoni 1962). Thanks to mass migration, unemployment diminished everywhere, but social and economic inequalities remained high, and the dual system still implied high degrees of marginality for sizable portions of the labor force.

The miracle abruptly stopped in the early 1960s. By 1962, the reserve labor army had significantly diminished compared to the previous decade (Rossi and Toniolo 1996). Due to the absence of coherent income growth, a spontaneous rise in protests and strikes in northern Italy triggered huge increases in nominal wages (Graziani 1976) – around 50% from 1962 to 1964. Available reconstructions show that labor shares increased by three or four points within this short time frame (Gabbuti 2021). During 1962 and 1963, entrepreneurs decided to "pass the burden" of increased labor costs on prices (Vianello 1979; Graziani 1998). They were particularly favored by the permissive policies of Bank of Italy, which was not inclined to

[17] The Vanoni plan (1955-1964), which tried to put the bases for an economic planning during the miracle, was a notable exception. It aimed to create four million jobs, balancing current accounts and filling the North-South gap. It was quickly abandoned by politics, but it was partly realized (jobs and current accounts) by the miracle economic circumstances (Carabba 1977; Graziani 1998).

[18] Productivity gains were largely achieved by acquiring machines and techniques from developed countries (Rossi and Toniolo 1996; Ciocca 2007).

hinder the economic miracle. The theoretical scheme followed by the Bank of Italy under Guido Carli's governorship (1960-1975), indeed, was aimed at ensuring a highly favorable profit share to encourage accumulation and investment (Valli 1993), while monetary stability was no longer considered strictly necessary. Carli (1993, 268) explicitly said after many years: "The political ratio of the monetary expansion (…) was to allow firms to transfer the increasing (labor) costs on prices without compressing profit margins*"*. In mid-1963, when inflation reached remarkable peaks (8,4%), Bank of Italy decided to set very restrictive monetary policies to stop the negative trend in the balance of payments[19] (Gelsomino 1998). These measures provoked a strong slowdown of the economy (1964-1966) and reestablished "market discipline" both for workers and capitalists.

From 1965 to 1969, the so-called "Restoration", the economic climate changed. Similarly to the miracle, wage claims and prices calmed down while growing exports assured satisfying growth rates (Ciocca *et al.,* 1975). Thanks to restructuring processes, investments were reactivated, and profits in industry were restored at the end of the 1960s[20] (Vianello 1979; Graziani 1998). Unions, weakened by the unemployment increase experienced during the recession (1964-1966) –particularly in the North – had to accept the new industrial discipline and enter a new wage moderation phase (Salvati 1984; Gallo and Loreto 2023; Foa 1976a). Nonetheless, alongside national events, peripheral regions experienced good convergence in these years. The expansion of state-led and private modern industrial structures particularly favored growth in southern provinces[21] (Graziani 1998). Moreover, despite their local and national fragility, unions were able to push for the gradual abolition of wages zones[22] (Foa 1976b). Still, given the strong persistence of a dual economic system, the economic challenges facing the South – e.g. high unemployment – remained far from resolved.

Even during the Restoration period, the absence of economic programming and capitalists' shortsightedness posed the basis for a new structural break in industrial relation[23] (D'Antonio

[19] The external deficits were fueled by an increase in imports, a decrease in exports and capital flight. Imports were boosted by domestic inflation and consumption, while falling international price competitiveness led to a decline in exports (Ciocca 2007, 258-259). It is important to note that the Central Bank did not have the possibility to devalue the currency due to the constraints of the Bretton Woods fixed exchange regime.

[20] Entrepreneurs, indeed, could not restore Golden Age's profits through prices increase because of possible "retaliations" of the Central Bank. At the same time, De Cecco (1971) argued that the fundamental "exogeneity" of technological progress made wage compression and rationalization the only channels through which capitalists could increase profits.

[21] *Cassa del Mezzogiorno*, established in 1950 by the government and aimed at promoting growth and employment, was an important institutional feature of the period. It gave subsidies to economic activities of southern regions, particularly focusing on industrial activities after 1958 (Buscemi 2025).

[22] *Gabbie Salariali,* literally *wage cages*, was the name commonly given to wage pay scales. The mechanism was introduced in 1954 and allowed for "legal" wage discriminations dividing the Country in 13 zones with different minimum bargained wages. Small provinces and southern regions were particularly penalized. The convergence path started in 1961, when an agreement reduced the number of zones to 7 (Turone 1992).

[23] About economic planning, Ugo La Malfa, influential politician from the Republican party and Minister of the Economy in 1962, firmly highlighted the absence of programming and proposed new guidelines

1973, 196-201; Sylos Labini 1972). The renewal of metal-mechanical workers contract in autumn 1969 – the so-called "Hot Autumn" – triggered a long season of economic conflict spanning for the whole decade. Similarly to 1962, the magnitude of the phenomenon was promoted by widespread reabsorption of unemployment and the frustration of workers' claims during the Restoration (1964-1968)[24]. Workers' protests increased manufacturing wages by 50% in just a few years (1969-1972). However, this time, workers' movements – driven by a new egalitarian spirit aimed at harmonizing workers' wages and rights across different sectors and regions (Dell'Aringa 1976; Bologna 2017) – were also able to carry out important battles at national level[25]. The Workers' Charter (*Statuto dei Lavoratori*) was introduced in 1970[26], while the definitive abolishment of wage zones was completed between 1969 and 1972. During the 1970s unions became real political actors, starting to discuss with the government for the adoption of welfare system improvements. The aim was to reshape the traditional income distribution scheme and create new forms of democracy with greater redistribution (Accornero 1992; Turone 1992). All these elements combined contributed to the significant decrease in income inequality – around 10 Gini index points –over the course of the decade (Vecchi 2017).

Entrepreneurial reactions were not long in coming. Inflation started to rise from 1969 fluctuating around 5-6% in the early 1970s. After a restriction in 1969, Bank of Italy cautious policies allowed for a "creeping inflation" (Salvati 1984). Carli (1977; 1993, 261) admitted the impossibility of taking drastic measures to reduce inflation due to the exceptional political conflict within the country[27]. Profit shares decreased over the period (Torrini 2015) because of the external competitiveness constraint and the absence of currency devaluations – which did not allow price explosions. Similarly to the 1964-1965 crisis, investments dropped, and GDP growth decreased, signaling, along with inflation, the capitalists' reaction to labor movements (Ciocca, 2007).

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for the next decade in his famous *Nota aggiuntiva* (1963). However, even during the 1960s the programming plans were barely realized (Graziani 1966, 83; Ruffolo 1973).

[24] A coherent income policy was still notably absent. Napoleoni (1966) argued that a long-term strategy for the Italian economy needed to involve unions in decisions regarding incomes but also in matters of redistribution and social welfare policies. Indeed, according to Napoleoni, the export-led model had to contain wages. Therefore, alternative forms of political compromise – e.g. redistributive policies – needed to be negotiated with the working class. Regarding the long-term fragility of the export-led model, we recommend Cesaratto and Zezza (2019) and Ciocca *et al.* (1975).

[25] A new cohesion between main workers' unions (CGIL-CISL-UIL) played an important role in these claims (Turone, 1992).

[26] *Statuto dei lavoratori* was a legislative act which protected and expanded workers fundamental rights. It was applied to firms with more than 15 employees. Its importance was pivotal in halting widespread exploitation in the workplace that characterized the 1950s and the 1960s (Alberti, 2024).

[27] According to Salvati (1983, 100-110), political and entrepreneurial indecisions also favored the surge of extraordinary intensity in conflict.

4. Sources and Methods

a) Sources

Inflation at provincial level (derived from Consumer price Index) was collected from different editions of *Annuari Statistici* from 1952 to 1972. *Annuari Statistici* were edited by Istat (National Italian Institute of Statistics) and represent a coherent source for the whole period. CPI data were collected from Istat provincial offices. There are some missing observations in the dataset because before 1958 Istat collected Inflation only in some provinces (generally the big cities), and in the 1970s some provinces were not able to collect data for some years. Clear editing mistakes were deleted from the dataset.

Unemployment is reconstructed starting from a numerator (number of people unemployed) and a denominator (working age population). The numerator is composed of people enrolled in employment offices (*Iscritti Uffici di Collocamento*) at provincial level including all the available classes – unemployed people employed in the past, young people looking for their first job, housekeepers and retired people looking for a job. The data come from *Quadri Economici delle Province Italiane Unioncamere* (1952-1957) and *Annuari di Statistiche Provinciali Istat (*1958-1972). The Employment offices, established at provincial level after WWII, were coordinated by the Government and had the task of registering unemployed people and filling the vacancies. Even if the attempt by the government to control placement was soon depressed (Musso 2004), firms were not allowed to autonomously fill the vacancies, and they had to formally ask to employment offices for manpower. However, people enrolled in employment offices cannot be considered a perfect proxy for unemployed people because of many provincial characteristics influencing this number – e.g. the main economic sector. Moreover, many people were enrolled even if they were not really seeking a job or were employed in the informal sector. For example, provinces of Ferrara, Ravenna and Lecce had – particularly in the 1950s and the early 1960s – disproportionately high number of enrolled people – even over 25%-30% of working age population. In fact, the main occupation of those areas was the daily-wage agricultural worker (*Bracciante)*, and people probably used to be enrolled in employment offices all the year – always trying to find a better job – even if they were working, at least in some periods. However, this numerator could still be of high interest for the aim of the paper because it essentially reports the fragility of the provincial economic and employment system. From Conflict inflation theory perspective, based on the concept of social class power, this variable could even be more suitable than classic unemployment rates. The denominator is working age population reconstructed at provincial level by Chiaiese and Ciriotto (2025).

Observed manufacturing nominal daily wages were collected at regional level from 1952 to 1957 (smallest disaggregation level for the period) and at provincial level from 1958 to 1972 in

Notiziario Statistico INAIL[28]. Applying the ratio $\frac{\text{provincial wage 1958}}{\text{regional wage 1958}}$ to regional wages from 1952 to 1957, and assuming it remained constant, provincial level wages and growth rates for the whole period were reconstructed. The wages data refer to workers which were subjected to injuries. Many different sources of bias about this source are described in Ramazzotti (2023). All in all, they can arguably be considered the most reliable sub-national sources for the period. The Ministry of Labor collected in the same period similar data at regional level, but they refer just to surveys on big industries, and they clearly miss the point to account for provincial differences. For example, from the data of the Ministry it results that many southern regions like Sicily and Apulia had higher wages for all the period compared to the national average, very unrealistic evidence if compared to what we know about Italian economic history. INAIL series data, referring to all the industries, should not be biased in this sense. Of course, these wages cannot be considered exhaustive because they just count for industrial workers. It is reasonable to assume, indeed, that average real wages were quite lower because in agriculture and services incomes were inferior. However, no obvious source of bias should affect the growth rates of this variable, allowing us to be more confident about the analysis. Moreover, Levrero and Stirati (2004) indicate that industry wages tended to determine wage changes across all the sectors during the post-war period.

Total working hours lost for labor conflicts were collected at provincial level from *Annuari di Statstiche provinciali Istat* from 1958 to 1972. Between 1952 and 1957 the same data at regional level from *Annuari Statistici Istat* were collected. To obtain total lost working hours at provincial level before 1958, the ratio $\frac{\text{provincial hours 1958}}{\text{regional hours 1958}}$ was applied to the data from 1952 to 1957. After that, to obtain "per worker" data, we divided the provincial hours by working age population from Chiaese and Ciriotto, 2025. The variable should signal labor conflict – hours of strike per worker – within provinces throughout the period, and it is used as proxy for "crude conflict" over a certain year.

Unionized people in CGIL and CISL – the two main Italian unions – at provincial level were collected from the unpublished appendix in Romagnoli (1980). To create the unionization rate, we divided the number of unionized people by the active population reconstructed by Chiaiese and Ciriotto (2025). In addition to the use of active population as denominator, the main issue regarding this variable is represented by the fact that people enrolled in CGIL and CISL were not the entire unionized population. However, considering the importance of these unions in the context of the period, it is quite reasonable to assume that real total unionization should follow the same trend.

[28] Inail is the Italian agency against workplace accidents.

b) Methods

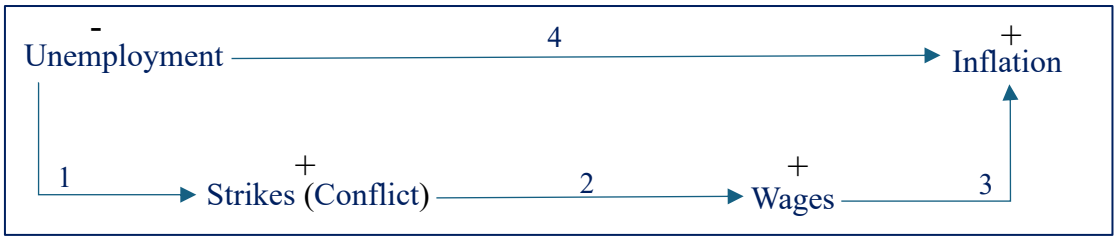
For the empirical analysis panel data regressions with fixed effects both on provinces and years – time – are used. The provinces fixed effects erase the time-invariant differences between provinces, "exogenizing" the individual hidden characteristics that might bias the results. When using only province fixed effects, the regression results should be interpreted as long-term correlations that are valid across all provinces. On the other hand, time fixed effects "exogenize" the hidden characteristics that vary over time. When using only time fixed effects, the results should be interpreted as "within-country" correlations: for instance, provinces with higher unemployment experienced lower inflation during the period. By excluding both the important confounders – hidden characteristics – we examine the relationship residuals not shaped by time or provincial characteristics, generally approaching a better form of association between variables.

With the dataset containing provincial data from 1952 to 1972, the "Conflict causal mechanism" *(unemployment-> economic conflict->wage growth->inflation)* will be firstly tested. This will be done by regressing the variables contained in the nodes (->), adding province or time fixed effects in the first two specifications (1-2) and both fixed effects in the third specification (3). The tables will show the β coefficient results with standard errors in parentheses. The first regression within the "causal chain" associates hours of strikes per worker (dependent variable), the crude measure for economic conflict, and unemployment[29] (independent variable). If the relation holds and is negative, it would confirm a fundamental pillar of conflict inflation theory: lower unemployment rates increase workers' bargaining power and directly trigger wage and social requests, which usually take shape through strikes. The second regression associates lagged nominal wage growth[30] (dependent) and hours of strike per worker (independent). If the relation holds, it would suggest that strikes generally lead to an increase in salaries. The third regression examines the relationship between inflation (dependent variable) and wage growth (independent variable) to test for the final link in the causal mechanism and assess the real contribution of wage growth to inflation. The regressions with provincial fixed effects will be conducted both at country (A) and macroregional level (B-C-D-E). The macroregions considered are *North-west, North-east, Center and South*[31]. The inspection of subnational level results with province fixed effects help to understand the main mechanisms driving conflict, wage growth and inflation in Italy, depicting a detailed framework

[29] We drop the unemployment observations from the province of Ferrara, which can be considered an outlier strongly invalidating the results.
[30] The relation is tested with a time lag on wage growth because, usually, strikes and wage claims took some months to be transformed in wage increases.
[31] Macroregions are composed in this way: North-West (Liguria, Piedmont, Valle d'Aosta, Lombardy), North-East (Veneto, Trentino-Alto Adige, Friuli-Venezia-Giulia, Emilia-Romagna), Center (Tuscany, Latium, Umbria, Marches), South (Abruzzo, Molise, Puglia, Basilicata, Campania, Calabria, Sicily, Sardinia).

of the national gaps[32]. As explained in the introduction, the main question to answer is whether regional differences in unemployment and economic conflict – briefly narrated in section 3 – led to different wage growth and inflationary paths. Finally, a wage Philips curve – the relationship between lagged wage growth (dependent variable) and unemployment (independent variable) – and an inflation Philips curve – the relationship between lagged inflation (dependent variable) and unemployment (independent variable) – will be tested using the same approach as the conflict causal chain[33]. Philips curves results should generally recap the steps of the conflict causal mechanism. In Figure 1 we synthetize the relationships we are going to analyze with the different steps (1-2-3-4).

Figure 1. The Causal Mechanism linking unemployment to inflation



Notes: The points 1-2-3-4 signal the different regressions steps in the analysis. Steps 1-2-3: the conflict causal chain. Step 4. the Philips curve.

[32] Testing macroregional results with time fixed effects would yield less meaningful results due to the economic similarity of provinces within the same macroregion.
[33] The usual Philips curve does not incorporate lagged variables. However, since a lagged variable is used in the second node of the conflict causal chain, it is reasonable to include lagged values in this relationship as well.

5. Results

a) Economic conflict and unemployment

Table 1. First node regressions, dependent variable = Hours of strike per worker, provincial data 1952-1972

	(1)	(2)	(3)
Unemployment rate - Italy (A)	-57.75***	-8.69***	-17.17***
	(2.92)	(2.07)	(3.78)
R^2	0.0684	0.0684	0.3393
Observations	1905	1905	1905
Unemployment rate - North west (B)	-83.24***		
	(9.16)		
R^2	0.1058		
Observations	420		
Unemployment rate - North east (C)	-61.84***		
	(5.72)		
R^2	0.0213		
Observations	399		
Unemployment rate - Center (D)	-58.12***		
	(5.74)		
R^2	0.1092		
Observations	420		
Unemployment rate - South (E)	-35.30***		
	(3.88)		
R^2	0.0309		
Observations	666		
Province fixed effects	yes	no	yes
Time (year) fixed effects	no	yes	yes

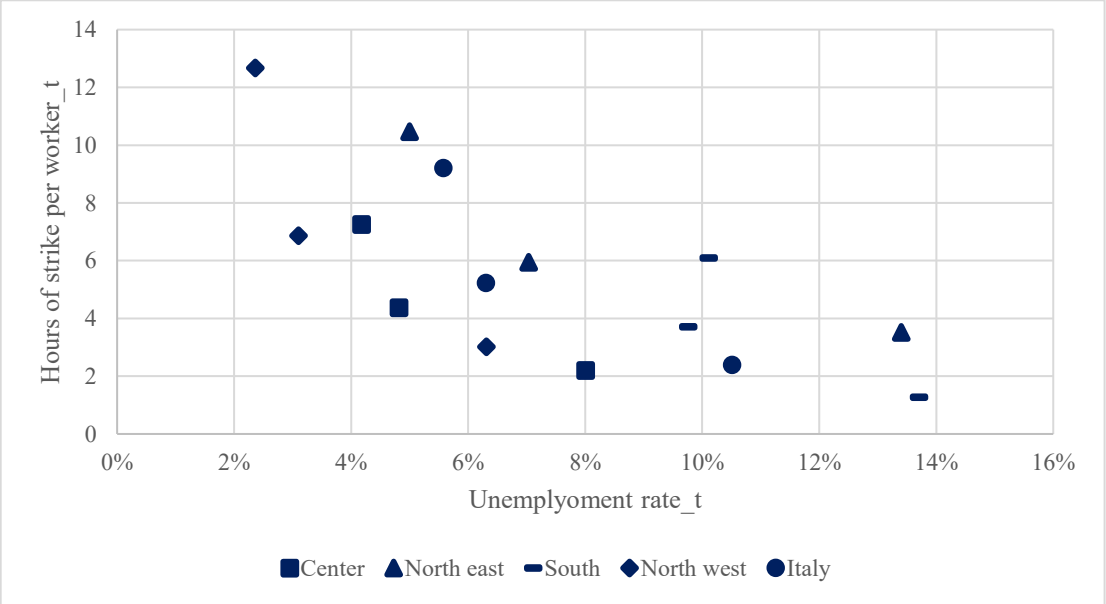
Notes: standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively; B–C–D–E are obtained by subsampling the entire dataset (A), which includes all Italian provinces. Sources: own elaboration. Look at section 4.1.

The first node of the conflict causal chain is represented by the relation between hours of strike per worker (dependent variable) – proxy for economic conflict – and unemployment (independent variable). Looking at country-level results with provincial fixed effects (1.A), the relation seems clearly negative and significant. A 1% increase in unemployment is associated with 0.57 fewer hours of strike per worker. Therefore, it is presumable that lower unemployment rates brought to higher conflict in the long run, confirming one of the main conflict inflation theory intuitions. Country-level results with time – year – fixed effects (2.A) yields, even in this case, a negative coefficient, revealing that provinces which experienced lower unemployment experienced higher conflict on a yearly basis, albeit to a lesser extent[34].

[34] In table 1.a in the appendix, unionization rate is included as an explanatory variable in the baseline regressions, showing positive and consistent – though relatively small -- results. It is interesting to

Adding province and time fixed effects (3.A) the relation is confirmed to be negative and significant. Then, the association is not only true in the long run: provinces that experienced sharp decreases in unemployment generally had higher conflict propensity.

Figure 2. Macroregional Hours of Strike per worker and Unemployment rates, yearly averages grouped into three subperiods (1952-1961; 1962-1968; 1969-1972)



Note: In Figure A1 in the Appendix all years – without grouping – are shown.
Sources: own elaboration. Look at section 4.1.

Macroregional regressions with provincial fixed effects (1.B-C-D-E) indicate a stronger relation in the North-west, which weakens in the Nort-east, Center and, especially in the South. These results suggest that in southern provinces, where unemployment was generally high and persistent, the conflict propensity was extremely low. In contrast, northern regions, where industrial cities were located, were much more sensitive to reductions in the reserve labor army and were able to trigger long conflict seasons shaping national events. To better grasp the intuition, let us observe Figure 2, showing a scatterplot with macroregional hours of strike per worker (y axis) and unemployment rates (x axis), where the dots represent yearly averages for three major periods (1952-1961, 1962-1968, 1969-1972). The overall figure clearly resembles a classic "Philips curve shape" relationship, where northwestern regions with lower unemployment rates experienced very high economic conflict (upward and steeper segment of the curve), while southern regions were positioned on the downward (and flatter) slope of the curve[35]. Figures A2 and A3 in the appendix depicts the macroregional time series of the

notice that unionization rate is particularly important in explaining hours of strikes per worker when we add only time fixed effects (inter-provinces variations), thus justifying why unemployment has such a low coefficient in that case.

[35] The macroregional regressions in table 1.a in the appendix with provincial fixed effects (B-C-D-E) shows consistent results for unionization rate only for Northeast and South. Looking at figure 2 is evident, indeed, that northeastern points are above the national average. For instance, it is historically well known -- and visible from our dataset – that, despite their high unemployment rates, Emilia-Romagna provinces experienced very high economic conflict in the 1950s, largely due to strong unionization rates.

variables, particularly showing the concentration of conflict in the peaks of 1962 and 1969. It is evident that southern regions "politically" followed the conflict peaks of northern regions – even if their unemployment rates were much higher.

b) Nominal Wage growth and economic conflict

Table 2. Second node regressions, dependent variable = Lagged Nominal Wage growth rate, provincial data 1952-1972

	(1)	(2)	(3)
Hours of strike per worker - Italy	.007***	-.0006***	-.0003
(A)	(.0003)	(.0002)	(.0002)
R^2	0.1391	0.1391	0.7224
Observations	1814	1814	1814
Hours of strike per worker – North	.006***		
west (B)	(.0004)		
R^2	0.2854		
Observations	400		
Hours of strike per worker – North	.006***		
east (C)	(.0005)		
R^2	0.2079		
Observations	380		
Hours of strike per worker - Center	.009***		
(D)	(.0009)		
R^2	0.0884		
Observations	400		
Hours of strike per worker - South	.012***		
(E)	(.0009)		
R^2	0.1444		
Observations	634		
Province fixed effects	yes	no	yes
Time (year) fixed effects	no	yes	yes

Notes: standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively; B–C–D–E are obtained by subsampling the entire dataset (A), which includes all Italian provinces.
Sources: own elaboration. Look at section 4.1.

The second node of the conflict causal chain is represented by the relation between lagged nominal wage growth (dependent variable) and hours of strike per worker (independent variable). The outcome of the country-level regression with provincial fixed effects (1.A) shows that strikes per worker had a significative effect on wage growth, further corroborating another pillar of conflict inflation theory: in the long run, a higher conflict propensity brought better wage results. Indeed, one additional hour of strike per worker is associated with an increase in nominal wages of 0,7%. In contrast, the country-level regression with time fixed effects (2.A) reveals a negative coefficient: a province with 10 fewer hours of strike per worker obtained a

better wage increase (0,6% more) on a yearly basis. Moreover, the relationship becomes non-significant – and slightly negative – when both fixed effects are included (3.A), indicating that a higher degree of conflict, relative to the provincial and yearly average, did not necessarily lead to greater wage increases.

These results might seem at odds with conflict inflation basic mechanism, but they can be explained by the nature of the Italian wage bargaining system during the Golden Age. Labor relations were very rigid in this period: wages were almost entirely bargained at the national level by labor and entrepreneurs' unions[36] (Cella and Treu 1989; Foa 1976b; Gallo and Loreto 2023). The firm level bargaining – which could be expected to widen wage growth provincial gaps based on different workers' bargaining power – was only sporadically present during the period of analysis and typically focused on issues unrelated to core wage matters[37]. In substance, the centralized and confederal structure of workers' unions ensured that the gains deriving from bargaining – in form of wages and rights – were redistributed across different Italian regions. Despite widely different conflict propensities within the country – driven by different unemployment rates, as shown in the previous paragraph – national wage agreements were uniformly applied to workers across the country, from the North to the South[38]. The industrial, social, and economic conflict led by the more developed parts of the country also used to benefit the poorer provinces, creating a sort of "conflict trickle down mechanism"[39]. Moreover, during the 1960s and early 1970s, the abolition of wage pays scales (*Gabbie Salariali*) – a consequence of the higher conflict propensity within the country – favored southern and marginal provinces, whose wages grew faster than the national average. This effect is reflected in the negative coefficient observed in the regression with time fixed effects, while the non-significant coefficient in the regression with both fixed effects reflects the impossibility of achieving higher wages outside the framework of national-level bargaining.

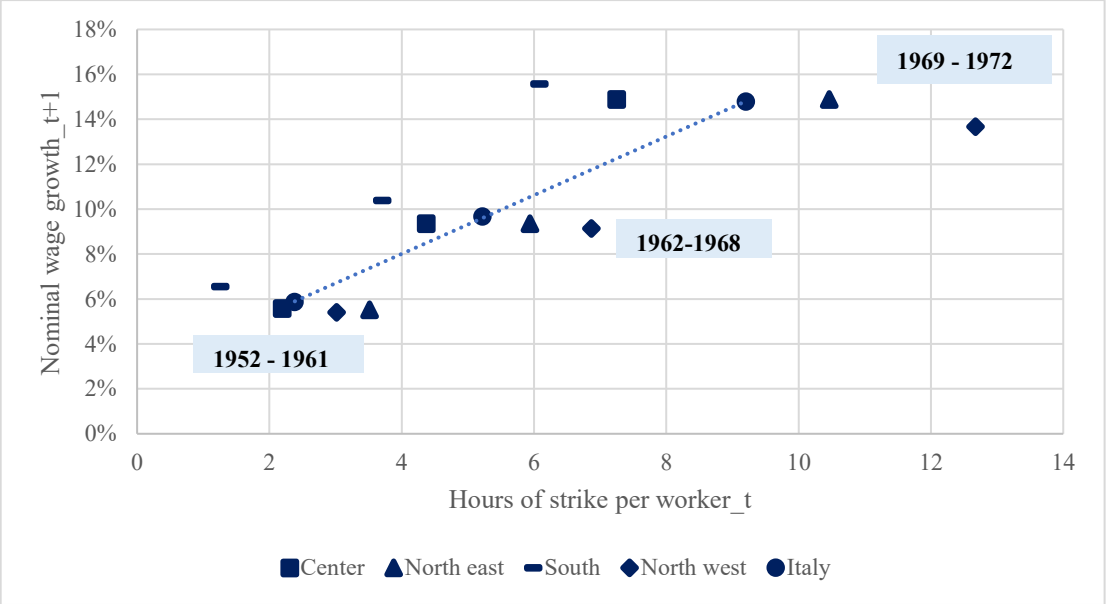
[36] Wages were mainly determined by a two-tier bargaining system. The national bargaining had as key interest some country-level agreements on the "rules of the game" which had to be respected by all the job contracts. The rules set up after WWII regarding wage indexation (*Scala mobile)*, wage zones (*Gabbie Salariali*), qualifications and gender pay gaps were particularly important. The sectoral bargaining, which occurred every three years, had as main interest the determination of minimum wages and working hours in a specific sector at the national level. It was the main determinant of pay differences between categories (Cella and Treu 1989).

[37] Opposed both by labor and entrepreneurs' unions during the 1950s, the firm level bargaining appeared only in some big industries after the strikes wave of 1962-1963, and more consistently after 1969-1970. The main arguments addressed were production bonus, piece work remuneration and job evaluation (Cella and Treu 1989). These topics were only very marginal to the determination of full wage.

[38] This is also a modern feature of the Italian bargaining system. The point is strongly highlighted in many different articles (Faini 1993; Brunello *et al.*, 2001; Boeri *et al.*, 2021). See the general discussion in the last paragraph of the section.

[39] After 1969 the firm level bargaining started to be more widespread and to deal with more bargaining issues. However, thanks to a strong egalitarian movement within unions, the firm level most advantageous agreements were quickly absorbed by the sectoral (national) level agreement, essentially reinforcing the "conflict trickle down" mechanism (Cella and Treu 1989).

Figure 3. Macroregional lagged Nominal wage growth and Hours of strike per worker, yearly averages grouped into three subperiods (1952-1961; 1962-1968; 1969-1972)



Note: In Figure A4 in the Appendix all years – without grouping – are shown.
Sources: own elaboration. Look at section 4.1.

Macroregional results (1.B-C-D-E) corroborate the national outlook, pointing out stronger associations in central and southern regions, where provinces typically followed the conflict peaks of northern regions with lower intensity, finally achieving similar or even better results. Moreover, the R^2 values of the regressions are higher in the North, confirming that the relationship between these two variables was closer in these regions. The North thus served as the starting point of a "conflict trickle-down mechanism". Figure 3 shows a scatterplot with lagged macroregional average yearly wage growth rates (y axis) and hours of strike per worker (x axis) in three major periods (1952-1961, 1962-1968, 1969-1972). It is evident that regions with lower conflict propensities – and higher unemployment – experienced slightly higher wage growth rates, particularly in the last period (1969-1972) with the final abolition of wage zones. Figure A5 in the appendix shows macroregional average cumulated wage growth rates, visually confirming the intuition.

c) Inflation and wage growth

Table 3. Third node regressions, dependent variable = Inflation rate, provincial data 1952-1972

	(1)	(2)	(3)
Nominal wage growth rate - Italy	.16***	.006	.007
(A)	(.007)	(.009)	(.01)
R^2	0.1987	0.1981	0.6314
Observations	1791	1791	1791
Nominal wage growth rate – North	.22***		
west (B)	(.016)		
R^2	0.3241		
Observations	402		
Nominal wage growth rate – North	.20***		
east (C)	(.019)		
R^2	(0.2185)		
Observations	391		
Nominal wage growth rate - Center	.13***		
(D)	(.015)		
R^2	0.1808		
Observations	381		
Nominal wage growth rate - South	.13***		
(E)	(.012)		
R^2	0.1564		
Observations	617		
Province fixed effects	yes	no	yes
Time (year) fixed effects	no	yes	yes

Notes: standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively; B–C–D–E are obtained by subsampling the entire dataset (A), which includes all Italian provinces.
Sources: own elaboration. Look at section 4.1.

The third node of the conflict causal chain is represented by the relation between inflation (CPI) as dependent variable and nominal wage growth as independent variable. Country-level results with province fixed effects (1.A) reveal that the relation is positive and highly significant. Then, leaving aside provincial characteristics, nominal wage growth is related to inflation in the long run. A 10% increase in wages is associated with a 1,6% increase in inflation. It is important to stress that the mechanism worked in a specific historical and institutional environment. In the period analyzed, inflation could spontaneously emerge from within-country distributive struggle[40], but it could never explode, thus configuring a small effect of wages on inflation. The

[40] On the other hand, in periods of complete wage moderation, when wage claims and political freedoms are repressed, inflation can barely emerge from distributional frictions between social classes.

external competitiveness bound in a fixed exchange regime, indeed, could not allow persistently permissive monetary policies or currency devaluations triggering wage-inflation spirals.

In country level results with time fixed effects (2.A) and both fixed effects (3.A) the relation disappears. This outcome is probably brought by the results on the second node (wage growth-economic conflict). Indeed, we could assert that the spread of similar wage growth across the country helped to balance inflation rates between different provinces. Moreover, it is likely that inflation was closely linked to national events and prices were easily transmitted from province to province.

Macroregional results confirm (1.B-C-D-E) the national scenario and show that the relation weakens – in terms of explanation of variability and coefficient – as we move south. We can hypothesize that inflation was more closely linked to wages in northern provinces, where most industrial production was concentrated and commodity prices quickly responded to wage growth. In southern provinces, instead, inflation and wage growth were more heavily imported, producing lower degree relations. For this reason, it is unlikely that the wage growth premium experienced by the southern regions following the abolition of wage zones could have contributed to higher inflation. Figure A6 shows cumulative yearly inflation rates for different macroregions. It is evident that the differences between them were not substantial, and variations were typically quickly reabsorbed.

d) Philips curves and general discussion

Table 4. Wage and Inflation Philips curve regressions, dependent variable (1-2-3) = Lagged Nominal wage growth rate, dependent variable (4-5-6) = Lagged Inflation rate, provincial data 1952-1972

	(1)	(2)	(3)	(4)	(5)	(6)
Unemployment rate - Italy (A)	-.89***	.07***	.01	-.15***	.001	-.04**
	(.04)	(.01)	(.04)	(.019)	(.007)	(.02)
R^2	0.0395	0.0395	0.7220	0.0097	0.0097	0.6424
Observations	1814	1814	1814	1728	1728	1728
Unemployment rate – North west (B)	-1.00***			-.24***		
	(.10)			(.04)		
R^2	0.1649			0.0560		
Observations	400			388		
Unemployment rate – North east (C)	-.67***			-.14***		
	(.07)			(.03)		
R^2	0.0871			0.0226		
Observations	380			376		
Unemployment rate - Center (D)	-1.04***			-.18***		
	(.12)			(.04)		
R^2	0.0611			0.0178		
Observations	400			370		
Unemployment rate - South (E)	-1.05***			-.09**		
	(0.10)			(0.03)		
R^2	0.0501			0.0000		
Observations	634			594		
Province fixed effects	yes			yes		
Time (year) fixed effects	no			no		

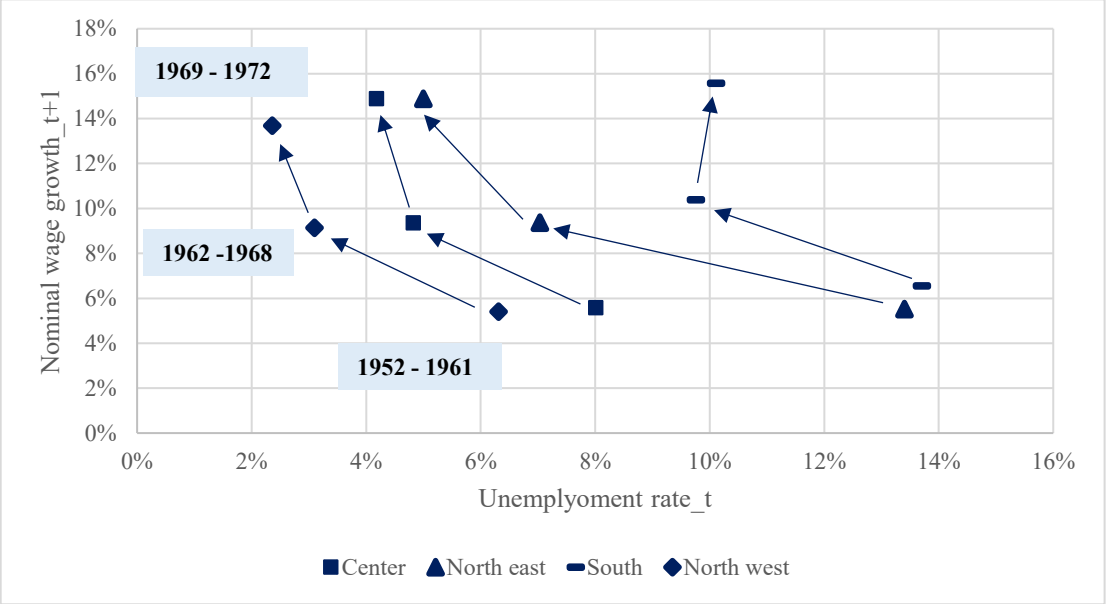
Notes: standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively; B–C–D–E are obtained by subsampling the entire dataset (A), which includes all Italian provinces.
Sources: own elaborations. Look at section 4.1.

The results on the wage Philips curve – the relation linking lagged wage growth (dependent variable) and unemployment (independent variable) – and inflation Philips curve – the relation linking lagged inflation (dependent variable) and unemployment (independent variable) – are presented in table 4 and show high consistency with previous findings[41]. At national level with provincial fixed effects (1.A), the relations are negative and highly significant, thus matching the historical and theoretical framework. So, excluding provincial characteristics, lower unemployment rates corresponded to higher wage growth and inflation. A 1% decrease in unemployment is associated with a 0,89% increase in wages and a 0.15% increase in inflation. With time fixed effects (2.A) the relationships become slightly positive – though insignificant

[41] Look at note 33 about the use of lagged variables.

for the inflation Philips curve – reflecting the existence of a "conflict trickle down mechanism" as well as the structural limitation on significant regional differences in wage growth and inflation within the country. By adding time and fixed effects (3.A), the wage Philips curve is non-significant – consistently with the results of the second node – while the inflation Philips curve finds a very small negative result. This likely reflects the fact that inflation does not underestimate the informal economy and thus captures the real increase in overall wages more accurately than industrial wage data do.

Figure 4. Macroregional Wage Philips curves, yearly averages grouped into three subperiods (1952-1961; 1962-1968; 1969-1972)



Notes: Lagged values for Nominal wage growth: look at note 22; In Figure A7 in the Appendix all years – without grouping – are shown.
Sources: own elaboration. Look at section 4.1.

The macroregional results (1.B-C-D-E) are in line with expectations. The coefficients of the wage Philips curves are similar across regions due to uniform wage growth nationwide and parallel decreases in unemployment, without evidence of convergence. Figure 4 presents macroregional wage Philips curves – with yearly averages – for three major subperiods (1952-1961, 1962-1968, 1969-1972), clearly displaying four similar curves shifted according to different unemployment levels, with the notable exception of the Northeast, where the decline in unemployment is more pronounced. However, the higher R^2 values in northern regions suggest that a genuine Philips curve relationship was more evident in zones where economic conflict was more pronounced, and that wage dynamics were subsequently transmitted to other regions through the "conflict trickle-down mechanism"[42]. For instance, it is interesting to notice that in the period 1969-1972 the South had a very positive yearly increase in wages although a contemporary increase in unemployment. Similarly, inflation was more correlated to

[42] This evidence is in line with the historical practice of Italians unions to base wage claims on the industrial triangle unemployment and labor market conditions (Foa 1976b).

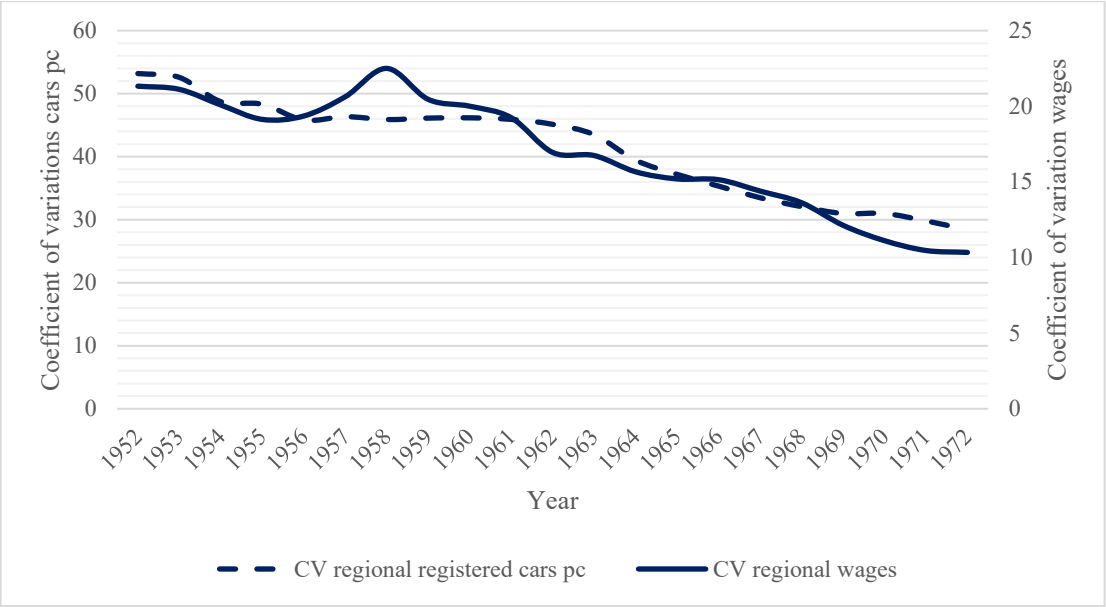
unemployment in northern regions while, in southern provinces, inflation was imported through the bargaining system and external prices from the other parts of the country.

These findings have also been highlighted in the literature covering more recent periods. Several studies on regional wage and Philips curves (Brunello *et al.*, 2001; Manacorda and Petrongolo 2006; Lucifora and Origo 1999; Bodo and Sestito 1994; Faini 1993) identify this structure of the Italian bargaining system, consistently showing that wage dynamics in Italy are largely – still nowadays – determined by labor market conditions in the North. This literature attributes the main cause of wage compression between regions the evolution of the bargaining system driven by the egalitarian movements of the 1970s[43]. However, this paper finds that the egalitarian push of Italian unions was somehow implicit in the centralized nature of bargaining system, even before the 1970s. Indeed, despite higher unemployment rates in "marginal" regions, we can observe a strong convergence of provincial wages starting from the early 1960s – well before 1969. This trend is largely attributable to the widespread absence of firm-level bargaining prior to the 1970s.

An interesting question arising from this paper is whether the bargaining structure had some impact on inflationary paths. As Bodo and Sestito (1994) propose for the following period (1980-1990), we could wonder if the generalized spread of wage increases – fostered by the North's labor market conditions and economic conflict – could have eventually triggered an acceleration in entrepreneurs' price response, even in regions where local labor markets, such as those in the South, would not theoretically justify such inflationary pressure. In other words, in absence of buffer zones (Salvati 1984, 120, 150), the usual price transmission mechanism could be reinforced by a strong wage transmission mechanism. On the theoretical side, a similar concept can be found in Lavoie (2022; 2024), who extends the conflict inflation model to include wage–wage inflation driven by the emulation of wage claims across different unions or regions. In this context, the mechanism could be described as a form of "wage–wage automatic" inflation, where emulation functions as an intrinsic feature of the bargaining system. However, as many papers on the wage curve advance, we should note that the unions' impact on wage convergence was limited to the formal sector of the economy. Considering the size of the informal sector in these regions, nourished by a big mass of underemployed and unemployed people, we could suppose that the effect of the mechanism was probably dampened.

Figure 5. Coefficient of variation for Regional Registered cars per capita and Regional Nominal Wages

[43] The formal abolishment of Gabbie salariali of 1969 (Faini 1993), the unions' "political" egalitarian movements (Faini 1993) of the 1970s and the effects of the wage indexation agreement of 1975 which lasted – at least -- until 1984 (Manacorda and Petrongolo 2006)



Sources: Regional wages: own elaboration. Look at section 4.1; Regional Registered cars: Annuario Statistico Istat (1953-1973); Regional population: https://seriestoriche.istat.it/.

To conclude, the impact of the Italian bargaining system on development and growth are still recently debated. Some authors assert that the absence of strong wage differentials resembling productivity and labor market gaps between Italian zones would bring to high unemployment and lower earnings in southern regions (Boeri *et al.,* 2021, Brunello *et al.,* 2001; Faini 1993). However, the egalitarian nature of Italian unions could potentially have beneficial effects for growth of depressed zones during the Golden Age. Complementarily with classic explanations of regional convergence during the 1960s[44], the "conflict trickle down mechanism", thanks to the "exceptional" increase in real wages[45] could have played a role in increasing consumption, living standards, GDP and employment in southern and marginal provinces[46]. Figure 5 shows the coefficient of variation between regional registered cars per capita and nominal wages in Italy from 1952 to 1972. The decrease in "consumption" inequality is evident from the early 1960s, similarly replicating, with a lag, the wage inequality decreases which followed the 1962 strikes. At the same time, although the wage convergence with northern regions, unemployment experienced a steep decrease in the 1960s in southern Italy (Figure 1.a in the appendix).

[44] Among them, we can mention mass migration, remittances and, in particular, State interventionism which guaranteed a high investment rate and increase in employment (Ginsborg 2006, 310-311; Graziani 1998, 96-103; Vecchi 2017, 277-280; Felice 2019).
[45] The exceptional increase in nominal wages in southern Italy was not offset by a corresponding rise in inflation, resulting in real wage growth that exceeded the national average. As shown in the third node, inflation in southern Italy was largely shaped by national-level dynamics.
[46] Deleidi *et al.* (2025), testing with more recent data on Italian regions, supports the view that higher wages would bring higher productivity and employment.

6. Conclusion

The historical events of the Golden age showed that a very intense growth path was not accompanied by adequate economic planning. The recurrent crises of the Italian economy particularly stemmed from the absence of a balanced income growth path. In particular, it is historically evident that inflation arose from the abrupt economic conflict that followed phases of wage moderation. By adopting conflict inflation theory, which essentially views inflation as a result of distributive struggle, this paper aims to contextualize the events of the Golden age within a broader theoretical framework.

The empirical analysis conducted in this article, which profits of the reconstruction of a provincial-level dataset containing key variables on unemployment, inflation, economic conflict, and wage growth, firstly highlights that the historical decrease of unemployment in post-war Italy brought to periodical increases in workers' economic conflict aimed at changing income distribution, which, in turn, brought to increases in nominal wages and, finally, cost push inflation. Moreover, the paper deeply inspects the impact of wage claims and economic conflict across Italy's widely diversified economic areas. The main finding argues that the centralized structure of Italian unions created a conflict trickle down mechanism, ensuring that marginal and southern provinces, where unemployment was high, benefited – in terms of wages and rights – from the widespread increase in conflict in northern provinces fostered by low unemployment rates. In the end, the transmission of similar wage growths could help explain the comparable inflation rates across the country. It is possible that the mechanism could also trigger potential inflationary bursts, adding a new dimension to the study of the wage bargaining systems in a historical setting.

The results also suggest that peculiar union and bargaining institutional settings could lead to different historical patterns. While many authors only consider mass migration and state interventionism as the main forces driving the convergence of southern regions during the 1950s and 1960s, the paper argues that the conflict trickle down mechanism could have had positive implications for these regions, offering an additional explanation for the phenomenon.

The analysis of the paper stops at 1972. Indeed, many economic historians indicate 1973 – the oil shock – as the real end of the Italian Golden Age (Felice 2018; Salvati 1984; Ciocca 2007). In the following years inflation exploded, driven by the capitalists' need to recover profit margins – squeezed by rising import and labor costs (Salvati, 1984). Thanks to the end of Bretton Woods agreements (1973) and the abolition of fixed exchange rates, Bank of Italy essentially supported the inflationary phenomenon through stop and go policies, as well as the currency devaluations in 1973 and 1976 (Epstein and Shor 1989; Modigliani 1999). Unions, due to their new bargaining power, successfully responded to prices' increase and the potential erosion of real wages. According to Aris Accornero (1992), the agreement on the *Punto Unico*

di Contingenza sulla Scala mobile, the 100% indexation of wages to inflation (1975), represented the peak of the unions' conquests parabola. Unlike the Golden age, when inflation was usually transmitted from wage claims to prices, the 1970s and the 1980s saw strong inflationary movements – almost 20% on average – brought by price increases followed by wage adjustments (Zenezini 1989). Even after the mid-1970s, when unemployment started to markedly increase, the automatic full wage indexation allowed the working class to keep increasing real wages (Levrero and Stirati 2004) and stable labor share (Torrini 2015).

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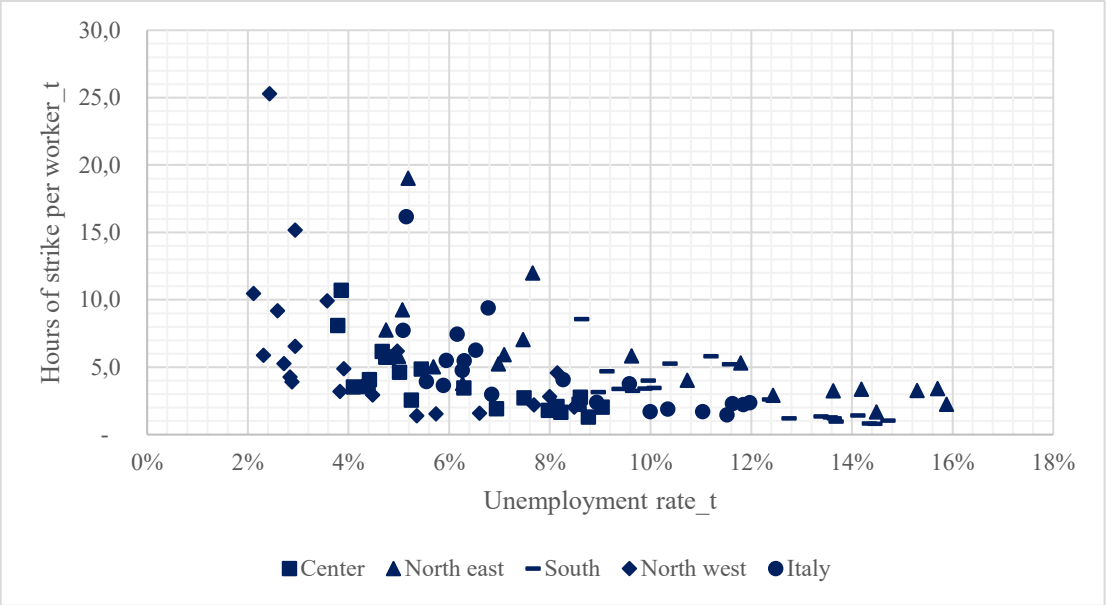
Appendix

Table 1.a. First node regressions with two independent variables, dependent variable = Hours of strike per worker, provincial data 1952-1972

	(1)	(2)	(3)
Italy (A)			
Unemployment rate	-60.59*** (2.98)	-8.87*** (1.84)	-17.93*** (3.78)
Unionization rate	6.98*** (1.69)	13.68*** (.62)	4.87*** (1.63)
R^2	0.1263	0.1560	0.4173
Observations	1905	1905	1905
North-west (B)			
Unemployment rate	-89.23*** (10.43)		
Unionization rate	5.32 (4.44)		
R^2	0.1262		
Observations	420		
North-east (C)			
Unemployment rate	-62.88*** (5.65)		
Unionization rate	10.38*** (3.02)		
R^2	0.1319		
Observations	399		
Center (D)			
Unemployment rate	-58.91*** (6.16)		
Unionization rate	1.32 (3.71)		
R^2	0.1284		
Observations	420		
South (E)			
Unemployment rate	-40.20*** (3.97)		
Unionization rate	15.98*** (3.54)		
R^2	0.1299		
Observations	666		
Province fixed effects	yes	no	yes
Time (Year) fixed effects	no	yes	yes

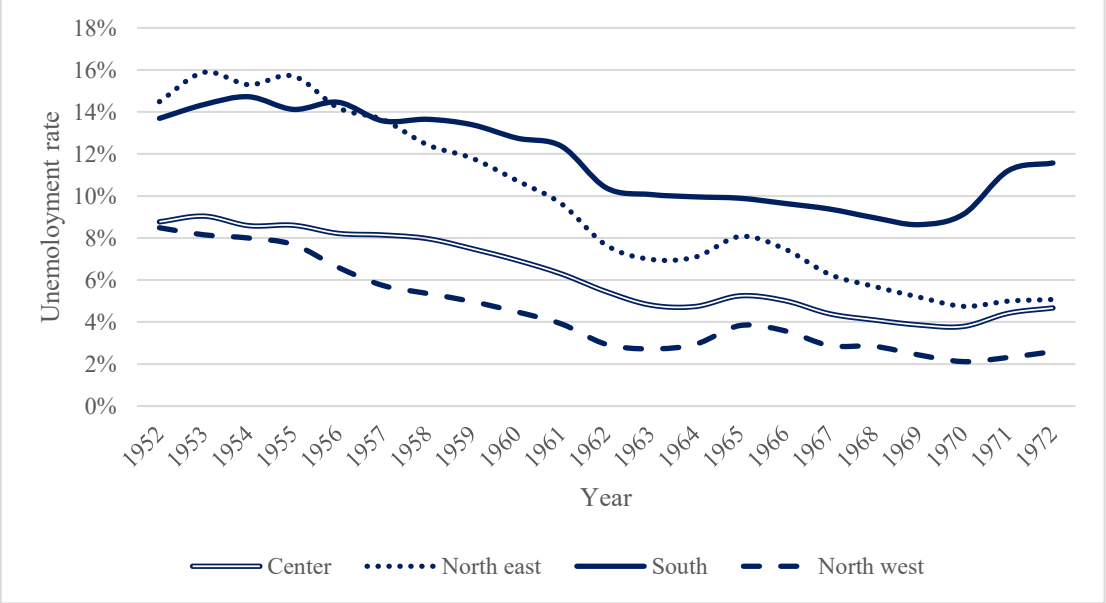
Notes: standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively; B–C–D–E are obtained by subsampling the entire dataset (A), which includes all Italian provinces.
Sources: own elaborations. Look at section 4.1

Figure A1. Macroregional Hours of Strike per worker and Unemployment rates, 1952-1972



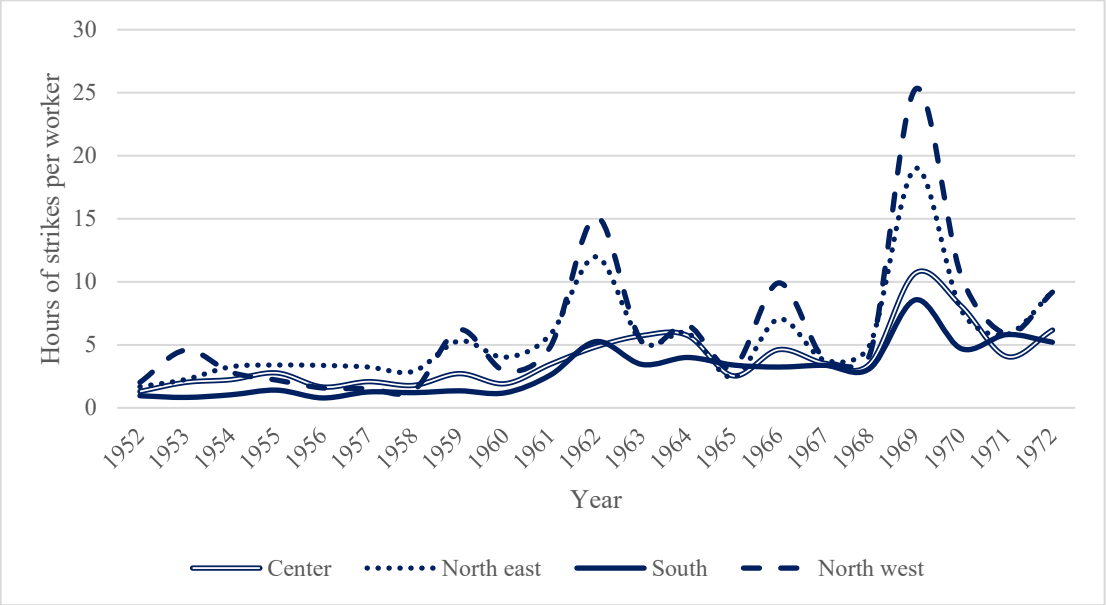
Sources: own elaborations. Look at section 4.1

Figure A2. Macroregional unemployment rates, 1952-1972.



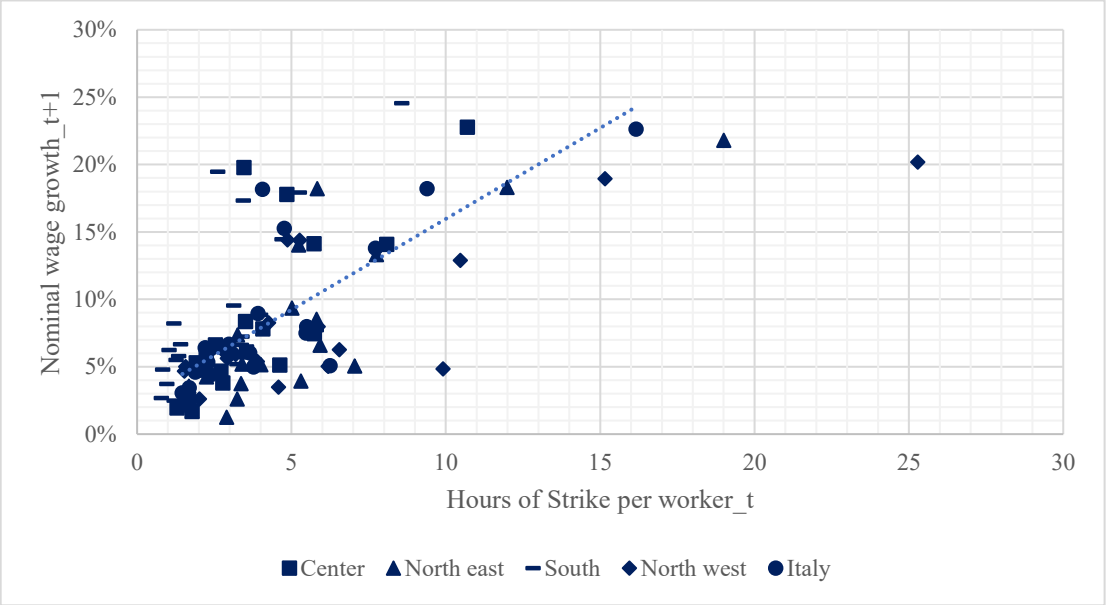
Sources: own elaborations. Look at section 4.1

Figure A3. Macroregional Hours of strike per worker, 1952-1972.



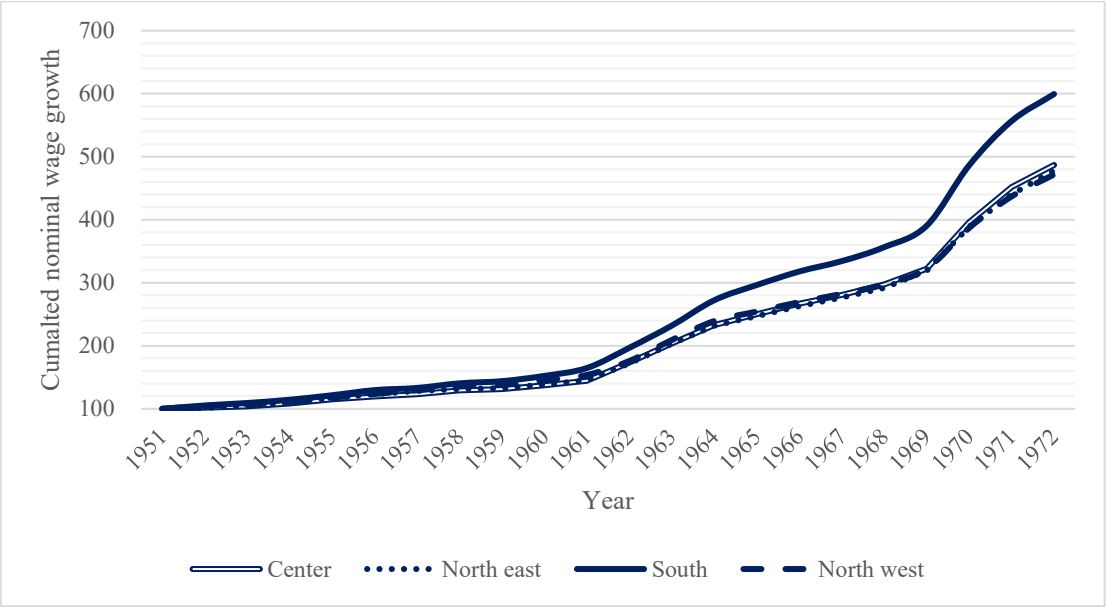
Sources: own elaborations. Look at section 4.1

Figure A4. Macroregional lagged Nominal wage growth and Hours of strike per worker, 1952-1972



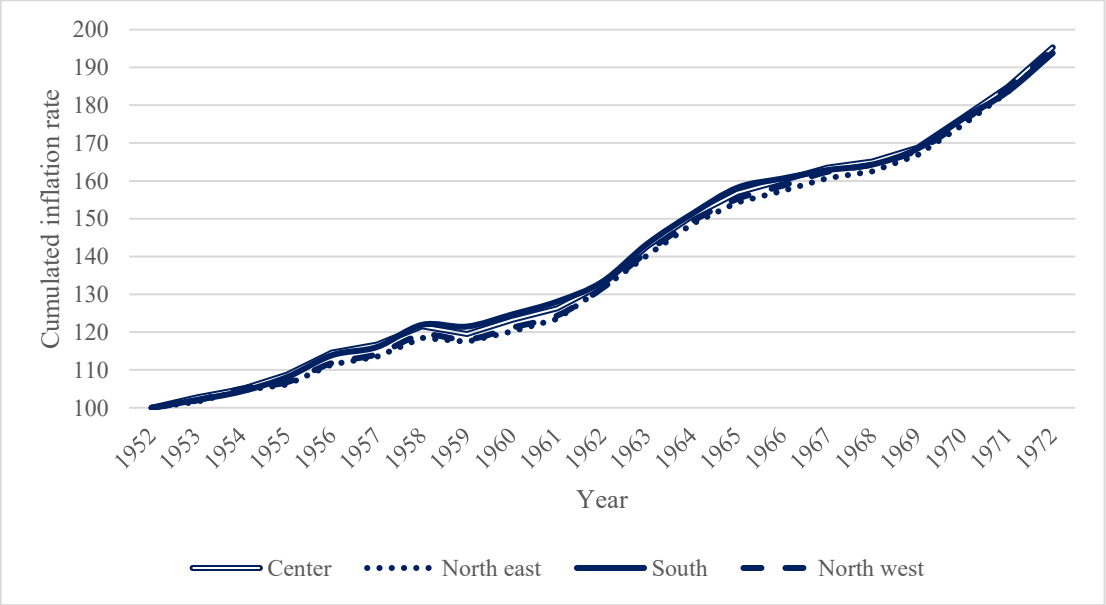
Sources: own elaborations. Look at section 4.1

Figure A5. Macroregional cumulated nominal wage growth, 1951-1972; 1951=100



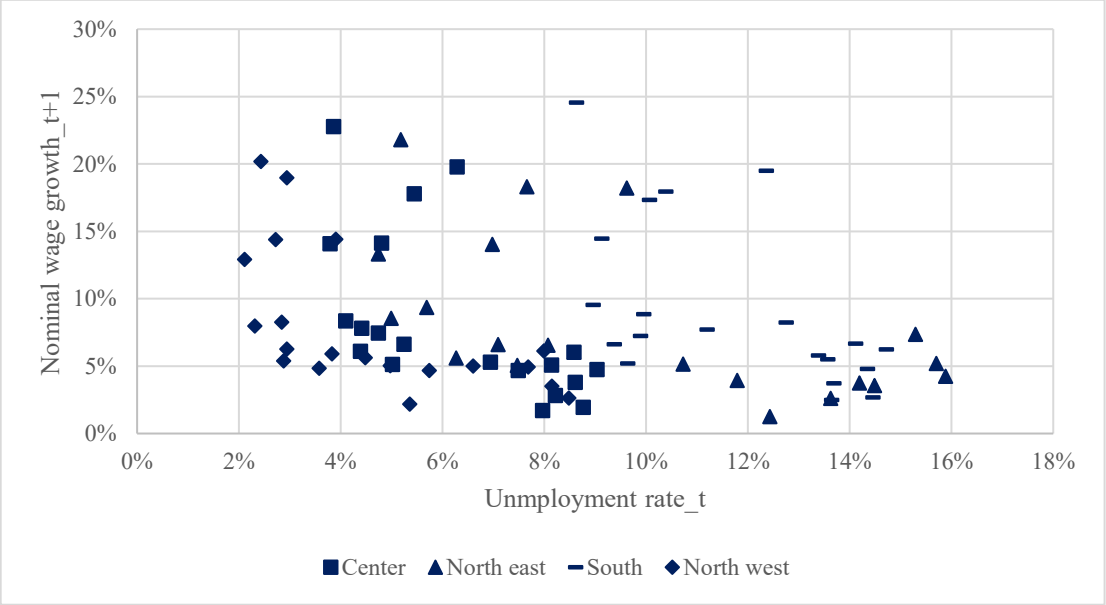
Sources: own elaborations. Look at section 4.1

Figure A6. Macroregional cumulated inflation rates, 1952-1972; 1952=100.



Sources: own elaborations. Look at section 4.1

Figure A7. Macroregional Wage Philips curves, 1952-1972



Note: Lagged values for Nominal wage growth. Look at note 22.
Sources: own elaborations. Look at section 4.1

Chapter 3

Estimating the Informal Economy in History: A New Approach Based on the Italian Case (1951-1991).

With Dario Chiaiese, University of Siena.

Abstract: Assessing the size and structure of a country's hidden economy is crucial for accurately analyzing its distributive and developmental trajectories. However, due to severe data limitations, economic history has offered relatively few contributions on this topic, often overlooking its significance. This paper aims to apply a new technique for evaluating the informal economy in historical contexts, using it to reconstruct Italy's hidden economy between 1951 and 1991. The choice of Italy is far from arbitrary: the country has long been characterized by a high (and highly perceived) level of informality, shaped by its distinctive industrial structure and reinforced by both State weakness and the political connections tied to this form of "hidden economic policy." Our preliminary results suggest that the hidden economy in Italy expanded particularly during the Golden Age (1951–1973) and remained at a persistently high level during the subsequent period (1973–1991). This pattern broadly mirrors Italy's growth trajectory and points to the need for a renewed consideration of informality within Italian economic history. Future steps will include estimating regional hidden economies using the same methodology, in order to assess how local dynamics contributed to the evolution of the phenomenon at the national level.

1. Introduction

Assessing the size and structure of a country's hidden economy is crucial for accurately analyzing its distributive and developmental trajectories. By definition, the hidden economy escapes taxation and therefore represents a significant share of economic activity that is not available for redistribution and public investment. Its extent fundamentally distorts the evolution of a balanced income growth path, as it shifts the burden of taxation on employees – who usually cannot escape taxation – or pushes large segments of the workforce into precarious employment, ultimately benefiting profit-earners. Moreover, it alters the economic incentives for business growth and survival, often constraining the industrial scale of an economy and limiting its prospects for future development.

The estimation of the informal economy is particularly challenging for historical periods. Due to the lack of data on misreporting of economic activities, the economic history literature substantially lacks contributions on this subject, largely overlooking its importance for economic and distributive issues. The first aim of this paper is to use a new technique to assess the informal economy in historical frameworks. By comparing electricity data with official

GDP figures, we propose a new methodology that can serve as a valuable tool for future studies with high potential for economic history research.

In this regard, Italy offers an ideal case for the historical analysis of the phenomenon. Numerous scholars, journalists, and writers have highlighted the relevance of informality for the Italian economy during post-WWII period (Bocca, 1962; 1963; Sylos Labini, 1972; Paci, 1973; Contini, 1981; Bagnasco, 1981; Del Boca and Forte, 1982; Mastronardi, 1994; Roma, 2001; Ginsborg, 2006). In particular, its relationship with politics and the "sensitive" issue of taxation could be considered pivotal for the country's economic and social analysis (Bozzi, 2025; Manestra, 2010; Zizza, 2002; Pedone, 1979). Politicians and voters have long been aware of the importance of the phenomenon and its impact on income distribution, engaging in political bargaining over the optimal balance between taxation and opportunities for evasion – where the burdens placed on different social classes count. The failure to build a State based on "ordinary rules" during the post-war period (Barca, 1999), which led to a highly chaotic growth path, is reflected in the issue of taxation and can be interpreted through these lenses. Drawing on more recent examples that nevertheless stem from a long political tradition, tax amnesties are a recurring practice in Italy and, in 2023, Prime Minister Giorgia Meloni remarked in a public speech that the government is not willing to demand what she called the "State bribe" (*Pizzo di Stato*), implicitly suggesting the unwillingness to harshly prosecute small-scale tax evaders (Fatto Quotidiano, 2023). As a result, according to Dell'Anno and Schneider (2003), Italy had in 2002 the second highest estimated ratio between shadow and formal economy in Europe, right after Greece.

So, notwithstanding the relevance of the subject for Italy, there is no quantitative work addressing the problem historically. Consequently, it is hard to understand how this phenomenon evolved over time. Naturally, this missing information extends to regional level. The second aim of this paper is to historically evaluate the roots of the current shadow economy in Italy and its regions looking at the period between 1951 and 1991. The exploration of the link with the country's unique economic structure – which promotes micro and small-medium-sized enterprises – and the taxation policies introduced during the fiscal landscape of the Golden Age will be central to the analysis. So, exploiting the new methodology, we aim at assessing the size of the informal economy in Italy and its regions during the second half of the 20th century. Finally, this research has the potential to make a significant contribution to the field of economic history and can play a crucial role in shedding light on the persistent regional disparities in the development of the shadow economy, as outlined by ISTAT (2010).

This paper is structured as follows. Section 2 will present a historical overview of the economic development, and the role of the hidden economy in Italy. Section 3 will present the methodology and the data for the reconstruction of hidden economy at national and regional level. Section 4 will analyze some series on the use of electricity consumption in Italian regions

in order to lay the groundwork for future estimates of the hidden economy. Section 5 will present some preliminary results on the size of informal economy in Italy. Finally, Section 6 will conclude.

2. Historical Background

Between 1950 and 1970, Italy underwent a significant transformation, marked by rapid economic growth. The period is often called the "economic miracle," as Italy definitively shifted from an agrarian economy to an industrialized nation. Central to this transformation was a sharp increase in domestic investment. From 1950 to the early 1960s, Italy's investment rate, pulled by increasing exports, rose from 19% to over 30% of GDP. This high rate of reinvestment in domestic industries enabled technological upgrades and capacity expansion, fostering greater productivity and industrial growth (Felice, 2018; Zamagni, 1993). Labor dynamics were pivotal in sustaining growth. Rural-to-urban migration led to a significant influx of workers to industrial cities, particularly in North-western Italy, which provided a steady supply of low-cost labor. This migration not only supported production in critical industries such as automobiles and household appliances, but also contributed to the establishment of industrial clusters concentrated on low-value-added sectors. These clusters, which later came to be known as industrial districts (Brusco, 1982; Becattini, 2004), were concentrated in the northern and central regions of Italy and were characterized by the prevalence of small firms (Zamagni, 1993). They represented a distinctive feature of the Italian growth model but also contributed to the expansion of the informal economy.

The Italian micro and small-medium enterprises (SMEs) typically acted in a “cascade system”, where medium firms subcontracted small firms to produce semifinished good, while small firms subcontracted – legally or illegally – tiny firms (domestically run) or single home-workers. The system, hard to trace by authorities, entailed a growing share of the hidden economy while allowing small firms to survive – and often flourish – in a high structural change period. According to Brusco (1982), evasion and connected labor flexibility and precarious employment were pivotal assets for the development of SMEs and industrial districts[47]. So, alongside the dwarfing effects on Italian enterprises (De Cecco, 2007; Di Martino and Vasta, 2018), this system fostered the propagation of an unbalanced income growth pattern during the Golden Age, with evident repercussions for the country’s overall development trajectory. The increase in “legal” and “illegal” profits in big and small industries, fundamentally ungoverned by the State, did not match with increasing wages for long periods, bringing to periodical wage and rights’ claims explosions when unemployment decreased (Nardozzi, 2003; Rappa, 2025).

[47] In this regard, Paci (1973, p. 291) estimates that the marginal labor force in Italy counted to at least one million people in 1971.

Within the Italian SME context, two main areas emerged in post-war period. North-Western and Central Italy firms followed the trends mentioned above, probably contributing to the expansion of the informal economy (Roma, 2001). Southern small and artisan firms, highly dispersed in large areas, hardly survived big firms' competition from the North and the structural transformation of this period (Latella 1978a; Sylos Labini, 1972). The disappearance of the traditional manufacturing sector, only partially covered by the big firms' surge (Felice, 2018), pushed high percentages of the labor force running out from agriculture to join the marginal labor market and poor entrepreneurship in building sector and services, thus promoting the hidden economy in a different manner (Latella, 1978b).

As noted by Barca (1999), the lack of enforcement of the State's "ordinary rules" – in this case, a clear and certain taxation system – was pivotal to the development of the informal economy. Indeed, compared to the pre-war period, the fiscal institutional context was not changed dramatically during the economic miracle[48] (Manestra, 2010; Bozzi, 2025). Moreover, firms and self-employed workers were highly facilitated in tax avoidance and evasion thanks to tax overlaps, tax reliefs, bureaucratic chaos and administrative negligence. Di Martino and Vasta (2018), for instance, find that small firms usually worked in legal grey areas with the assistance of professional accountants, who were well aware of how to exploit tax inconsistencies. Lack of tax compliance, resource tunneling, and informal insolvency procedures were among the most widespread practices in this context[49]. According to the available reconstructions from Manestra (2010), tax declarations presented by entrepreneurs and self-employed workers remained similar in real terms from 1952 to 1973, although a concurrent exceptional growth in GDP and consumption[50].

To explain these figures, it is necessary to consider the specific role of politics during the Golden Age. All the governments of the post-war period, always led by the Christian Democratic Party (DC), ideologically supported small entrepreneurship in opposition to large industrial capitalism (Colli and Rinaldi, 2015). The lower middle-class, which could benefit greatly from lax tax policies, indeed constituted the core electorate of DC. Consequently, given the strong patronage system present in Italy (Allum, 1997), this political context facilitated the proliferation of such illegal practices in small firms under political supervision[51] (Ginsborg, 2006, pp. 318-319; Trigilia, 1986, pp.177-180).

During the 1970s, three main events, brought by the high social and economic conflict over unresolved distributive issues (Felice, 2018), interacted with the historical trend of the hidden

[48] For instance, notwithstanding Vanoni's reform (1951), fiscal pressure remained quite constant.
[49] Valiani (1983) even suggests that evasion became a sort of industrial competition tool in the post-war period.
[50] According to Di Majo and Frasca (1975), independent workers evaded taxes corresponding to the 52% of income in 1972,
[51] Bocca (1963) and Brusco (1982) claim that the same kind of system worked in regions led by the Communist party.

economy. First, the higher workers' bargaining power and the low unemployment rates of those years allowed for the regularization of large segments of the workforce, probably transforming evasion into a phenomenon highly linked to tax declarations and personal income rather than precarious employment – even though the latter remained a distinctive feature of the Italian labor market.

Second, the decrease in profits brought by the distributive struggle, in addition to international frictions such as the oil shocks (1973-1979), promoted the structural and sectoral transformation of the industrial sector[52]. This transformation notably rescaled firms' size and high value-added sectors, positioning SMEs as a new industrial paradigm. However, it is not fully clear if this evolution of the industrial structure had positive effects on the increase of the shadow economy. From one side, it probably contributed to the decline of workers' movements and the reemergence of a marginalized labor market during the 1980s and 1990s (Gallo and Loreto, 2023). Moreover, the long industrial retreat augmented the labor force tertiarization – particularly in the South, where big State industries constituted an important share of the economy – probably pushing up low valued added sectors and, consequently, hidden economy shares. From the other, according to Roma (2001), the industrial transformation brought to an economic strengthening of SME in the North, leading to a mass-regularization of northern economy, with a concurrent increase of the irregular economy in the South.

Third, new tax measures were implemented in this period. The fiscal reforms of the early 1970s were thought to increase taxation progressivity and redistribution[53] – as delineated in the 1948 Constitution (art. 53). Moreover, the reforms tried to rationalize the system and avoid reliefs, thus finally creating a solid and modern tax system consistently based on a personal income tax (IRPEF). However, although their long-term contribution to overall tax collection is undisputed, their effects on progressivity and the hidden economy are less clear. The increased fiscal burden, introduced for redistributive purposes, prompted entrepreneurs to engage in tax avoidance and evasion, thanks to the government's long-standing bureaucratic negligence on the issue. According to the literature (Valiani, 1983; Pedone, 1979; Fausto, 2023), redistribution moved in the opposite direction after the reforms, as progressivity applied only to dependent workers, while large segments of the self-employed and entrepreneurial classes continued to evade

[52] The dimensional and sectoral transformation of the Italian industry, spanning between 1970 and 2000, could be read from two different perspectives. The "industrial restructuring" advocates (Graziani, 2000; De Cecco, 2000) highlight that, due to high industrial conflict and technological innovations, big firms externalized to SMEs some relevant productions in the 1970s. This long-run mechanism suppressed the "economic miracle" growth path based on the development of big firms in modern sectors. "Industrial districts" advocates (Becattini, 2004), instead, prefer to underline endogenous factors and geopolitical patterns to explain the abrupt emergence of SME in Northern and Central Italy.

[53] Parliamentary works started in the 1960s inspired by Keynesian ideas, but they were finally approved in 1972/3 and introduced in 1974 – a period in which supporting the growing Welfare State coming from new social reforms became essential (Bozzi, 2025).

taxation due to the widespread absence of effective tax assessments[54]. Manestra (2010) shows that IRPEF declarations by self-employed workers did not change in real terms between 1974 and 1986, suggesting that the phenomenon of tax evasion in that cohort of employment probably did not slow down. Moreover, the strong persistence of class clientelism in major political parties during the 1980s (Allum, 1997) favored the introduction of regular tax amnesties, which supported incorrect taxpayer behaviors, thus bringing a negative effect on tax compliance.

The history of industrial structure, taxation, and evasion in post-war Italy has highlighted how the growth of the country was based on a surreptitious redistribution from different social classes, and how the growth path itself – in different zones – was shaped by distributive dynamics. Next section will show the methodology we will use to reconstruct the informal economy in Italy between 1951 and 1991.

3. Methodology and Data

The economic literature which attempts to estimate the hidden economy could be divided into two main branches (Schneider and Enste, 2000): on one hand there are direct estimation methods, on the other indirect methods. Direct methods consist of micro approaches which employ surveys or tax auditing. Considering the complexity of using these methods for historical research, we will draw attention to the indirect "macro" approaches. Among them, we can find the transaction approach, which exploits the discrepancy between transactions and GNP growth (Feige, 1996), the currency-demand approach, exploiting the difference between currency and deposit demand (Schneider 1997), and the "labor force" method, which investigates the gap between official and actual labor statistics (Contini, 1981). The labor force method has been applied to historical Italian data by Istat (1979; 1990), and later by Rey (2000) and Baffigi (2015). The results for the period 1951-1970 by Istat (1979) and Baffigi (2015) are shown in Figure 1.a in the appendix. Baffigi (2015) reports a very small hidden economy in 1951 – around 6-7% – growing, through interpolation, to more than 20% in 1970. However, considering the history of the post-war Italian hidden economy described in section 2, we dispose of strong bases to consider these results quite unrealistic. In particular, the low starting levels in the 1950s do not match with our historical knowledge.

So, given the questionable reliability of the historical data involved with previous methodologies, we decided to use a different strategy based on long-run reliable data. We rely on the physical input approach (Kaufman and Kaliberda, 1996; Dobozi and Pohl, 1995; Novkovska and Novkovski, 2018; Ibanez et al., 2021), which postulates a stable long-run

[54] For instance, according to Tremonti and Vitaletti (1986), between 1973 and 1984 tax assessments on VAT were only around 4-5% of GDP.

relationship between electricity consumption and economic activity. Electricity provides a physical input common to all sectors, making it a suitable proxy for total productive activity. The underlying assumption is that electricity-use efficiency rises monotonically over time—power efficiency never declines. Hence, when electricity consumption grows faster than recorded GDP, the discrepancy signals an expansion of unmeasured output. The magnitude of this unrecorded component depends on the level and structure of the elasticity between electricity and GDP. Historical studies confirm the existence of a persistent long-run relationship between the two variables (Kander and Lindmark, 2004; Kander and Stern, 2014; Rafindadi, Aliyu, and Usman, 2022), yet this framework has not been applied to reconstruct the shadow economy in a long-term historical context.

We use electricity consumption, together with additional controls, to produce a new estimate of Italy's GDP between 1951 and 1991. Data on electricity use are drawn from Terna (2022), ISTAT, and Malanima (2006), providing alternative but comparable measures of energy demand. Our baseline regressor is electricity consumption from Terna (2022). To ensure international comparability, the main dependent variable is GDP in 2011 international dollars from the Maddison Database (2023); GDP in constant 2005 euros from Baffigi (2015) is used for robustness checks. The relationship between GDP and electricity cannot be consistently estimated through ordinary least squares (OLS) because both series are nonstationary, leading to spurious regression (Granger, 1981; Johansen, 1991). Both variables display strong upward trends over time. To verify the existence of a meaningful long-run relationship, we test the integration properties of the series and remove their deterministic components. A set of unit-root tests, including the Augmented Dickey–Fuller (ADF) procedure, confirms that both GDP and electricity consumption are integrated of order one, I(1): their first differences are stationary, indicating stable growth dynamics over time.

To test for a stable long-run relationship between the two series, we perform the Johansen cointegration procedure. The results indicate the presence of one cointegrating vector, implying that GDP and electricity consumption share a common stochastic trend. This finding justifies modeling GDP as a function of electricity use within a cointegrated framework.

Our working hypothesis is that Italy's recorded GDP before 1980 is potentially biased. Historical evidence suggests that this bias was particularly pronounced between 1946 and 1970, although we make no assumptions about its specific form or evolution. Estimating the long-run relationship between GDP and electricity consumption using only the 1980–2000 period would produce an elasticity representative of a mature, highly electrified, and largely service-based economy. To overcome this limitation, we adopt a "synthetic estimation" strategy. We first estimate the fundamental long-run relationship between electricity consumption and GDP using Swedish data and then transfer the resulting parameters to Italy. This approach rests on the

assumption that the structural link between energy use and output is similar across industrializing economies. For Sweden, we combine data on electricity consumption from Kander (2002) with GDP estimates from the Maddison Project (2023), covering 1880–2000. We show that Sweden provides an appropriate benchmark. Like Italy, Sweden was a latecomer to industrialization: the shift of labor and production from agriculture to industry occurred toward the end of the nineteenth century, and the adoption of electricity expanded gradually during the following decades. However, Sweden's smaller population and higher resource endowment generated faster growth and a different productive structure, offering a cleaner empirical environment for identifying the underlying energy–output relationship.

We apply the same unit-root tests used for Italy and confirm that Sweden's electricity consumption and GDP are integrated of order one, I(1). The Johansen cointegration tests indicate the presence of one long-run equilibrium relationship between the two variables. The estimated long-run elasticity of GDP with respect to electricity is comparable to that found for France and Italy, suggesting that the electricity–growth nexus is stable across countries. To model this relationship, we estimate a Vector Error Correction Model (VECM), which distinguishes the long-run equilibrium from short-run adjustments. Unlike OLS, the VECM framework accounts for the nonstationary nature of the data and quantifies how quickly each variable reverts to equilibrium after a deviation. This specification allows us to identify both the long-run elasticity and the short-run dynamics governing the energy–GDP relationship. Formally, the model is

[1]

$$\Delta y_t = \alpha_y(y_{t-1} - \theta x_{t-1} + c) + \sum_{i=1}^{p-1}\left(\gamma_i^{yy} \cdot \Delta y_{t-i} + \gamma_i^{yx}\Delta x_{t-i}\right) + \varepsilon_{yt}$$

$$\Delta x_t = \alpha_x(y_{t-1} - \theta x_{t-1} + c) + \sum_{i=1}^{p-1}\left(\gamma_i^{xy} \cdot \Delta y_{t-i} + \gamma_i^{xx}\Delta x_{t-i}\right) + \varepsilon_{xt}$$

The two VECM equations describe how each variable responds to its own past values and to those of the other variable. Let $y = \log(GDP)$ and $x = \log(electricity)$. The first term in each equation, the error-correction term (ECT), captures the speed of adjustment toward the long-run equilibrium through the coefficient α. The remaining terms represent short-run dynamics in first differences. The results indicate a strong and stable long-run relationship between electricity consumption and GDP over the period 1883–2000. Moreover, the electricity equation displays a sizeable and significant adjustment coefficient, suggesting that deviations from the long-run relation are corrected primarily through changes in electricity consumption. These findings support the use of electricity consumption as a reliable proxy for economic activity in the long run. Tables 1-3 presents the key findings of the analysis conducted so far on Swedish data.

Table 1. Johansen Rank Test, Cointegration Equation and Error Correction.

Hypothesized rank	Trace statistic	10% crit.	5% crit.	1% crit.
$r = 0$	47.01	22.76	25.32	30.45
$r \leq 1$	4.92	10.49	12.25	16.26

Note: Test type: trace statistic, model with linear trend in the cointegration relation.

Table 2. Cointegration Equation.

Variable	Coefficient
$\log GDP_t$	1.000
$\log Elec_t$	-0.378
trend	-0.0179

Note: The implicit long-run relation is $\log GDP_t = 0.378 \log Elec_t + 0.0179\, t$.

Table 3. Error Correction Terms.

Equation	α (loading on EC term)
$\Delta \log GDP_t$	-0.0005
$\Delta \log Elec_t$	0.1839

Note: Loading coefficients relative to the first and only cointegration relation. They show that electricity consumption essentially adjusts to the short-period movements of GDP.

Table 1 shows that only one long-period cointegration relation exists between GDP and electricity, while Table 2 shows the coefficients of the equation. Table 3 reports the Error Correction terms (α_X and α_Y), showing that electricity adjusts more rapidly than GDP to any movement away from the equilibrium. This picture indicates a unique long-run cointegrating relation between GDP and electricity consumption. The adjustment coefficients show that electricity consumption reacts strongly to deviations from the long-run equilibrium, while GDP is weakly exogenous. This implies that electricity consumption closely tracks the long-run evolution of GDP, making it a suitable proxy for long-run economic activity even though adjustment runs from GDP to electricity and not vice versa.

The long sample from 1883 to 2000 allows a precise estimation of the long-run coefficients, but it also raises challenges. As the economy evolves, electricity is used more efficiently, implying that more units of output are produced per unit of electricity. Sectoral composition further affects this relationship: agricultural activities rely less on electricity, while services are inherently more energy-efficient than manufacturing. Technological progress enhances efficiency across all sectors. To capture these structural dynamics, we augment the model with the shares of agricultural and service employment. For Sweden, these series are drawn from

Schön and Krantz (2012); for Italy, they are reconstructed from census data in Daniele and Malanima (2009).

Following Ibanez et al. (2021) and the framework outlined above, we estimate the Swedish coefficients using a state–space model with Kalman filtering. This specification captures the structural, long-run relationship among electricity use, sectoral composition, and GDP, while allowing the elasticity of electricity to vary smoothly over time. Formally,

[2]

$$y_t = c_t + (\theta_0 + \theta_A \cdot \mathcal{A}_t + \theta_S \cdot \mathcal{S}_t) \cdot x_t + \gamma t + \phi_t x_t + \varepsilon_t$$
$$c_t = c_{t-1} + \kappa_t, \qquad \kappa \sim \mathcal{N}(0, Q_k)$$
$$\phi_t = \phi_{t-1} + u_t, \qquad u \sim \mathcal{N}(0, Q_u)$$

Here, $\mathcal{A}$ and $\mathcal{S}$ denote the shares of agricultural and service employment, respectively. The terms interacting with x_t form the structural component of the model, capturing how the elasticity between electricity use and GDP varies with sectoral composition. The stochastic coefficient ϕ_t follows a random walk and represents the unobserved evolution of electricity efficiency over time. The remaining components account for idiosyncratic variation specific to Sweden.

In the second step, we adapt the benchmark relationship estimated for Sweden to the Italian case. Consistent with our working hypothesis that pre-1980 GDP figures are potentially biased, we restrict the use of observed GDP data to the 1980–2000 period. We then construct an adjusted measure of electricity consumption as a predictor of GDP, based on the Swedish coefficients and the Italian sectoral composition, according to the following equation:

[3]

$$x_t^* = x_t^{ITA}(\theta_0 + \theta_A \cdot \mathcal{A}_t^{ITA} + \theta_S \cdot \mathcal{S}_t^{ITA})$$

The variable x^* is again the structural interaction between electricity consumption and workforce structure for Italy, but this time the coefficients are those estimated for Sweden. Followingly, we construct a similar model to that in Equation (2):

[4]

$$y_t^{ITA} = \psi_t \cdot x_t^* + \phi_t^{ITA} \cdot x_t + \gamma^{ITA} \cdot t + \varepsilon_t$$

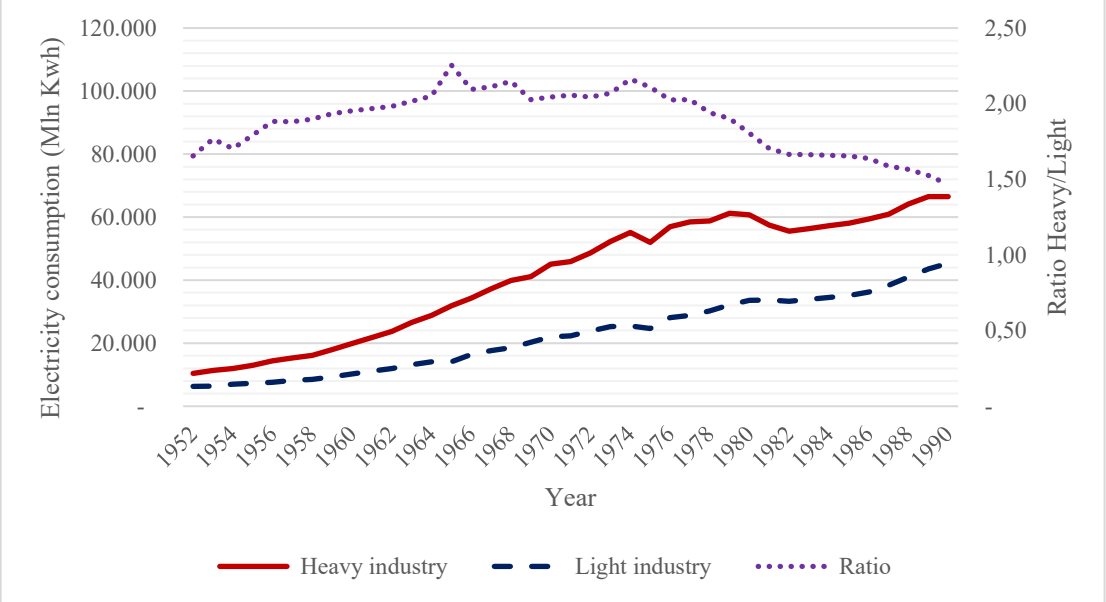
The calibrated model introduces a scaling parameter, ψ, to adapt the Swedish benchmark relationship to Italy, and a latent component, ϕ^{ITA}, capturing the unobserved evolution of electricity efficiency. The resulting Italian GDP estimates are fully data-driven and do not rely on observed GDP levels. The observed series for 1980–2000 enters the model only to align the scale of the relationship and to estimate the contribution of unobserved factors.

This approach follows recent advances in the literature, favoring flexible specifications that balance parsimony and structural interpretability. Although the main objective is to reassess the size of Italy's shadow economy between 1951 and 1980, we exploit extended time series to capture the long-run co-movement between electricity consumption and output.

4. Industrial and Regional Data Exploration

As we have seen in the previous section, our methodology for reconstructing independent Italian GDP estimates – theoretically including the hidden economy – relies on recovering data on Swedish GDP as well as Italian and Swedish electricity consumption and sectoral specialization. However, the same methodology can be applied to the reconstruction of regional GDP series by using Swedish data together with regional electricity consumption data. Given the availability of regional and finely disaggregated sectoral data for Italian electricity consumption, which we gathered from different editions of Annuario Statistico (Istat, various years) this section presents these data for their future application in GDP reconstructions. In our case, they are particularly useful for gaining a better understanding of the different regional development patterns within the country. Showing the historical trends of electricity consumption in heavy and light industry is especially helpful for understanding the evolution of Italian industry in the post-WWII period. This is important because it allows us to examine the potential evolution of the hidden economy, since— as reported in Section 2 — light industries were certainly among the major drivers of informality in the Italian economy.

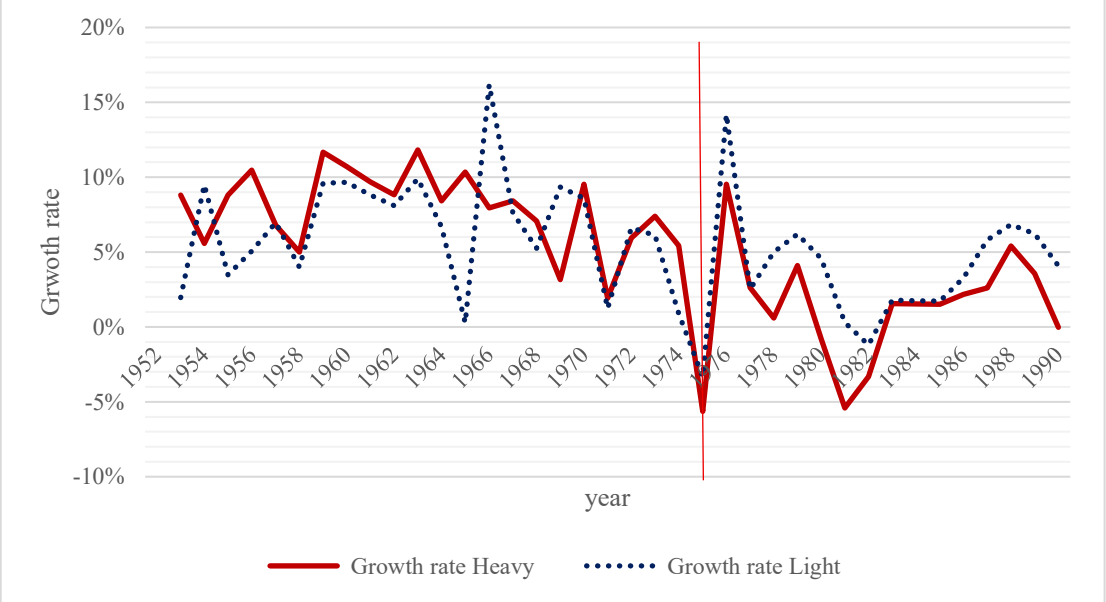
Figure 1. Electricity consumption (mln Kwh) in Heavy industries and Light industries in Italy (1952-1990)



Source: own elaborations from Annuario Statistico Istat (various years).

Figure 1 shows electricity consumption in million Kwh for heavy industries and light industries in Italy from 1952 to 1990[55]. The ratio between the two $\frac{Kwh\ Heavy\ Industry}{Kwh\ Light\ industry}$ is represented as a dotted line. This figure closely summarizes what we know about Italian post-war industrialization, suggesting that using these kinds of data could be insightful for reconstructing GDP measures and historical development trajectories. From 1952 to the mid-1960s we can notice a sharp increase in heavy industries' electricity consumption, while light industries relatively lagged behind. This is coherent with the industrialization process followed by Italy in the Golden Age, when private and State-led industries concentrated in high value-added sectors rapidly grew, favoring stable employment and high growth rates. The ratio remained quite stable until the mid-1970s – the end of the Golden Age – when heavy sectors started to decline due to the oil shocks and the general reallocation of Italian industry. The light industry electricity consumption strongly increased until 1990, thus drawing a sort of parabola in the Italian post-war industrialization. This path is evident from Figure 2, where growth rates of electricity consumption divided into industrial macro-branches are shown. Heavy industries recorded average higher growth rates compared to light industries until 1975 – the only recession year in the Italian post-war period – while a clear reverse occurred afterward – particularly in the late 1970s and early 1980s. Moreover, it is interesting to notice that light industries were more shock-dependent compared to heavy industries, which grew following long-term investment plans and probably assured a more balanced growth path in the long run.

Figure 2. Growth rates in electricity consumption for industrial Macrobranch. Italy, 1952-1990.

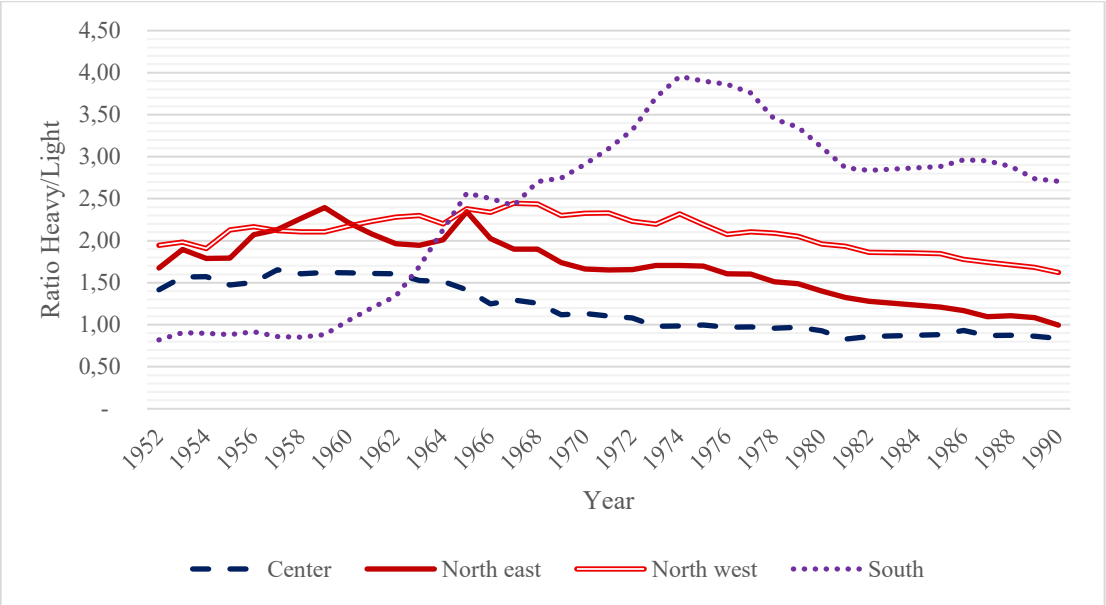


Source: own elaborations from Annuario Statistico Istat (various years).

[55] Heavy industries include chemical, steel and metalengeneering firms. Light industries include textiles, food, furnitures, rubber, and others. The extractive and building sectors are excluded.

Looking more closely at our data, the regional path of Italian industry is mirrored by Figure 3, which represents the macroregional ratios $\frac{Kwh\ Heavy\ Industry}{Kwh\ Light\ industry}$. If the gap between north and south was extremely high in 1952, showing how the presence of heavy industries was widespread only in northern Italy, the State-led plans for industrialization and regional convergence brought the South ratio to decisively overpass Northwest in the 1960s[56]. In the mid-1970s, the electricity consumption of heavy industry in the south was four times higher compared to light industries, transforming it in the more sectoral specialized Italian macroeregion. However, as evident from Figure 4, the per capita Kwh consumption of heavy industries remained below the North, showing that the industrial convergence and its reflections on development was "relative".

Figure 3. Ratio of electricity consumption in Heavy industries over Light industries in Italian Macroregions (1952-1990).



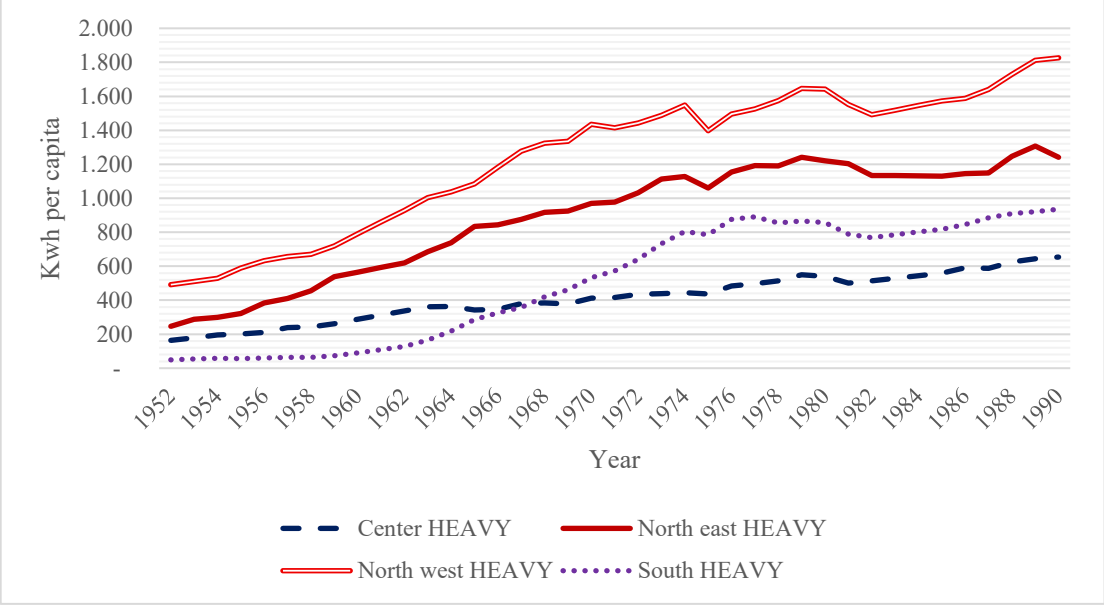
Source: own elaborations from Annuario Statistico Istat (various years).

The ratios in Figure 3 also help us to understand the timeframe of the decline of heavy industries and the emergence of light industrialization in different macroregions. For instance, in Center and Northeastern regions, the importance of light industry for industrial development started to manifest very early, around the early 1960s. While, in North-Western regions, the industrial structural transformation started to take place only in the early 1970s after the Hot Autumn (1969), reflecting the long-term investment decisions taken by Italian capitalism during a season of strong distributive conflict. However, looking at Figure 5 showing per capita electricity consumption of light industries, it is evident that these sectors – traditionally

[56] The State-led programs were conducted, for instance, through Cassa per il Mezzogiorno and were aimed, after 1958, at incentivizing big and State industries to relocate (Graziani, 2000; Felice, 2018).

composed by small and medium enterprises – were also able to grow during the miracle – particularly in North-Eastern regions – including growing shares of the economy and employment. In this context, Figure 5 witnesses how southern regions were never able to catch up with central and northern regions, thus highlighting again the importance of heavy industry (massively State-led) for their internal development, and suggesting the reasons behind their lack of convergence in the 1970s and 1980s, when heavy sectors started to experience recession. Figure 2.a and 3.a in the appendix, showing respectively Kwh per worker in industry (Light+Heavy) and total energy consumption differentiated for macroregion and macrobranch, fundamentally underline the evolution of Italian industry in the period 1950-1990 described in the previous lines.

Figure 4. Electricity consumption in per capita Kwh for Heavy Industry in macroegions, 1952-1990.

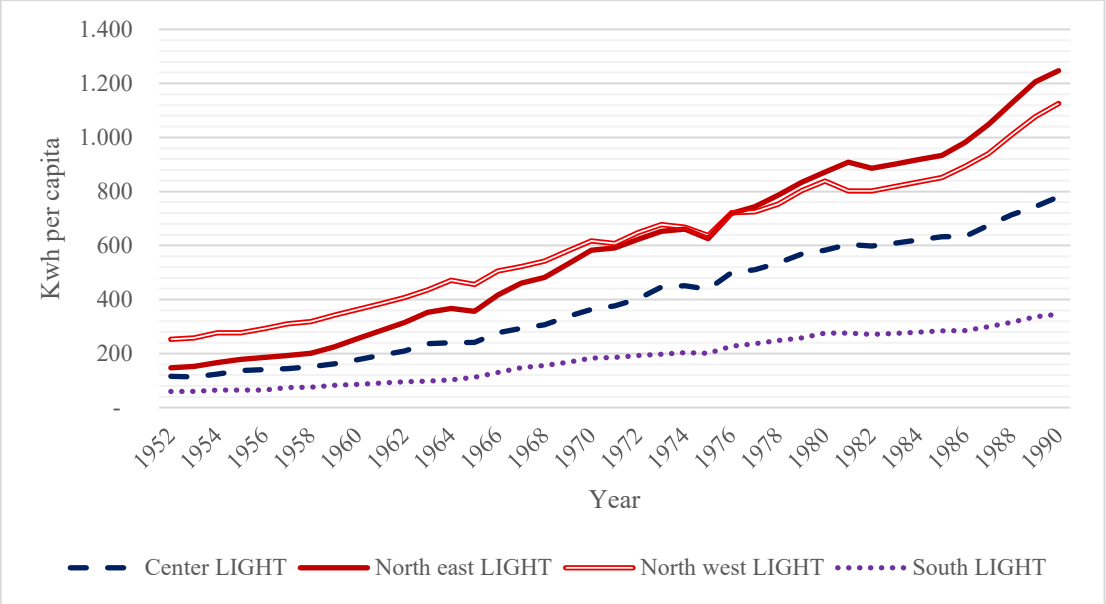


Source: own elaborations from Annuario Statistico Istat (various years).

Recapping our figures and refocusing the findings to explain the development of the hidden economy in post-war Italy, we could predict that the increase of light industries during the miracle concurrently expanded the share of the hidden economy. However, we could expect that a peak in the share occurred later, probably in the 1980s, when heavy industries – where average firms' size is much bigger and marginal workers and hidden profits are more difficult to hide – started to stagnate, transforming small-medium enterprises from peripheral to the new industrial paradigm. About the regional allocation of the hidden economy produced by industry, we could claim that central and northeastern regions were probably the more prone to these kinds of dynamics. However, from our raw data, it is not possible to disentangle if a possible strengthening of small-medium enterprises in these regions during the 1980s could dampen the phenomenon, as claimed by Roma (2001). In the end, the total irrelevance of southern light

industry from a comparative perspective makes us guess that the hidden economy in these regions was widely produced in other sectors, for instance, services.

Figure 5. Electricity consumption in per capita Kwh for Light Industry in macroegions, 1952-1990.



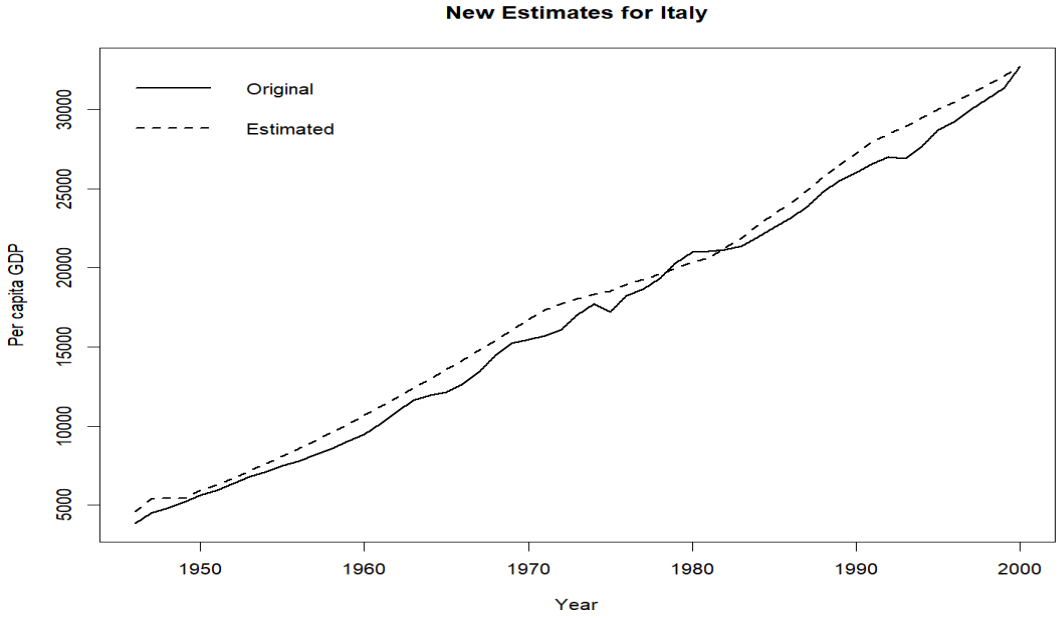
Source: own elaborations from Annuario Statistico Istat (various years).

5. Results

Figure 6 shows our preliminary results on the estimation of GDP – including hidden economy – in Italy between 1950 and 2000 through electricity consumption data. We compare our new estimates (dotted line) with the benchmark historical estimates produced by Baffigi (2015) (solid line). As mentioned in section 3, let us notice that Baffigi's estimates already include the hidden economy, although it is calculated differently from the approach we use. Compared to the canonical GDP per capita series, our estimated values are higher in all the periods – except for 1980 and 1981. Our GDP per capita is much higher from the late 1950s to the mid-1970s – the Golden Age – then the gap declines in the late 1970s finally recovering during the 1980s. So, according to our methodology, the hidden economy in Italy was generally higher in post-war period compared to usual reconstructions. Considering that the total wage bill is generally much closer to official statistics than profits, this means that the higher actual GDP per capita resulted in a more unbalanced income distribution. In this regard, the tightening of the gap in the late 1970s is of particular interest, as it could signal that the actual GDP, including hidden economy and "hidden profits", was slowing down much more intensely than official statistics recorded, thus determining the important political turns of the 1980s and the end of the intense distributive conflict that characterized the previous decade. Indeed, the political dissatisfaction of certain social classes — both small and large profit earners — generated by the strong

redistribution of those years and by the decline of growth, could result in broader and more generalized opposition to further social and democratic progress in the country.

Figure 6. This paper per capita GDP estimates (Estimated) compared to Baffigi (2015) (original).

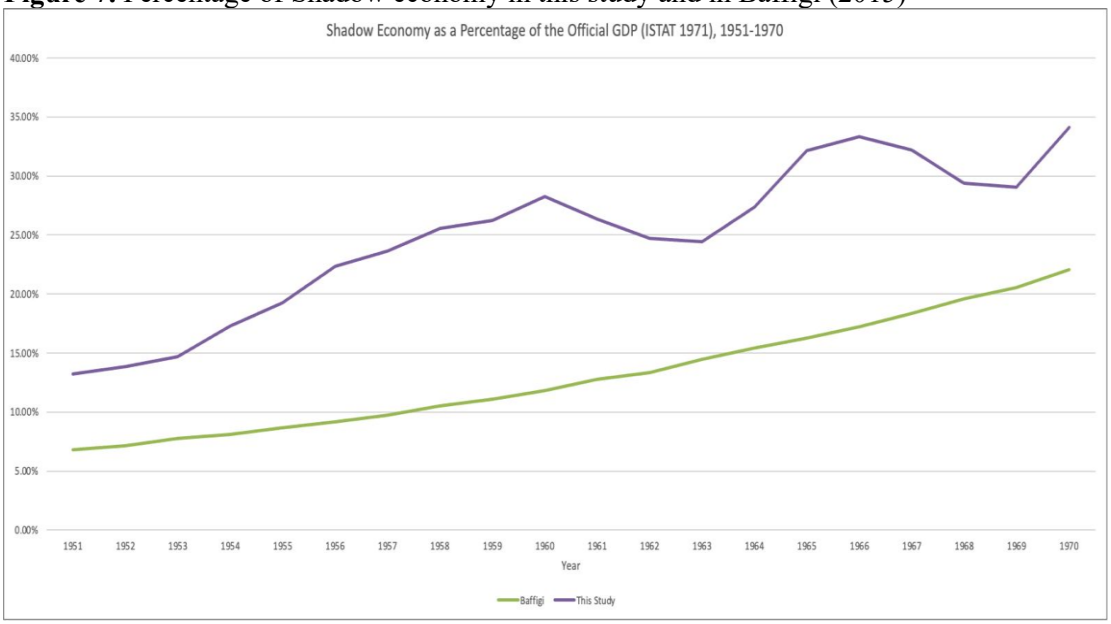


Source: own elaborations and Baffigi (2015). Look at section 3.

Figure 7 expresses our and Baffigi's (2015) share of the hidden economy between 1951 and 1970. Both the series are computed on the baseline estimates (Istat 1971), which do not include the hidden economy. Unfortunately, we cannot replicate the exercise for the period 1971-1991, as there is no availability of estimates without hidden economy from Istat afterwards. As shown in Figure 1.a in the appendix, Baffigi (2015), from very low levels in 1951, postulates – by interpolation – constantly growing shares of hidden economy from 1951 to 1970. Instead, we reconstruct a more reliable figure where, coherently with historical evidence, the presence of a solid hidden economy is clear from the early 1950s. Our hidden economy then grows in the 1950s and the 1960s – particularly between 1954 and 1960 – as effect of the miracle and the complete absence of strong enforcement of State regulations and taxation. As recalled in the historical section, the high employment of irregular workers in economic activities thoroughly shaped the phenomenon in this period. Compared to Baffigi's straight line, we are also able to look at variation in the hidden economy depending on different timespans. It is noteworthy that informality seems to tend towards reduction in periods of strong expansion of the economy (1961-1963; 1966-1969), while the opposite occurs during slowdowns (1964-1965). The reason probably lies in the fact that, during periods of economic slowdown, small firms tend to save on labor costs by employing marginal workers without regular contracts, whereas during economic booms the expansion of firms makes it more convenient for entrepreneurs to regularize their workforce. Moreover, during periods of decreasing labor supply (economic booms), workers tend to have greater bargaining power and are better able to secure regular

employment from employers. Both the explanations are consistent with the observations of contemporary economists and sociologists (De Cecco, 1972; Paci, 1973; Sylos Labini, 1972; Meldolesi, 1972).

Figure 7. Percentage of Shadow economy in this study and in Baffigi (2015)



Source: own elaborations. Look at section 3.
Note: The shadow economy is computed as the difference between total GDP in our estimates

According to our estimates, after 1970 the hidden economy kept being very high with periodical fluctuations. However, it is probable that the nature of the hidden economy changed after the 1972-3 fiscal reforms and the increase of tax burden for firms and entrepreneurs. Indeed, in the late 1970s and 1980s, it was more likely that informality was brought by tax evasion than irregular employment – even if the latter remained a typical Italian characteristic. The labor movement was then quite strong to demand widespread workers regularization, while the increase of tax burden, without concurrent law enforcement made convenient for firms the second form of "informality creation" – direct tax evasion. Moreover, a changed social conception of work, along with a general increase in labor and living standards fostered by social welfare, contributed to the end of the mass job marginality, characteristic of the 1950s and 1960s.

6. Conclusion

Notwithstanding its importance for economic growth and income distribution, the hidden economy is largely unstudied in economic history mainly due to lack of data. This paper tries to reconstruct the history of the hidden economy in Italy from 1951 to 1991 both from a narrative and quantitative point of view. Italy is considered a very paradigmatic country in this regard, as it is one of the developed countries with higher estimated hidden economy nowadays. Our suspicions regarding the growth of the hidden economy in Italy point precisely to the period of the golden age (1950–1973), when the economy expanded in a chaotic manner and the State did not intervene in several key areas, including tax enforcement. Preliminary results show that our priors are well-founded, as we see increasing hidden economy's shares on GDP exactly in that period. Future steps will consider the improvements of our estimates and the inclusion of regional estimates of hidden economy through the same methodology. Our data exploration (section 4), indeed, reveal the high potentiality of these data for the understanding of the inner dynamics of the hidden economy in Italy.

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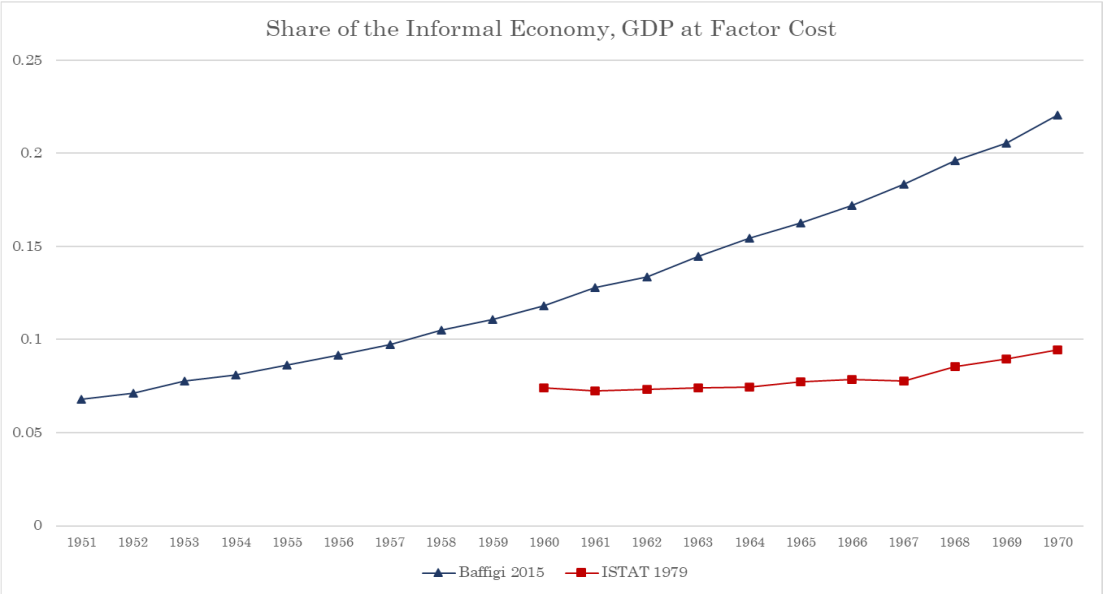
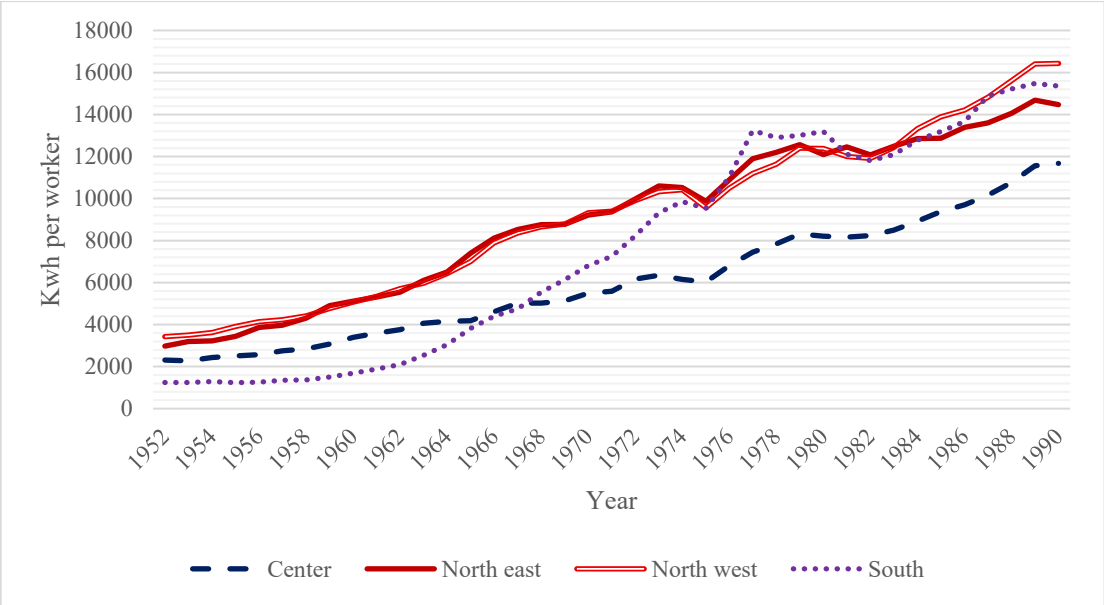
Appendix

Figure 1.a. Share of informal economy in Baffigi (2015) and Istat (1979)



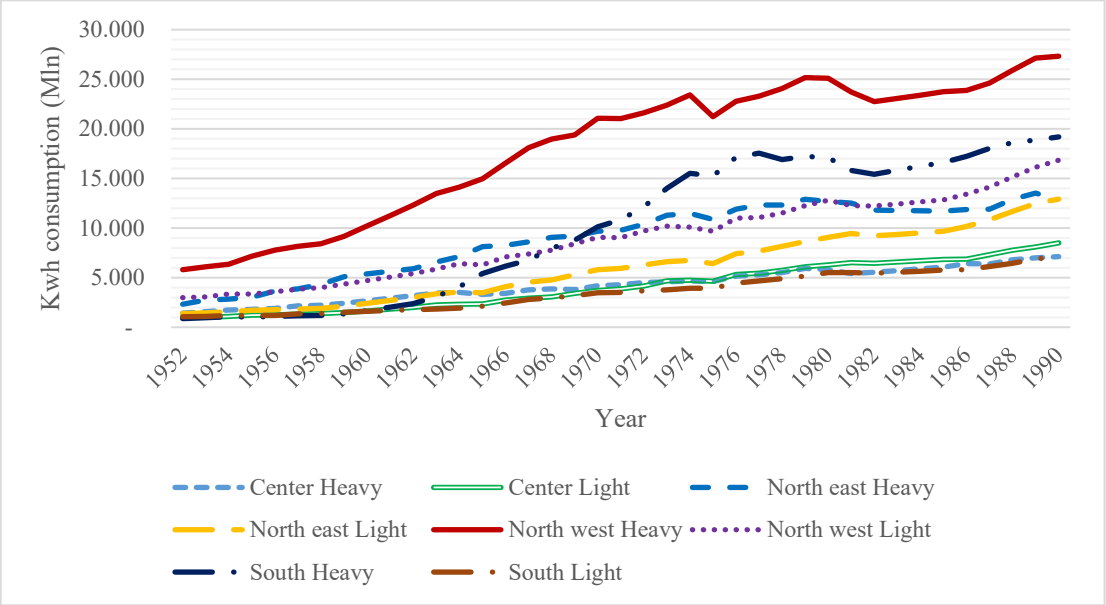
Source: Baffigi (2015), Istat (1979).

Figure 2.a. Kwh consumption per industrial worker in Macroregions, 1952-1990.



Source: own elaborations from Annuario Statistico (different years) and Chiaiese and Ciriotto (2025).

Figure 3.a. Total Kwh consumption in Macroregions and industrial Macrobranches



Source: own elaborations from Annuario Statistico (different years).

Chapter 4

“La salute non si vende.” Workplace deaths in Post-WWII Italian industry, a provincial analysis (1951-1991).

Abstract: Despite its importance for public opinion and industrial relations, occupational health and safety (OHS) has never been a major topic in economic history. The gap is particularly evident on the quantitative side, as there is a complete lack of measurement of macro-historical trends. This paper attempts to contribute to OHS literature by providing the first estimates of industrial fatality rates in Italy between 1951 and 1991. The rapid and chaotic industrialization of post-war Italy, with all its economic and social consequences, makes it a particularly interesting case study in this regard. Moreover, by providing provincial estimates of industrial fatality rates, this article deepens the study of OHS regional divides into highly diversified labor markets and social contexts. Finally, the causes of fatality rate trends at both the country and provincial levels are analyzed qualitatively and quantitatively through the construction of a panel dataset. The main findings indicate that average establishment size and, in particular, the level of workers’ bargaining power — or political activism — were the primary driver of improved OHS conditions during Italy’s First Republic.

1. Introduction

Workplace deaths are currently at the center of political and social debate in Italy (Alberti, 2024; Gallo and Loreto, 2023). However, occupational safety issues have a long history in the country. In the immediate post-WWII period (1945-1963), when the country was experiencing abrupt and chaotic industrialization, occupational injuries and deaths were extremely high (Carnevale and Baldasseroni, 1999). Notwithstanding the government’s attempts to curb the phenomenon in the 1950s, only unions and workers’ movements were able to push for improvements in workplace safety during the 1960s and 1970s – a period marked by high economic and social conflict. The unions’ bargaining processes and the institutionalization of workers’ struggles were able to favor a drastic reduction in workplace fatalities. However, during the 1980s, a new period of low industrial conflict and difficulties faced by unions brought the reduction process to a halt.

When governments and institutions demonstrate limited capacity to implement policies on these issues — as in the Italian post-war historical context — occupational health and safety (OHS) can be regarded as an additional component of wage. Similarly to wage, indeed, workers and entrepreneurs bargain due to a divergence of interests, thereby adding a further dimension to the “classic” income distribution. While improved OHS is a clear benefit for workers, entrepreneurs must augment costs and reduce profits to improve workplace conditions. For this

reason, we could argue that when unions are historically strong and workers' bargaining power is high – typically as a result of low unemployment rates – workplace safety tends to be negotiated and improved at the expense of profits (Nichols and Armstrong, 1973). Even the industrial structure likely plays a significant role in shaping the fatalities reduction process (Nichols et al., 2018). In large firms, where profits are usually higher and workers are better able to organize, employers may be less resistant to implementing safety improvements, as these require a relatively smaller financial effort and help avoid greater confrontation with unions. Moreover, large firms are better able to increase productivity by rationalizing production methods (Braverman, 1974), thereby offsetting the costs associated with higher workplace safety. So, the local context, shaping workers' bargaining power and industrial structure, has an important role in the bargaining of occupational health and safety.

Despite sharing the same regulations and institutional framework, the highly diversified post-war Italian regional labor markets and social contexts allow us to examine whether varying levels of workers' activism and bargaining power, together with differences in industrial structure, had different impacts on occupational safety. To this end, the paper first reconstructs fatality rates at the provincial level in industry between 1951 and 1991 using as main source *Notiziario Statistico* INAIL (National Institute for Insurance against Workplace Accidents). Fatality rates, calculated as the ratio of the number of deaths to the number of workers, provide a clearer understanding of the phenomenon's historical trajectory and highlight genuine provincial differences that reflect variations in labor market conditions. The paper then develops three different proxies for workers' bargaining power at provincial level – unionization rate, hours of strikes per worker, and precarious employment rate – and one variable reflecting industrial structure – average establishment size – in order to test the predicted positive impact of these variables on fatality rates. The precarious employment rate — similar in concept to the unemployment rate but with broader implications — represents the share of the workforce compelled to work in precarious conditions and is derived from the difference between industrial and population census workers (Sylos Labini, 1974). Low precarious employment levels – as high levels of unionization and hours of strikes – are expected to increase workers' bargaining power, fostering unions to negotiate for the improvement of working conditions – in terms of safety measures, rights and working hours – thereby reducing fatality rates. Other sets of variables, including technological and institutional factors, are included in the panel as controls based on their potential role in shaping the phenomenon.

The results show that the fatality rate in industry decreased from around 6-7 deaths per 10000 workers in 1951 to less than 3 in 1991, with a sharp decrease concentrated in the 1960s and the 1970s. The South, the less politically active part of Italy, recorded fatality rates during this period that were 2.3 to 3.2 times higher than those in the North-West. Econometric results

finally confirm that provinces with higher levels of workers' activism and more complex industrial structures experienced fewer deaths per worker across all periods.

Section 2 reviews the historical literature on OHS and its evolution in post-war Italy. Section 3 explains the data and the methodology of the analysis. Section 4 presents national and macroregional trends in industrial fatality rates, as well as the econometric analyses of the selected variables. Section 5 concludes.

2. Literature Review and Historical Framework

Despite its importance for public opinion and industrial relations, occupational health and safety has never been a major topic in economic history. The gap is particularly evident on the quantitative side, as there is a complete lack of measurement and comparison of macro-historical trends. Moreover, most of the research has generally concentrated on the period around the turn of the twentieth century, leaving more recent developments unexplored.

As highlighted in the introduction, the ongoing tension between employers and workers over occupational health and safety is widely discussed in the literature. One of the main topics concerns the evolution of OHS relations driven by the achievements of labor unions. In particular, many studies have focused on the mining sector, which, given the inherent dangers of the activity, was the first to develop workers' claims in the field. Reid (1981) examines the history of the struggle for better safety conditions in the Decazeville (France) mines between 1867 and 1914, showing that workers' bargaining power and organization were essential to the creation of the safety delegate role. Derickson (1992) describes the foundation of UMWA – United Mine Workers of America – hospitals in the early 20th century, which emerged in response to the high injury rates in the mines and the lack of adequate healthcare provision by employers. Fishback (1986), and more recently Morantz (2013) and Boal (2018), provide historical and quantitative evidence that the piece-work payment system, closely linked to workers' low unionization and bargaining power, was the main cause of safety issues in mines. The gradual strengthening of unions laid the foundations for the abolition of the system and for the general decrease in fatality rates in the sector. Walters and Quinlan (2019) examine the history of OHS mining conditions in the UK and Australia around the turn of the twentieth century, arguing that collective identity, public opinion, and union-driven worker representation and consultation were essential for improving health and safety conditions.

Another important strand of research, closely linked to the previous discussion and the introduction of this paper, focuses on the importance of precarious employment on OHS (Gregson and Quinlan, 2020; Belzer and Quinlan, 2024). These studies show how marginal employment historically created deplorable working conditions for poor workers, contributing to high fatality rates and increased incidence of illness among workforce and society. They

provide a detailed account of these historical situations, connected to earlier phases of industrialization (late 19th to early 20th century), in order to relate them to today's changing labor market, where neoliberalism has increasingly created a system dependent on precarious and low-paid jobs. This paper fundamentally adds a link between precarious employment and OHS, arguing that the proliferation of poor jobs essentially reduces workers bargaining power and organization, thereby hindering any possibility of improvement through political action—considered by the literature as the most important channel for achieving such improvements.

A distinct, yet clearly related, branch of the literature examines the role of institutions in OHS. To address workers' and societal dissatisfaction arising from long working hours and new occupational hazards associated with industrialization in the early 20th century[57], governments began regulating labor markets and implementing national insurance schemes and other forms of social protection — marking the first expansion of the welfare state (Huberman and Lewchuck, 2003; Moses, 2018; Fishback, 1998). In this case as well, the push from workers' movements was essential for institutional reforms (Gregson and Quinlan, 2019; Belzer and Quinlan, 2024). Tucker (1992), for instance, documents the Swedish case, where workers' actions, and sometimes collaboration with employers, were crucial to create good institutions throughout the 20th century.

Some scholars have specifically examined the historical functioning of social insurance systems against accidents to understand the factors behind their success or failure. A very interesting case is represented by Ontario, where the government was able to incentivize virtuous employer behavior through an insurance system that rewarded workplaces with lower accidents (Silvestre, 2010). However, initial attempts to establish effective new institutions were at times thwarted. Bartrip and Fenn (1988) reconstruct the history of work regulations and inspections in the UK between 1878 and 1913, and, through econometric analysis of the data, find that inspectors were unable to be effective due to a lack of political will. Spain, too, followed a more tortuous path than Sweden or other countries (Silvestre, 2008). The law on work accidents enacted at the beginning of the century (1900) was difficult to enforce, particularly in small firms. This was largely due to inspectors' lack of willingness, the absence of an effective compensation system rewarding compliant employers, and the general weakness of unions, which were more focused on other issues such as wages.

It is interesting to note that Italy's post-war experience with OHS mirrors the patterns described in the literature for earlier periods. From 1951 to 1963, the country was marked by a rapid structural transformation. Mass industrialization, based on a clear post-war political choice (De Cecco, 1971), led to particularly high growth rates during the so-called "economic miracle"

[57] For instance, Lewchuck (1992), testing French occupational mortality data between 1907 and 1908, finds that hours of work – a big share of the regulations in the "progressive era" -- were particularly important for mortality, reproposing the matter of exploitation and precariousness of labor market.

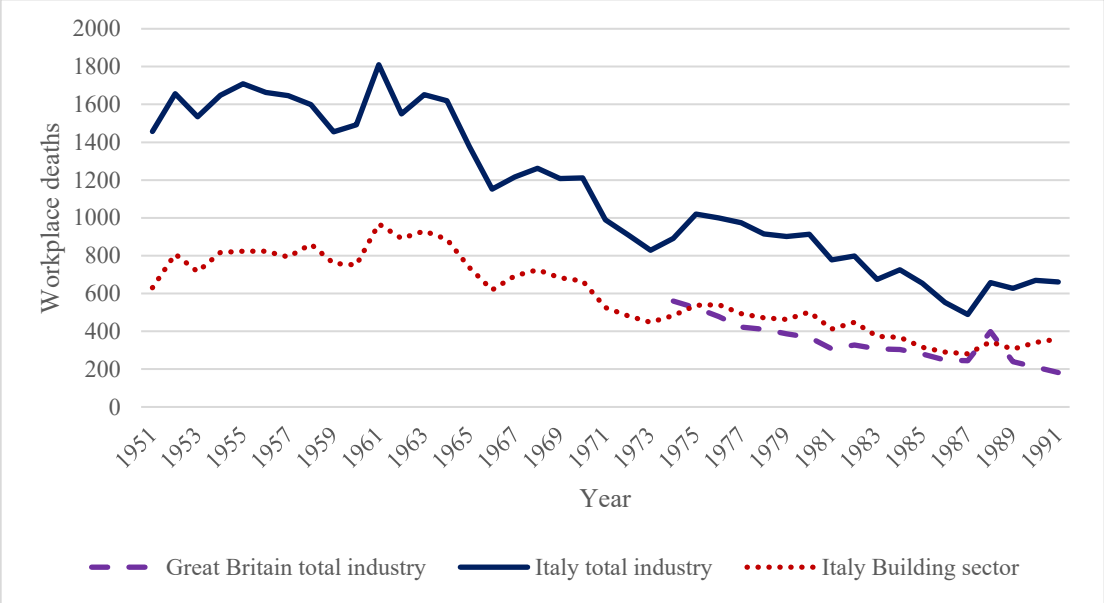
(1958–1963). In the absence of widespread technologically advanced industries or flexible exchange rates[58], the Italian export-led model relied on a fundamental pillar: low labor costs. Unions, weakened by internal fragmentation and high unemployment rates (Gallo and Loreto, 2023), proved particularly ineffective during this period in promoting a balanced growth path between profits, productivity, and wages. As a result, workers' conditions did not significantly improve during the economic boom. National unemployment and poverty inquiries (1953–1954) reported that most workers lived in harsh conditions and were economically and politically marginalized in the workplace. For example, as reported for nineteenth-century England by Gregson and Quinlan (2020), the phenomenon of homeworking was widespread throughout the country. These issues were especially pronounced in peripheral areas and Southern Italy. Indeed, Italy was strongly characterized by a dualistic system, with modern industries concentrated in the North-West coexisting alongside very traditional (often family-owned) enterprises throughout the country, which survived thanks to cheap labor and low production costs (Lutz, 1962; Sylos Labini, 1964; 1970).

Workplace safety and health were generally undervalued, both in the new taylorist factories of the North and in the small, traditional businesses of the peripheral provinces (Baldasserroni and Carnevale, 1999). Moreover, in an effort to boost productivity without making investments, average working hours increased during this period (Graziani, 1998; Gallo and Loreto, 2023). According to INAIL statistics (Figure 1), workplace deaths in industry rose alongside employment and GDP, reaching a peak in the early 1960s. Despite political interest in the issue — evidenced by the national inquiry into factory working conditions (1956) and the promulgation of new laws on occupational safety and health (1955–1956) — this trend did not change. As in earlier historical cases — such as Great Britain in the late 19th century (Bartrip and Fenn, 1988), and Ontario and Spain in the early 20th century (Silvestre, 2010; 2008) — the new legislation was widely disregarded (Carnevale and Baldasseroni, 1998). In particular, the lack of effective legal accountability for employers, the extremely vague definitions of safety standards in the regulations, and widespread non-compliance and corruption among labor inspectors hindered the enforcement of these laws (Smuraglia, 1963; 1974; Bagnara et al., 1981). For instance, until 1978, labor inspections and accident prevention were divided among three different entities (ENPI, ANCC, and the Labor Inspectorate), all of which were severely understaffed and ineffective (Bagnara et al., 1981; Carnevale and Baldasseroni, 1999; 2005). Moreover, INAIL, by failing to offer economic incentives for adopting safer practices, did not succeed in fostering a culture of workplace safety among employers (Carnevale and Baldasseroni, 2005). Overall, considering the failure of post-war political reforms (Barca,

[58] The Bretton Woods international fixed exchange rate regime impeded the use of monetary policy as a tool to enhance international price competitiveness.

1999), it soon became clear that a legal and political top-down approach was ineffective in the Italian context.

Figure 1. Workplace Deaths in Industry in Italy and Great Britain, 1951-2001.



Note: Italian workplace deaths refer to "compensated" deaths, because the INAIL database does not provide total deaths (both compensated and non-compensated). Both Italian and British statistics are reduced by the exclusion of the "Various Industries" and "Transports" categories.
Source: Italy: INAIL, https://www.inail.it/portale/it/attivita-e-servizi/dati-e-statistiche/statistiche-storiche/casi-indennizzati.html
Great Britian: Health and Safety Executive, https://www.hse.gov.uk/statistics/history/index.htm

The early 1960s marked a resurgence of the working class in the Italian political landscape. Waves of protests in 1962 and 1963 led to a general increase in wages, partially rebalancing the income distribution derived from the economic miracle. These protests were fueled by very low unemployment and marginality rates in the north-western regions, which enabled workers and trade unions to negotiate from a stronger position. Beyond direct economic demands, a new awareness of working conditions began to emerge in the industrial cities of the North, where workers were heavily unionized and employed in modern factories. Ivar Oddone and Gastone Marri, a labor physician and a unionist respectively, and two of the main advocates for workplace safety and health during this period, launched training courses and conducted case studies in factories in Turin (Righi, 2010; Carnevale and Baldasseroni, 1999), while public opinion also began showing greater interest in OHS issues.[59] As a result of these initiatives, workplace safety and rights became part of collective bargaining in major firms and state-owned industries during the 1960s, with cascading positive effects to most of the firms due to the mainly centralized bargaining system (Cella and Treu, 1989; Rappa, 2025). For instance, starting from 1962-1963, sectoral and national bargaining brought to the gradual diminishment

[59] A famous case is that of Dario Fo — awarded the Nobel Prize for Literature in 1997 — who was removed from public television in 1962 for a sketch on workplace deaths.

of labor hours – from 48 to 40 hours a week over a decade. Workplace fatalities (Figure 1) declined over the decade, likely due to both increased worker activism and the downturn in economic activity and employment following the 1964–1965 crisis—the so-called *Congiuntura*.

The Hot Autumn of 1969 marked a significant turning point in Italian economic and labor history. After several years (1965–1968) of renewed political repression and industrial restructuring (Graziani, 1998), workers' movements and trade unions launched new waves of protest that would continue throughout the following decade. According to De Cecco (1972), labor movements during this period were particularly favored by the recomposition of the labor force that followed restructuring processes, when the strong expulsion of marginal labor — women and young people— from industry gave greater bargaining power to workers. These mobilizations signaled the peak of the post-war distributive conflict and the end of the Italian Golden Age. This time, workers not only demanded higher wages but also explicitly fought for improved working and living conditions, seeking to extend these claims to the entire working population—from North to South[60]. A key feature of this period was the "institutionalization" of workers' gains through new legislation and the expansion of the welfare state, which contributed to reducing inequality, poverty, and the marginalization of the working class.

Workplace health and safety became central to these new demands. A pamphlet entitled "The Work Environment" (*L'ambiente di lavoro*), written by Oddone and Marri in 1967 and reissued in 1971, was used to raise public awareness and encourage workers to take an active role in changing work procedures and prioritizing health and safety conditions. Similarly, the alarming inquiry "The health in factories" *(La Salute nelle Fabbriche*), edited in 1969 and promoted by the Communist party under the direction of Giovanni Berlinguer – a prominent labor physician and brother of Enrico Berlinguer, the Communist party secretary from 1972 – was pivotal in advancing these objectives[61]. One of the most iconic slogans of the period was "Health is not for sale" (*La salute non si vende*), expressing the idea that health and safety at work were not negotiable parts of a wage package, but fundamental rights[62]. However, given the ineffective labor regulations, in the late 1960s and early 1970s, direct bargaining between workers and employers remained the primary mechanism for improving working conditions (Reich and Goldman, 1984), still disadvantaging those employed in small firms with low levels of unionization and limited bargaining power – the latter being, at least, useful for enforcing national contracts.

[60] This trend was linked to the so-called "Egalitarian" movement, which aimed to equate working rights and wages between different working positions and regions.
[61] Moreover, in popular culture, "The Working Class Goes to Heaven" (*La classe operaia va in paradiso*), a 1971 film by Elio Petri depicting workers' subjection to Taylorist production methods and the harsh realities of working conditions in Italian factories, strongly resonated with public opinion.
[62] For example, it was typical in the 1950s and 1960s to pay extras for workers subjected to high risk.

During the 1970s, two key pieces of legislation supported workers' demands for improved health and safety conditions in the workplace. In 1970, the Workers' Statute (*Statuto dei Lavoratori*) granted employees — under Article 9 — the right to actively organize and monitor workplace procedures and equipment that could pose risks of injury or occupational disease. Moreover, the Statute promoted a general increase in workers' bargaining power through labor rights, thereby contributing to better health outcomes for workers, particularly in large firms[63]. Then, in 1978, the establishment of the National Health System (Servizio Sanitario Nazionale), based on 672 decentralized local health units (USL), enabled the effective enforcement of the 1955–1956 laws by consolidating all previous prevention and inspection functions under a single entity (USL). It also allowed a new generation of occupational physicians — trained during the 1970s — to enter workplaces and work directly with employees in preventive initiatives (Carnevale, 2017). However, due to the local reorganization, prevention and control were more effective in highly politically active provinces, while Southern and the more isolated parts of the country still lagged behind from this point of view (Berlinguer and Biocca, 1987).

Both laws were conceived with a bottom-up approach, grounded in workers' needs and concerns, and thus enabled meaningful improvements in workplace safety. Throughout the 1970s and early 1980s, workplace fatalities in the industrial sector declined significantly (Figure 1). Despite the concurrent structural transformation of the Italian economy — marked by deindustrialization and a shift toward the service sector after 1973 — workers' activism likely played a key role in this decline. This highlighted the importance, in the Italian context, of a bottom-up approach to the realization of workers' rights.

During the late 1980s and early 1990s, Italy began the process of convergence with European standards in various domains. European directives concerning workplace health and safety were progressively incorporated into Italian legislation. Particularly significant was the Legislative Decree 626/1994, which introduced higher standards in the field and completely overhauled the laws dating back to 1955–1956, marking an end — even in this respect — to the so-called First Republic. However, the evolution of legislation did not lead to a corresponding decline in industrial workplace fatalities, which remained stable from the late 1980s and showed no convergence with countries that had more developed standards. Great Britain, for instance, experienced total industrial fatalities comparable to those in Italy's construction sector only during this period (Figure 1). As noted by Baldasserroni and Carnevale (1999), drawing on their experience as occupational physicians, a bottom-up approach was gradually replaced by a top-down model — one that proved largely ineffective in curbing workplace deaths. The decline of bottom-up strategies and worker activism, which had played a central role in injury prevention

[63] For instance, article 18, concerning protection against unjustified dismissal, was applied only to firms with more than 15 employees, thereby depriving workers in smaller companies of an important legal safeguard.

following the 1978 health reform, can be attributed to a range of economic, political, and social factors. On one hand, the political defeats suffered by trade unions and left-wing parties in the 1980s undermined labor's influence[64], forcing unions to pay more attention to the employment issue rather than OHS topics (Berlinguer and Biocca, 1987). On the other hand, the growing influence of small enterprises — where union representation was weak — within the Italian industrial structure (De Cecco, 2007), alongside the renewed marginalization of workers, contributed to the dismantling of the 1970s model.

3. Data and methodology

a. Fatality rates

Provincial fatality rates for industrial workers from 1951 to 1991 are computed as the number of workplace deaths divided by the number of workers insured by INAIL. Only fatal injuries are taken into consideration, as they are the only occupational injuries not influenced by human value judgements. For instance, temporary and permanent injuries widely changed between 1951 and 1991, with a marked increase in the 1960s and 1970s, when INAIL expanded their recognition criteria. Moreover, occupational injuries are often underreported, particularly in low-paid jobs, thus configuring an important bias for our results (Boone and Van Ours, 2006). Despite their relevance, occupational diseases are similar in nature and follow a comparable pattern. Moreover, they were frequently triggered over long periods and typically manifested after many years of work.

INAIL job insurance was mandatory in Italy for certain categories of workers since 1935. Industrial fatal injuries are recovered from *Notiziario Statistico* INAIL, which gathered quarterly data on industrial accidents from 1951 to 2009. *Notiziario Statistico* summarizes various kinds of industrial accidents for insured workers only. There are two main categories of work injuries: with compensation and without. There were different reasons to not compensate for injuries. First, some injuries were considered below the minimum severity level (*franchigia*). Second, in some cases, the circumstance of the accident was not closely related to the specific worker's task. Third, most non-compensated fatal injuries occurred among workers without a family who could receive the benefits. The paper shows statistics both with and without non-compensated deaths ("total" and "compensated" fatality rates). However, total fatality rates can be considered quite reliable if we are interested in levels and comparisons. To reinforce this claim, the data show that the percentage of deaths without compensation on total deaths did not follow regional paths in any year, suggesting that they were not influenced by INAIL's decisions. Unfortunately, hidden economy workers' fatal injuries are not included in

[64] Particularly significant in shaping the events of the 1980s were the dissolution of the unified union confederation in the early 1980s and the defeat in the referendum on the *Scala Mobile* wage indexation mechanism.

statistics, biasing the real numbers of the phenomenon. It is likely that during the 1950s and 1960s, when big shares of the labor force were employed in the hidden economy, fatal injuries were much higher with respect to official sources.

INAIL produced statistics on injuries considering the "*esercizio*" or the "*competenza*". Accidents *per esercizio* were reported in a specific year (f.i. 1961) but could timely belong to previous years (f.i 1960). Accidents *per competenza* belonged to a specific year (f.i. 1961) but could be reported later (f.i. 1962) for different motivations. This paper uses data *per competenza* reported on the 31st December of the following year – the latest *per competenza* date usually allowed by *Notiziario Statistico*. On the 31st December of the following year the vast majority of cases were reported and closed. Open cases rarely exceeded 5% of the whole sample. Finally, INAIL grouped injuries in 10 industrial sectors, where the group "Various" represented all the Services sectors – except for transports. Moreover, from 1981, the group "Indeterminate" – representing injuries not yet assigned to a specific industry according to available information – appears in the data. So, the Various category and a share of Indeterminates computed as – $\frac{Various\ injuries}{Total\ injuries} * indeterminate\ injuries$ – are excluded from the dataset. In the case of total fatality rates, these deaths are computed as $deaths\ to\ exclude \times \frac{total\ deaths}{deaths\ with\ compensation}$. The provincial subdivision of categories is present in 1971, 1981 and 1991, but in 1961 only regional subdivision exists and in 1951 there is no subdivision at subnational level. So, considering that Various deaths are very few in 1951 and 1961, we applied the provincial ratios of 1971 to those years.

It is extremely complicated to accurately reconstruct INAIL insured workers in a specific year. INAIL did not dispose of such data, but produced an estimate called "workers-per year" (*operai-anno*) until 1980[65]. Workers-per year were computed – even at provincial level – as follows: $\frac{\text{total amount of insurance fees}}{\text{average wage}\times 300}$, where the average wage statistics were produced by INAIL itself and 300 represents the standard number of working days in a year. Even according to the introductory notes of *Notizie Statistiche* INAIL (1959-1961), this is a very rough estimate.

Instead of using indirect measures, this paper uses the industrial census figures (1951-1991) as source of insured workers. The industrial census in Italy was compiled by entrepreneurs, who were required to report various features of their enterprises and local units. It is important to highlight that there is no reason to suspect significant mismatches between census figures and actual insured workers, as entrepreneurs likely reported only legally hired employees — who were also those covered by insurance.

[65] After 1980 INAIL started to provide an estimate of total working hours.

Not all the employees were equally insured. We know from *Notizie Statistiche* (1959-1961) that before 1965 only blue collars employed in extractive, manufacturing, building, energy and transports firms were insured. After the Presidential decree n. 1124 of 1965, which reorganized INAIL legislation, also helpers and artisans were included among them. In the early 1980s, as shown by Carnevale and Baldasseroni (1999), white collars – including those from the service sector – gradually began to be widely covered by insurance.

Among the details the industrial censuses asked for, entrepreneurs were required to report the number of helpers and employees in each local unit, categorized by type. Usually we can find such categories: White collars (managers and office workers), Special categories (blue collars with directive tasks), Blue collars (high and low skilled), Apprentices, and Others (guards, keepers etc.). This paper considers as workers insured by INAIL before 1965 all the employees belonging to special categories, blue collars, apprentices and others (guards, keepers etc.) in the sectors mentioned above. After 1965 – so with the 1971 census – the paper includes helpers and artisans among the insured categories, assuming that artisans were all the manufacturing workers employed in local units with only one employee. The inclusion of white-collar employees for 1991 would completely underestimate fatality rates, considering that it is reasonable to assume that the vast majority of fatal injuries occurred among industrial blue-collar workers. Figure 1.a in the appendix reports the reconstruction of insured workers for Italy and different macroregions between 1951 and 1991.

b. Explanatory variables and Empirical analysis

For the empirical exercise, provincial fatality rates are adjusted to avoid yearly random variability. Indeed, in many cases small provinces experienced a high number of workplace fatalities in one year and, by chance, very few the next. The census years fatal injuries observations (1951-1991) are adjusted as a three-year average (f.i. 1950-1951-1952). The correction allows to have more readable fatality rate trends at provincial level. The same adjustment is applied to various and indeterminate deaths, which are then subtracted from the provincial fatal injury counts.

Four main variables at provincial level are reconstructed to empirically analyze the relations between fatality rates, workers' activism and industrial structure. The first three of them can be considered the "workers' bargaining power variables", replicating a similar concept and serving as cross robustness checks.

The first key variable is the "Precarious Employment Rate", calculated as the difference between the total number of workers in a professional condition according to the population census and the total number of workers in the industrial census, divided by the number of workers in the population census. The population census definition of "professional condition"

also includes unemployed individuals who previously worked in a specific sector, thereby significantly enhancing our estimates of "marginality". This technique, first used by Sylos Labini (1974), Paci (1973) and Meldolesi (1972), and recently mentioned in Ardeni (2024), exploits the fact that in the industrial census, entrepreneurs reported only legally hired employees working in local units, while in the population census, citizens directly reported their employment status. The difference between the two censuses signals the number of unemployed and precarious workers, who likely worked without regular contracts, either from home or in the hidden economy.

The precarious employment rate is not only a proxy for unemployment that can be applied to specific sectors, but it also reflects a broader economic and social environment that shapes workers' bargaining power and labor market outcomes. For instance, if one member of a household earns a good income due to sufficiently high wage levels in the regular economy, the other members are not forced to accept irregular jobs at any wage, thereby reducing the Precarious employment rate. Otherwise, a strong social welfare system could have the same effect, increasing household income without resorting to the hidden economy. Moreover, it is highly probable that precarious employment is strongly positively correlated with average working hours per employee, a variable partly able to explain industrial fatality incidence (Gregson and Quinlan, 2020), thereby reinforcing its effect.

The second key variable is the unionization rate. Unionized people in CGIL and CISL – the two main Italian unions – at provincial level were collected from the unpublished appendix in Romagnoli (1980) for the years 1951, 1961, and 1971. For the years 1981 and 1991 unionized people were collected at regional level from CESOS yearly publications. Provincial data for 1981 and 1991 were reconstructed through the application of 1971 provincial ratios to regional data. To create the unionization rate, the number of unionized people was divided by the provincial active population reconstructed by Chiaiese and Ciriotto (2025). The main issue regarding this variable is represented by the fact that people enrolled in CGIL and CISL were not the entire unionized population. However, considering the importance of these unions in the context of the period, it is quite reasonable to assume that real total unionization should follow the same trend. Unfortunately, the unionization rate cannot be computed at sectoral and provincial level at the same time, somehow reducing the accuracy of this variable for our purposes.

The third key variable is represented by the Hours of strike per worker over the 10 previous years. Total working hours lost for labor conflicts were collected at provincial level from Annuari di Statistiche provinciali ISTAT from 1958 to 1972 and from Annuario di Statistiche del Lavoro ISTAT from 1973 to 1976 and from 1981 to 1984. In the years 1952-1957, 1977-1980 and 1985-1991 the same data at regional level from Annuari Statistici ISTAT were collected. To obtain total lost working hours at provincial level in those years, the ratio

$\frac{\text{provincial hours 1958}}{\text{regional hours 1958}}$ was applied to the data from 1952 to 1957, and the same ratio with 1981 and 1984 data was applied to the years 1977-1980 and 1985-1991 respectively. After that, to obtain "per worker" data, provincial hours were divided by working age population from Chiaese and Ciriotto (2025). In the end, the data were aggregated over the previous ten years (f.i. 1952-1961) to account for the evolution and significance of the phenomenon at provincial level over the inter-census period. The aggregation, unfortunately, delete one observation per province (1951). Even in this case, the variable cannot be computed simultaneously at both the provincial and sectoral levels.

The fourth key variable is the average establishment size derived from industrial censuses. It is computed as the provincial number of employees in the industrial sectors of interest divided by the number of local units. Let us notice that the average establishment size does not only indicate the provincial industrial structure, but also the average technological degree. For example, it is highly likely that provinces with larger average establishment sizes were more developed in modern industrial sectors, where mechanical equipment and machines were commonly used.

Besides the four key variables, other 4 "controls" are used. Building sector share over total industrial sectors is reconstructed as the number of employees in this sector relative to the total number of employees in industry, based on industrial censuses. In the literature, this variable, accounting for an extremely dangerous sector of employment, is considered very important in increasing fatality rates (Lanearts et al., 2020). This is consistent with Italian post-war history, considering that the building sector boom occurred from the 1950s to the 1970s, when fatalities in industry were at their highest. GDP per capita at provincial level is recovered from Chiaiese and Ciriotto (2025). It accounts for the procyclicality of workplace injuries and incorporates the theoretical perspective from the literature that links economic modernization with improvements in OHS. (Antonelli et al., 2024). Then an "institutional" and a "technological" variable are reconstructed. The institutional variable, named "Private healthcare share", is represented by the yearly number of patients in private hospitals over the yearly number of patients in public hospitals in different Italian regions – the most fine-grained disaggregation available from the data collected in Annuari Statistici ISTAT[66]. For the exercise, only general and specialized public hospitals are considered – leaving out psychiatric hospitals and public clinics (*ambulatori*). This variable should represent the local government's effort in public healthcare, so proxying for the institutional (and societal) care for OHS issues – enacted through inspections, regulations and other measures. Given the absence of original sources to account for the real variable – for instance number of labor inspections or inspectors – this proxy should partly serve for the aim of understanding the role of institutions in enforcing regulations. In the

[66] However, it can be assumed that regional data are fairly reliable at the provincial level as well, considering that people could access healthcare facilities in neighboring provinces through short trips.

end, the technological variable is represented by the provincial number of electrical engines – transforming electric energy in mechanical energy in local units – per employee in the manufacturing sector. The data are collected from 1951 to 1981 from the Industrial census. Unfortunately, the 1991 census does not register such data. So, the variable, reducing the sample, is only used in additional specifications – not in the baseline models. The relationship between technology and OHS is quite uncertain. In papers using modern data (Antonelli et al., 2024), it is theorized and tested whether technological advancements improve OHS, while the effect of machines in earlier industrialization periods is usually perceived as source of increased injury rates (Lewchuck, 1991). This variable —along with GDP per capita — should capture technological advancements during a transitional era, when Italy moved from early industrialization in many areas during the 1950s and 1960s to subsequent technological developments in the 1970s and 1980s. A positive impact of technology on workplace deaths could indicate a "Taylorization effect," whereby technological progress leads to an increase in risk exposure due to the intensified use of complex or hazardous machinery.

Thanks to the reconstruction of these variables, a panel dataset is assembled with provincial observations at census years over the period 1951-1991. In the econometric analysis, the relationships between the dependent variable — Fatality Rates — and the single key explanatory variables with controls are first tested using provincial fixed effects and, subsequently, provincial and time fixed effects together. The use of fixed effects allows us to control province-specific and time-specific characteristics (1-4). While using only province fixed effects, we still observe the impact of the historical pattern on the phenomenon, including both province and time (year) fixed effects we obscure the evolution of the process providing clearer indications of causal relationships. In other specification, two key variables – one bargaining power variable and the average establishment size (AES) – are tested together with controls (5-9). Logarithmic transformations of the variables are always applied except in the case of precarious employment rate, where some samples with negative values are present and, moreover, visual inspections show that a log-lin relation better fits the data. All the regressions are run with errors clustered at provincial level. An important issue arising from the regressions results, when both a bargaining power variable and AES are included, concerns the high correlation between these two main explanatory variables[67]. The correlation, arising from the historical coevolutionary process of increased industrial capacity and workers' empowerment and class consciousness, impacts on the exact estimation of the coefficients, dampening the effect of one or the other variable according to the single specification. In table 3, two indexes created by merging our main variables are used to better show the final results.

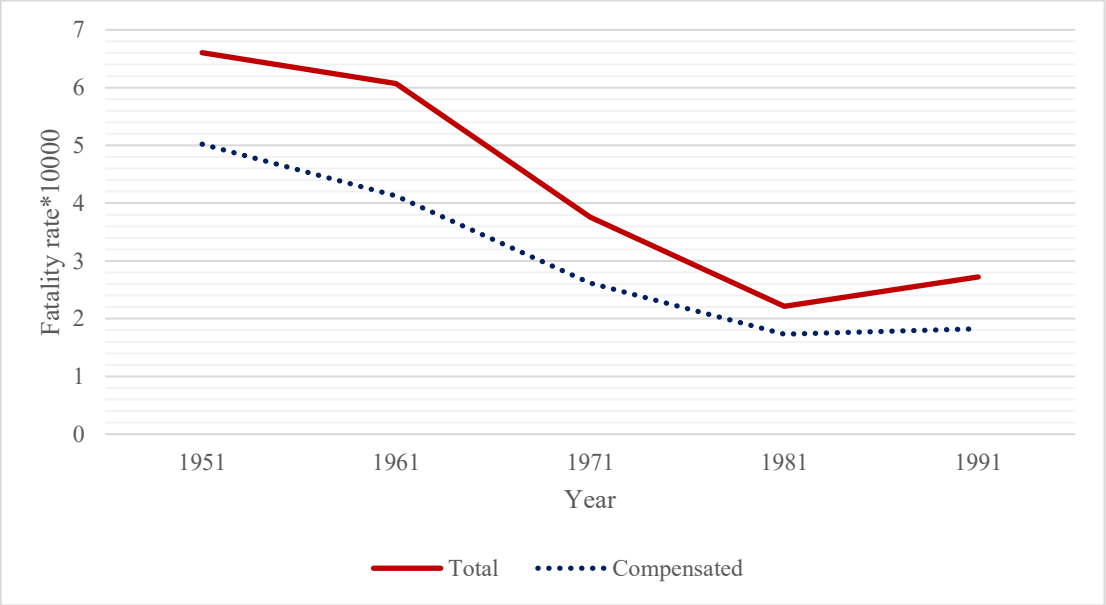
[67] However, despite the high correlation, the variance inflation factor always remains around 2-3 in all the specifications.

To recap, according to the simple model presented in the introduction and discussed with historical evidence in section two, a decrease in precarious employment degree – proxying for workers' bargaining power – should lead to a decrease in industrial fatality rates. Similarly, an increase in unionization rate or hours of strike per worker over the 10 previous years should decrease fatality rates. This reduction is expected to be more pronounced in provinces with larger average establishment size, as workers are more able to organize in bigger firms, and employers are less resistant to improving working conditions due to higher profit margins. The effect of other control variables is more controversial. The share of employment in building sector is expected to increase fatality rates, as is the case for private healthcare share. The technological and modernization variables – GDP per capita and engines per worker in manufacture – should probably have beneficial effects in the long run for the reduction of the phenomenon.

4. Results

a. The history of Fatal Injury rates in post-war Italian industry (1951-1991)

Figure 2. Total (compensated and non-compensated) and Compensated industrial fatal injury rates in Italy, 1951-2001.



Source: own elaborations. Look at section 3.
Note: the industrial sectors included are: extractive, manufacturing, utilities, construction and transport sectors.

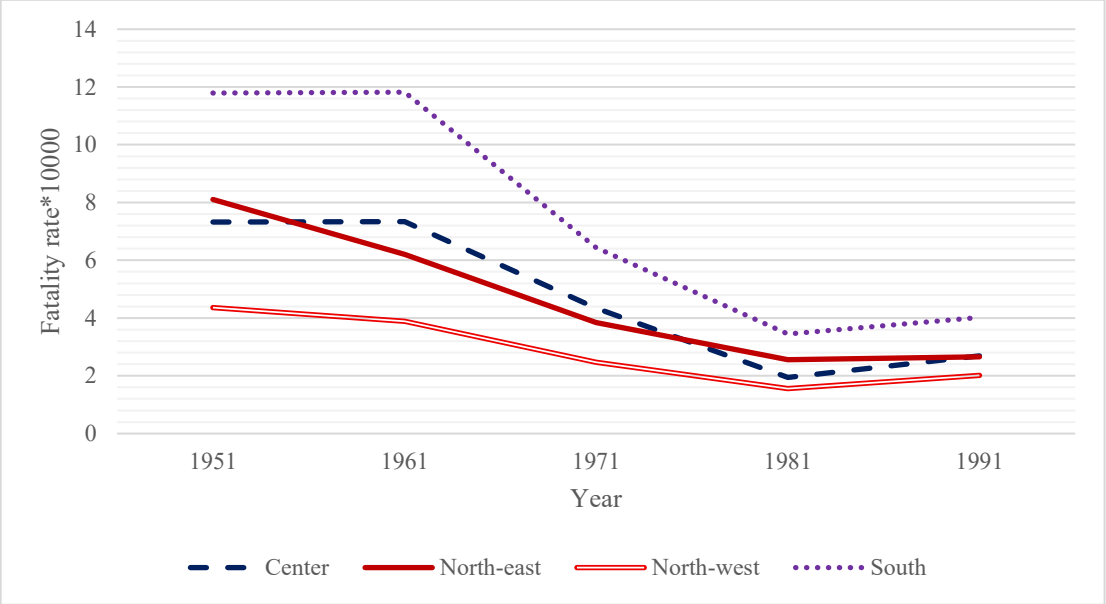
Figure 2 shows Total – including compensated and non-compensated injuries – and Compensated fatality rates in industry for post-war Italy (1951-1991). During the economic boom (1950s–early 1960s), total fatality rates did not decrease significantly, while compensated fatality rates fell by 0.9. This discrepancy was likely due to the overly strict definitions of injury circumstances provided by INAIL. However, as highlighted in the historical section, despite

the introduction of new laws on OHS (1955-1956), the economic growth of the 1950s was clearly disconnected by a corresponding improvement in working-class rights, resulting in the lack of a steep decrease in workplace fatalities. The 1960s and 1970s were key years for the reduction of fatal injury rates in post-war Italy. Considering that workplace safety and health were largely negotiated at the firm level during this period, the reduction in fatalities likely began in large firms in the 1960s, producing cascading effects on smaller firms as workers' struggles became institutionalized through national contracts and regulations, especially after 1969[68]. In particular, the effects of working-hour regulations negotiated through sectoral contracts, along with the labor rights gained following the introduction of the Workers' Statute (1970), were likely highly beneficial for the phenomenon. At the same time, Figures 2.a, 3.a, and 4.a in the appendix, showing the precarious employment rate, unionization, and cumulative hours of strikes per worker over the previous ten years, clearly indicate that the 1960s and 1970s were periods of intense labor conflict. Marginality — and unemployment — decreased due to the economic boom, the regularization of workers' rights, and the displacement of marginal workers following restructuring processes of the 1960s (De Cecco, 1972). As highlighted by the literature (Graziani, 1998; Felice, 2018), these events led to a clear increase in labor conflict, as reflected in unionization and strikes activity. After 1981, the reduction process slowed significantly, and the trend in total fatality rates reversed. A renewed increase in precarious employment, combined with the weakening of labor movements, shifted labor unions' attention to other issues, such as employment, thereby contributing to a further deterioration of workers' conditions.[69] The phenomenon was also linked to the reduction in average establishment size in industry (Figure 5.a). If in the 1960s a growing industrial structure facilitated workers' claims on various issues, including occupational health and safety—albeit with evident moments of friction (Graziani, 1998) —in the 1970s and 1980s, economic crises and restructuring processes imposed a new industrial paradigm, in which industrial districts composed of medium- and small-sized firms operating in light sectors flourished (De Cecco, 2004; 2007; Brusco, 1982).

[68] Rappa (2025) refers to this process as the "conflict trickle-down mechanism", as during this period highly unionized provinces transferred the gains of workers' struggles to less unionized provinces through collective bargaining agreements.

[69] The decrease in workers' activism is not apparent from unionization—which actually increased during the 1980s as effect of the "conflict years" (CESOS, 1991)—but is evident in strikes per worker, which plummeted during the decade. Moreover, in line with the explanation, it is interesting to notice that the new increase in fatality rates of the 1980s positively correlates with increasing inequality measured by the top 1% income trend (Guzzardi and Morelli, 2024).

Figure 3. Total fatal injury rates (compensated and non-compensated injuries) in Industry for Macroregions (1951-2001).



Source: own elaborations. Look at section 3.
Note: the industrial sectors included are: extractive, manufacturing, utilities, construction and transport sectors.

Figure 3 and Figure 6.a in the appendix show Total and Compensated macroregional fatality rates in industry for the period 1951-1991[70]. During the 1950s, fatality rates remained relatively stable across all regions, except in the North-East, where a decrease occurred. It is likely that the strong increase in average establishment size in this region could explain the observed outcome. Between 1961 and 1971, fatality rates decreased across all Italian regions, with reductions of almost 40% in northern and central regions and almost 50% In the South. In the North, the reductions were likely favored by negotiations between workers' movements and employers, while in the South, the decline was probably driven by the establishment of State-owned and large industries during the period (Graziani, 1998), where labor force was more organized and national labor contracts were more easily applied. During the 1970s, with the institutionalization of workers' struggles and the birth of social welfare, greater reductions in fatality rates occurred in the South and the Center (around 50%). It is also possible that the end of the building sector boom of the 1950s and 1960s, along with the concurrent decrease in precarious employment typical of the sector, could contribute to this outcome. In the 1980s, the rates stopped decreasing – or even increased – in the North-west, Central Italy and the South, while they stagnated in the North-east. While the stagnation in the North-East may have been driven by its industrial dimensional growth and the political activism within new local health units (USL), the increase in fatalities in other regions was likely due to the decline in economic

[70] North-west includes Piedmont, Valle D'Aosta, Lombardy and Liguria. North-east includes Veneto, Trentino-Alto Adige, Friuli-Venezia-Giulia and Emilia-Romagna. Center includes Tuscany, Umbria, Marche and Latium. South includes Campania, Abruzzo, Molise, Apulia, Basilicata, Calabria, Sicily and Sardinia.

conflict and the dismantling of the industrial structure, particularly in the South, where the State and large industries were most affected by the phenomenon.

Observing the long-time macroregional trends, we can notice an overall convergence across regions between 1951 and 1991. In 1951, the Center and North-East had fatality rates approximately 70-80% higher than those in the North-West, while the rate in the South was 180% higher, widening to 220% in 1961. By 1991, the Center and North-east had reduced their gap to 30%, and the South had reduced to 130%. All these results highlight the regional differences and developments in our key variables. In particular, marginal labor force, unionization and average establishment size in the South significantly converged to the national average during the period.

b. Empirical results

Table 1. Regression results with province fixed effects, dependent variable = Log total fatality rate in industry, provincial data (1951-1991)

Log (Total Fatality rate)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Log AES	-.28***				-.14*	-.18**	-.43***
	(.08)				(.07)	(.08)	(.08)
Precarious employment (%)		.69***			.65***		
		(.11)			(.11)		
Log Unionization			-.37***			-.34***	
			(.06)			(.06)	
Log Strikes pw				-.18***			-.15***
				(.02)			(.02)
Log Building Sector	.39***	.26***	.37***	.06	.27***	.38***	.13
	(.07)	(.07)	(.07)	(.11)	(.07)	(.07)	(.10)
Log GDPpc	-.70***	-.49***	-.65***	-.88***	-.48***	-.62***	-.88***
	(.03)	(.05)	(.03)	(.04)	(.05)	(.03)	(.04)
Log Private healthcare (%)	.13***	.08***	.06***	.04	.08***	.07***	.05*
	(.03)	(.02)	(.02)	(.03)	(.02)	(.02)	(.02)
Observations	453	453	436	360	453	436	360
R^2 adjusted	0.6801	0.6984	0.6640	0.6515	0.7007	0.6803	0.6840
Province FE	yes	yes	yes	yes	yes	yes	yes
Time (year) FE	no	no	no	no	no	no	no

Notes: All regressions are run with robust standard errors clustered at provincial level; Standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. Engines per worker are not included due to the high correlation with GDP per worker which, particularly in this specification, captures similar underlying factors.
Source: own elaborations. Look at section 3.

Table 1 shows, through different specifications, the results of the regressions with province fixed effects between our dependent variable – total fatal injury rate in industry – and different

independent variables[71]. All our main explanatory variables, average establishment size (AES) and the bargaining power variables – precarious employment rate, unionization and hours of strike per worker over the 10 previous years – are significant and impact with a considerable effect the dependent variable. Controlling for provincial characteristics but preserving the historical pattern, we find that a 10% increase in AES reduces the fatality rate by almost 3% (1). By contrast, a similar increase in marginal employment raises the fatality rate by nearly 7% (2), while a 10% increase in unionization (3) and in strikes per worker (4) lowers the fatality rate by 3.7% and 1.8%, respectively. However, when we include AES and a bargaining power variable in the same regression (5-7), we find that, in most cases, AES loses consistency and explanatory power due to the high correlation between these regressors. The share of the building sector within the overall industry also appears to be highly correlated with the historical evolution of the phenomenon. In most specifications, a 10% increase in the sectoral share is associated with a 3–4% rise in the fatality rate[72]. This is not surprising, given that the building sector was a relatively "poor" segment of the economy, characterized by a high share of marginal workers, very small average establishment size, and limited financial capacity among employers. GDP per capita is strongly negatively correlated with fatality rates, reflecting the concurrent historical patterns of "modernization" and reduction of workplace deaths. This could be also possibly linked to the historical increase in wealth and profits in the country, making clearly illegal practices unfair to the eyes of society at large. The share of private healthcare, the "institutional variable", is positively correlated to the regressand: a 10% increase in private healthcare share is associated with an approximately 1% rise in fatality rates. This finding is particularly interesting, as it suggests that the impact of governmental policies — both in the form of improved social protection measures and as a proxy for institutional presence in a province — has historically been positive with respect to the phenomenon. In summary, from a historical perspective, increases in workers' bargaining power, along with the role of the building sector and modernization, appear to be the most important factors explaining the decline in fatality rates, consistent with the historical evidence on the Italian case reported in the literature.

[71] Table 1.a in the appendix shows the same specifications with compensated fatality rates as dependent variable.
[72] Let us notice that the insignificant results of specifications 4-7 are probably given by the exclusion of observations from year 1951.

Table 2. Regression results with province and time fixed effects, dependent variable = Log total fatality rate in industry, provincial data (1951-1991)

Log (Total Fatality rate)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log AES	-.54*** (.07)				-.46*** (.08)	-.59*** (.10)	-.52*** (.09)	-.56*** (.09)	-.64*** (.09)
Precarious employment (%)		.46*** (.11)			.25** (.10)	.15 (.12)			
Log Unionization			-.22*** (.08)				-.017 (.09)	-.10 (.10)	
Log Strikes per worker				-.10*** (.04)					-.05* (.03)
Log Building Sector	.18** (.07)	.13* (.07)	.20*** (.07)	.003 (.10)	.16** (.07)	.14 (.09)	.18** (.07)	.14 (.08)	.08 (.10)
Log GDPpc	-.17 (.11)	-.23* (.13)	-.37*** (.12)	-.56*** (.19)	-.07 (.12)	-.14 (.15)	-.16 (.11)	-.19 (.14)	-.16 (.18)
Log Private healthcare share (%)	.018 (.02)	.015 (.02)	.017 (.02)	.019 (.03)	.015 (.02)	.06 (.04)	.017 (.02)	.04 (.05)	.011 (.02)
Log Engines per worker						.12*** (.03)		.14*** (.03)	
Observations	453	453	436	360	453	362	436	348	360
R^2 adjusted	0.7623	0.7395	0.6924	0.6548	0.7778	0.7582	0.7671	0.7399	0.73
Province FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Time (year) FE	yes	yes	yes	yes	yes	yes	yes	yes	yes

Notes: All regressions are run with robust standard errors clustered at provincial level; Standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.
Source: own elaborations. Look at section 3.

Table 2 presents the results of the same model specifications exposed in table 1, now including both province and time fixed effects and adding two new specifications with engines per worker as explanatory variable[73]. Excluding time-specific characteristics allows us to assess whether an "unexpected" increase in the explanatory variables — relative to the historical pattern — was associated with fatality rates, providing a clearer view of potential causal relationships. All our main explanatory variables are highly correlated with the dependent variable, exhibiting the expected signs and statistical significance (1–4). It is noteworthy that establishment size, in particular, gains explanatory power, indicating that the industrial structure played a crucial role in shaping provincial disparities in fatality rates. Including both bargaining power variables and AES in the regressions (5–9) results in a weakening of the significance of the former, reflecting again the high correlation between these variables. The technological variable – engines per worker – is clearly positively correlated with the dependent variable, suggesting that the use of

[73] Table 2.a. in the appendix show the same specifications with Compensated fatality rates as dependent variable.

machinery can increase fatalities in manufacturing, thereby confirming a "Taylorization effect" on the phenomenon. A 10% increase in the number of engines per worker is estimated to raise workplace fatality rates by approximately 1.2% to 1.4%. The other controls, instead, show less clear results in this case. GDP per capita and building sector exert, respectively, negative and positive influence on fatality rates, although the magnitude of their effects and significance varies across specifications. However, let us notice that, in this case, GDP per capita is shadowed by AES, which better describes sectoral fluctuations than GDP. In the end, the institutional variable shows no significant correlation with the dependent variable.

Considering the high correlation between average establishment size and all the bargaining power variables at the provincial level, using composite indexes that combine these factors could enhance the robustness of the framework. Table 3 shows the results of the relation – with fixed effects and controls – between fatality rates and two indexes – Activism index A and B – ranging from 0 to 1[74]. The first index, "Activism rate A", include the variables AES, precarious employment and unionization rate normalized over the whole period and divided by three. The second index, "Activism rate B", includes also hours of strike per worker. The historical evolution of the indexes for Italy and macroregions are shown in Figure 7.a and 8.a in the appendix. The results generally confirm the evidence highlighted in table 1 and 2. Considering only province fixed effects, a 1-point increase in Activism rate A decreases fatality rate by 0.88%, while a 1-point increase in Activism rate B decreases fatality rates by 1.2%. Taking into account both fixed effects, the effects of the indexes slightly decrease but remain very significant, thereby suggesting that considering AES and the bargaining power variables together improve – analytically and historically – our understanding of the phenomenon.

[74] Table 3.a. in the appendix show the same specifications with Compensated fatality rates as dependent variable.

Table 3. Regression results with province and time fixed effects, dependent variable = Log total fatality rate in industry (1951-1991)

Log (Total Fatality rate)	(1)	(2)	(3)	(4)	(5)
Activism index A	-.88***		-.74***	-.94***	
	(.11)		(.11)	(.15)	
Activism index B		-1.20***			-.85***
		(.16)			(.15)
Log Building Sector	.31***	.24**	.16**	.10	.04
	(.07)	(.10)	(.07)	(.09)	(.10)
Log GDPpc	-.54***	-.61***	-.15	-.14	-.34*
	(.04)	(.06)	(.12)	(.15)	(.18)
Log Private healthcare share (%)	.07***	.044*	.013	.033	.021
	(.02)	(.02)	(.02)	(.04)	(.02)
Log Engines per worker				.10***	
				(.03)	
Observations	436	348	436	348	348
R^2 adjusted	0.7104	0.6794	0.7617	0.7630	0.7132
Province FE	yes	yes	yes	yes	yes
Time (year) FE	no	no	yes	yes	yes

Notes: All regressions are run with robust standard errors clustered at provincial level; Standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively; Activism index A includes AES, precarious employment and unionization rate, Activism index B includes AES, precarious employment, unionization rate and hours of strike per worker.

Source: own elaborations. Look at section 3.

The empirical section has shown how the variables suggested by the historical evidence are able to explain the reduction in fatality rates occurred in Italian industry during the post-war period. Unfortunately, considering the historical coevolution of provincial industrial structure and workers' bargaining power, it is very difficult to disentangle the effect of one variable or the other on the phenomenon. However, it can be argued that both factors probably had a certain impact. While the increase in workers' bargaining power– common to all the provinces – historically drove the improvements in OHS standards and labor rights, the provincial industrial structure may better explain the adoption of such measures at the provincial level, as employer resistance was lower in areas where the impact of rising labor costs could be more easily absorbed[75]. It can be argued, indeed, that national regulations and contracts were more likely respected in areas where big establishments were present. However, in the long run, the role of the centralized wage bargaining probably played an important role in the adoption of OHS standards and better working conditions in provinces dominated by small local units (Rappa, 2025). The sectoral composition of the province also appears to play an important role in

[75] It is interesting to note that among the variables capturing workers' bargaining power, the one that best fits the relationships observed is precarious employment. This variable likely reflects more accurately the real forces at play in the labor market, as unionization and strike activity are partly mediated by the political context and do not necessarily mirror workers' concern for OHS. Moreover, while strikes per worker and the unionization rate refer to the entire working population (see Section 3), the measure of precarious employment pertains only to industrial sectors, making it a more precise indicator.

determining fatality rates, whereas other control variables are more context dependent. The analysis of the joint indexes (table 3) confirms the results.

5. Conclusion

This paper suggests, through historical and empirical analysis, that occupational health and safety issues can be integrated into the framework of income distribution dynamics. The Italian case in the post-war period (1951–1991) is particularly revealing for observing these dynamics, as institutions were either unable or unwilling to enforce workplace safety and health measures, thereby leaving the matter to free negotiation between workers and entrepreneurs. Marginality, unemployment, and precarious living conditions among the working class declined during the 1960s, fueling strong worker activism around wages and workplace conditions, particularly after 1969. At the same time, industrial complexity and profit margins reached historical highs in the country, giving employers the financial capacity to agree to improvements in working conditions. The combination of these factors led to a significant decrease in workplace fatality rates from the mid-1960s to the early 1980s. Moreover, the expansion of social welfare and the institutionalization of workers' struggles in the 1970s further reduced marginality in poorer regions, fostering a convergence in safety outcomes that persisted until the mid-1980s. During the 1970s and 1980s, the Italian industrial structure began to collapse, along with union activism and occupational protections, thus halting the process of reducing fatalities — a situation that persists to this day similarly replicating income inequality outcomes. During the 1990s, indeed, the protection of workers was increasingly delegated to institutions and regulations which, unfortunately, proved sufficient only for preserving existing rights rather than advancing occupational safety or further reducing fatality rates (Carnevale, 2017).

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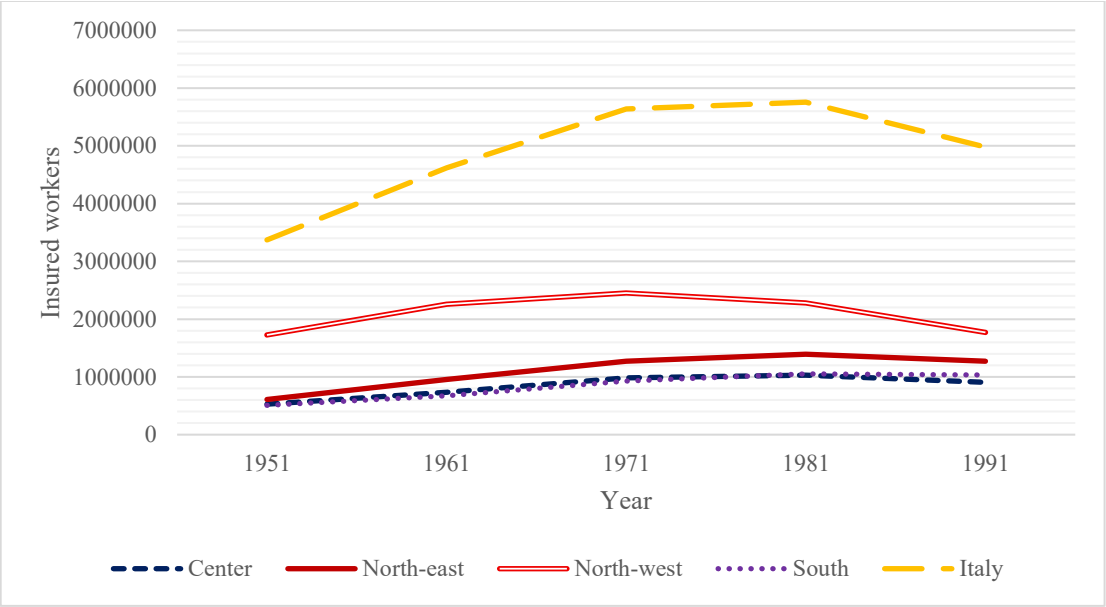
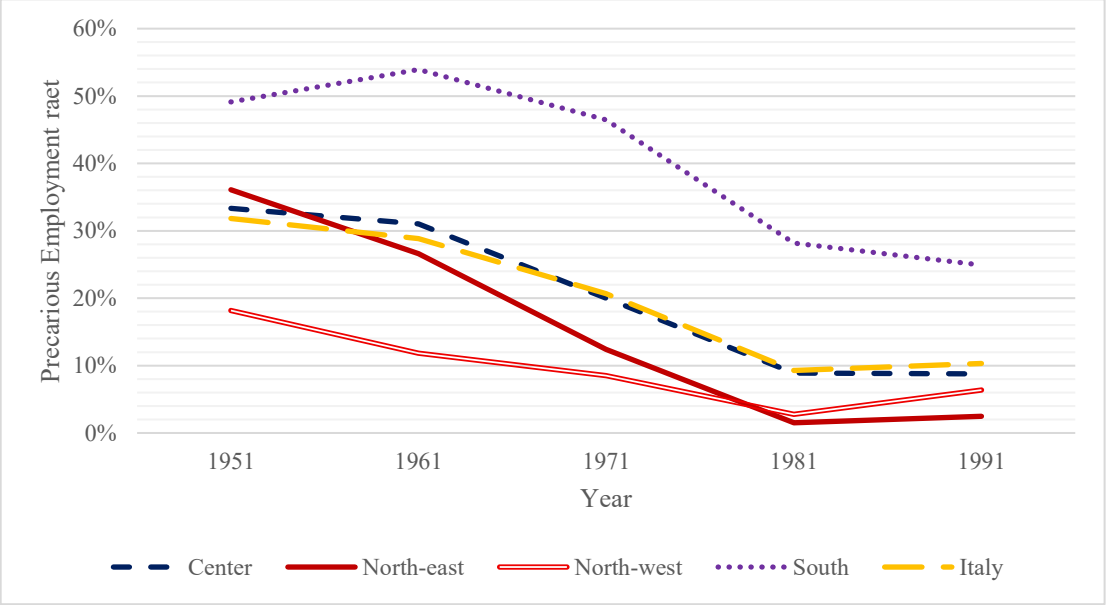
Appendix

Figure 1.a. Insured workers in Industry for Italy and Macroregions (1951-1991)



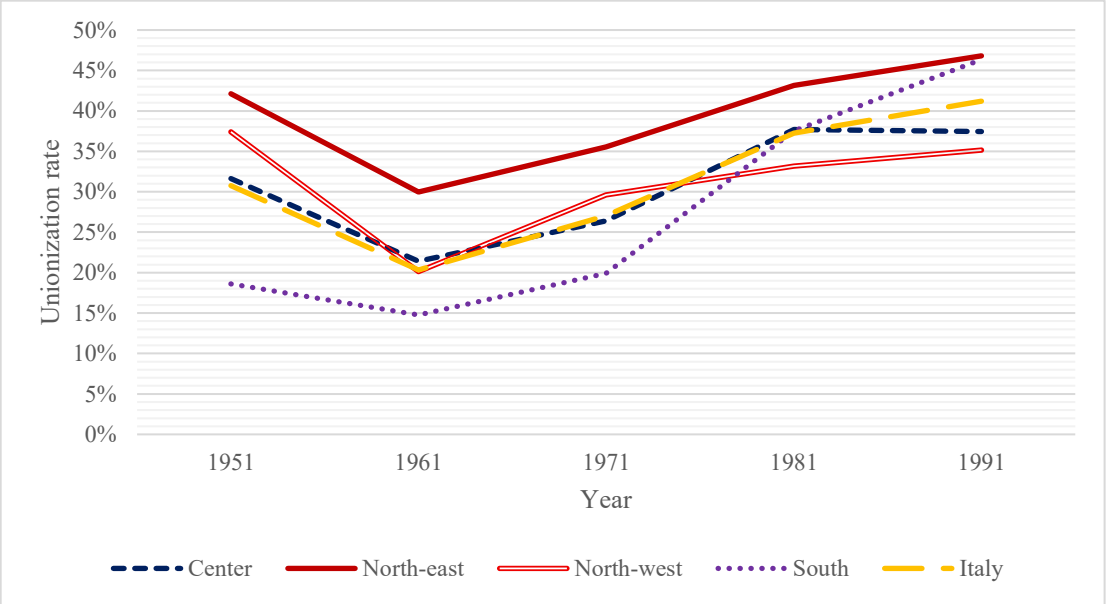
Source: own elaborations from the industrial censuses. Look at section 3.
Note: Insured workers include dependent workers, apprentices, helpers and artisans. The industrial sectors included are: extractive, manufacturing, utilities, construction and transport sectors.

Figure 2.a. Industrial Precarious employment rates in Italy and Macroregions, 1951-1991.



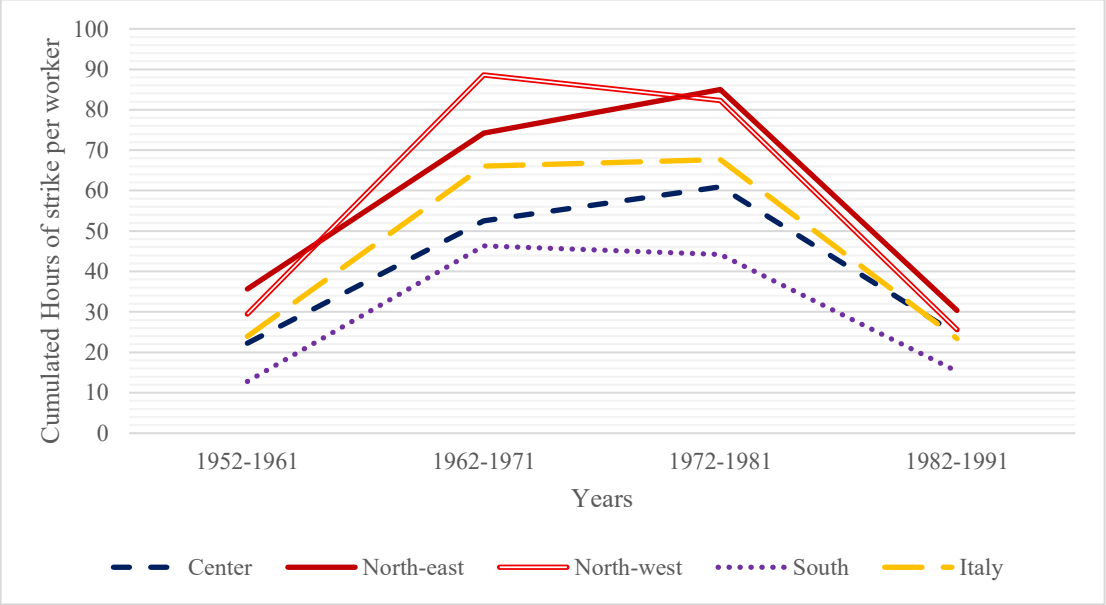
Source: own elaborations. Look at section 3.
Note: Precarious Employment rate is computed as the marginal workforce over total workforce in the industrial sectors of interest.

Figure 3.a. Unionization rate for Italy and Macroregions, 1951-1991.



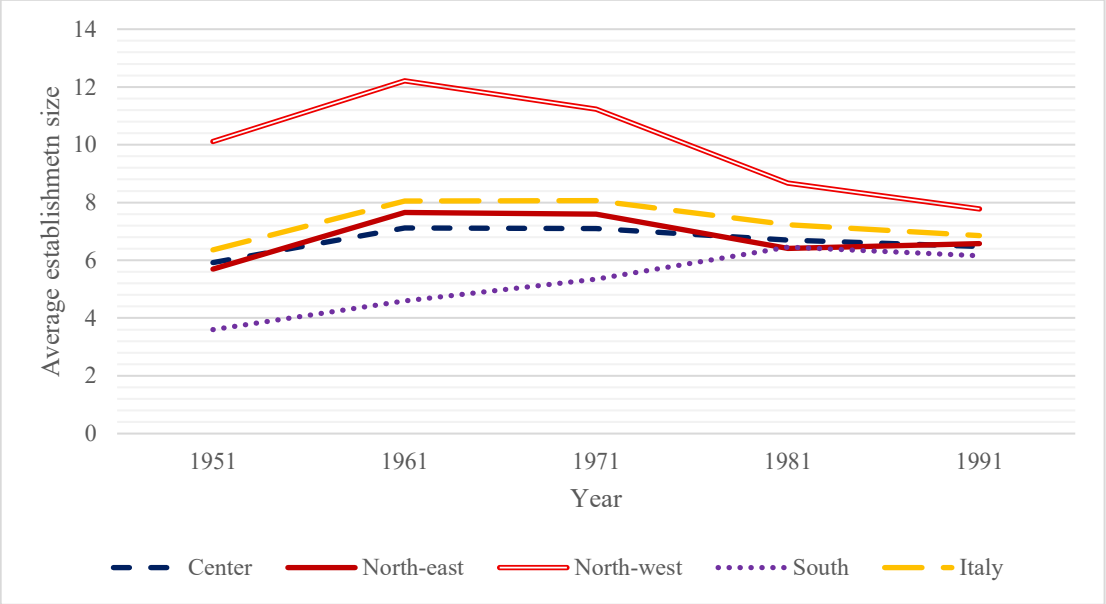
Source: own elaborations. Look at section 3.

Figure 4.a. Hours of strike per worker (10 years cumulated) for Italy and Macroregions, 1951-1991.



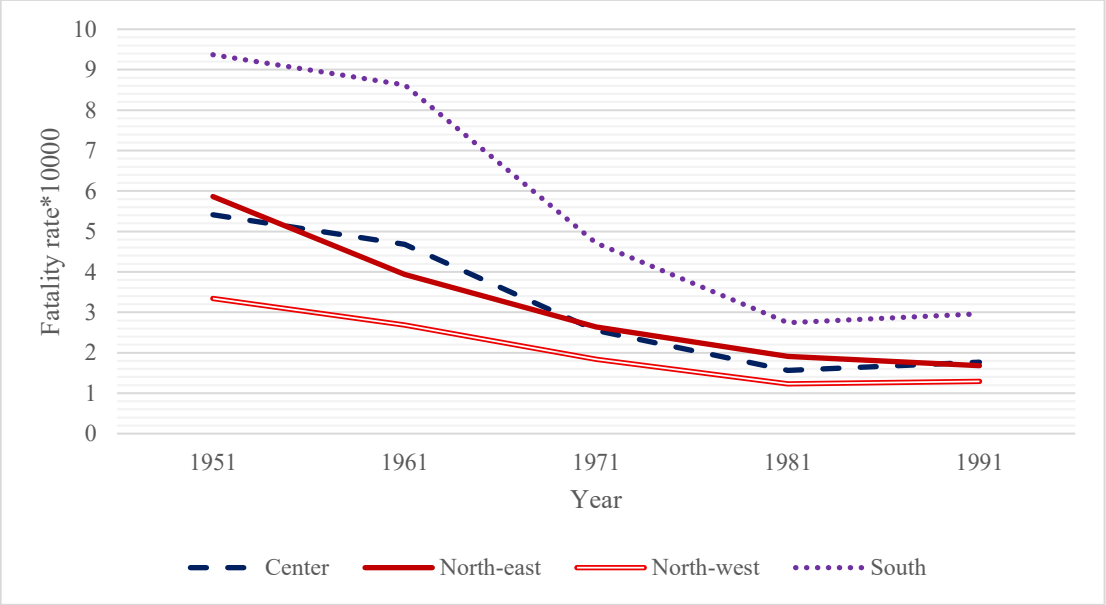
Source: own elaborations. Look at section 3.

Figure 5.a. Average establishment size in industry for Italy and Macroregions, 1951-1991.



Source: own elaborations. Look at section 3.
Note: Average establishment size is computed as the number of workers per local unit.

Fig. 6.a. Compensated fatal injury rates in Industry for Italy and Macroregions (1951-1991)



Source: own elaborations. Look at section 3.
Note: the industrial sectors included are: extractive, manufacturing, utilities, construction and transport sectors.

Table 1.a Regression results with province fixed effects, dependent variable = Log Fatality rate with compensation in industry, provincial data (1951-1991)

Log (Compensation Fatality rate)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log (AES)	**-.26*** **				-.15*	-.19*	-.39***
	(.09)				(.08)	(.10)	(.10)
Precarious employment (%)		**.58*** **			.54***		
		(.11)			(.11)		
Log (Unionization)			-.26***			-.23***	
			(.06)			(.06)	
Log (Strikes pw)				-.13***			-.10***
				(.02)			(.02)
Log (Building Sector)	.35***	.24***	.33***	.06	**.25*** **	**.34*** **	.12
	(.08)	(.08)	(.08)	(.10)	**(.08)**	**(.08)**	(.10)
Log (GDPpc)	-.73***	-.56***	-.70***	-.85***	-.55***	-.67***	-.85***
	(.03)	(.05)	(.03)	(.04)	(.05)	(.03)	(.04)
Log Private healthcare (%)	.09***	.05**	.04*	.03	.05**	.05**	.04
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
Observations	453	453	436	360	453	436	360
R^2 adjusted	0.6937	0.7169	0.6791	0.6315	0.7190	0.6960	0.6700
Province FE	yes	yes	yes	yes	yes	yes	yes
Time (year) FE	no	no	no	no	no	no	no

Notes: All regressions are run with robust standard errors clustered at provincial level; Standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.
Source: own elaborations. Look at section 3.

Table 2.a Regression results with province and time fixed effects, dependent variable = Log Fatality rate with compensation in industry, provincial data (1951-1991)

Log (Total Fatality rate)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Log (AES)	-.49***				-.40***	-.61***	-.50***	-.60***	-.57***
	(.09)				(.09)	(.11)	(.10)	(.11)	(.11)
Precarious employment (%)		.46***			.27**	.17			
		(.12)			(.12)	(.14)			
Log (Unionization)			-.15**				.04	-.07	
			(.08)				(.09)	(.11)	
Log (Strikes per worker)				-.08**					-.03
				(.04)					(.03)
Log (Building Sector)	**.21** **	**.16***	.22**	.02	**.19** **	**.18***	.20**	.18*	.09
	(.08)	**(.08)**	(.09)	(.11)	**(.08)**	**(.10)**	(.08)	(.10)	(.11)
Log (GDPpc)	-.19	-.23*	-.40***	-.46**	-.09	-.19	-.20	-.25	-.10
	(.13)	(.13)	(.14)	(.21)	(.13)	(.16)	(.13)	(.17)	(.20)
Log Private healthcare share (%)	.004	.001	.004	.014	.001	.01	.003	-.003	.007
	(.02)	(.02)	(.02)	(.02)	(.02)	(.03)	(.02)	(.04)	(.02)
Log Engines per worker						.14***		.16***	
						(.03)		(.04)	
Observations	453	453	436	360	453	362	436	348	360
R^2 adjusted	0.7234	0.7230	0.6699	0.5891	0.7468	0.7139	0.7263	0.6879	0.6565
Province FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Time (year) FE	yes	yes	yes	yes	yes	yes	yes	yes	yes

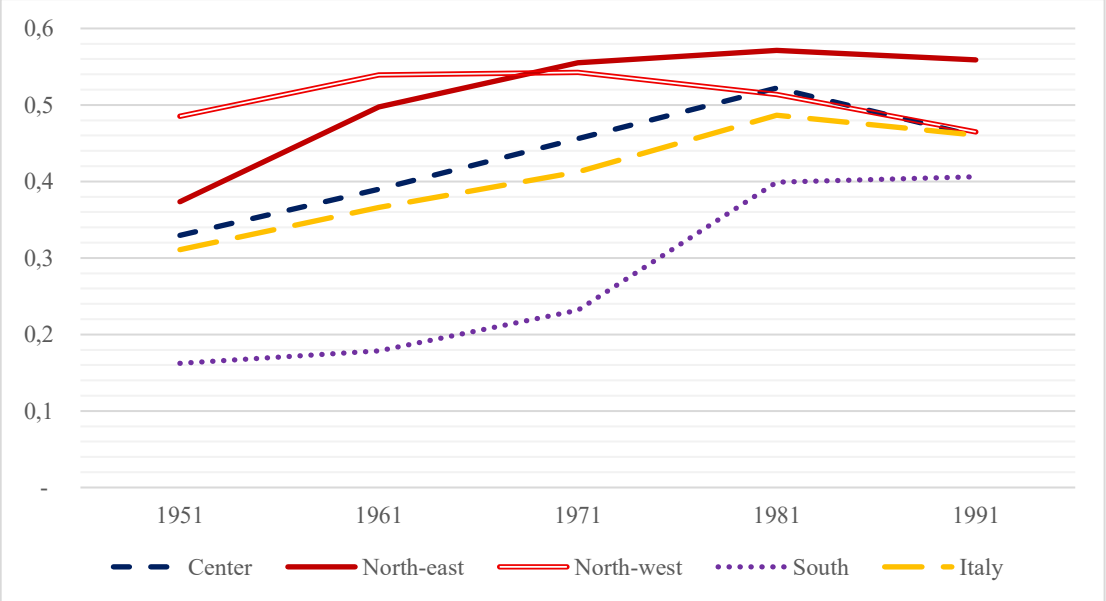
Notes: All regressions are run with robust standard errors clustered at provincial level; Standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.
Source: own elaborations. Look at section 3.

Table 3.a Regression results with province and time fixed effects, dependent variable = Log total fatality rate in industry, provincial data (1951-1991)

Log (Fatality rate with compensation)	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Activism rate A	-.68*** (.13)		**-.61***** **(.14)**	-.92*** (.18)	
Acrivism rate B		-.86*** (.17)			-.66*** (.17)
Log Building Sector	**.28***** **(.08)**	**.18*** **(.11)**	.19** (.08)	.14 (.10)	.05 (.11)
Log GDPpc	-.61*** (.047)	-.66*** (.05)	-.21 (.13)	-.22 (.17)	-.29 (.20)
Log Private healthcare share (%)	.048** (.02)	.034 (.02)	.0003 (.023)	-.013 (.04)	.014 (.025)
Log Engines per worker				.13*** (.04)	
Observations	436	348	436	348	348
R^2 adjusted	0.7207	0.6733	0.7295	0.7254	0.6535
Province FE	yes	yes	yes	yes	yes
Time (year) FE	no	no	yes	yes	yes

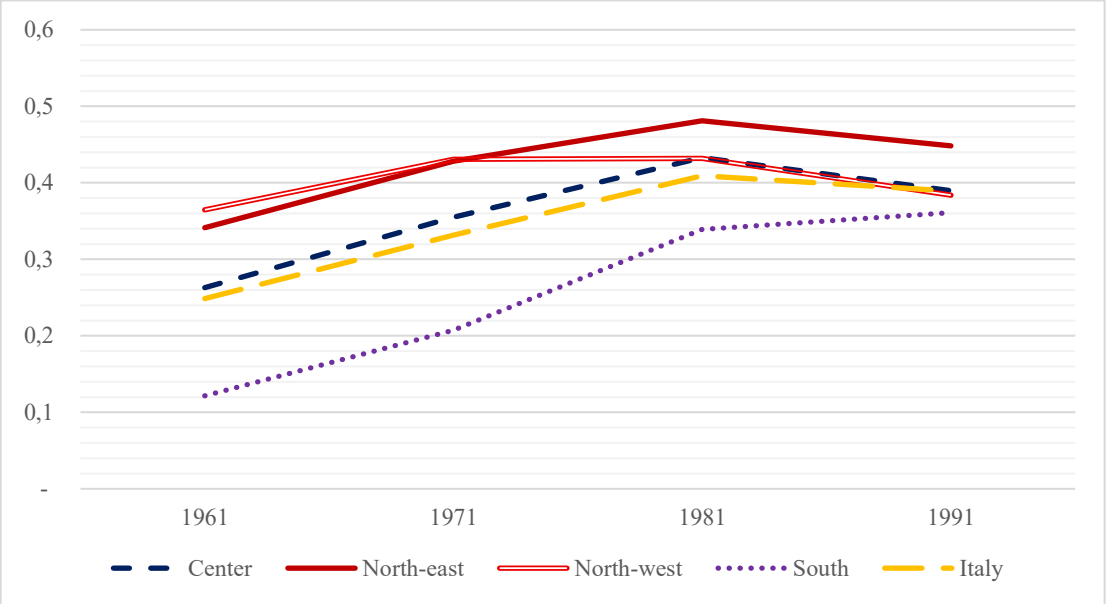
Notes: All regressions are run with robust standard errors clustered at provincial level; Standard errors are in parentheses below the results; ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively. Activism index A includes AES, precarious employment and unionization rate, Activism index B includes AES, precarious employment, unionization rate and hours of strike per worker.
Source: own elaborations. Look at section 3.

Fig. 7.a. Activism index A for Italy and Macroregions (1951-1991)



Source: own elaborations on the reconstructed variables described in section 3. The Activism index A includes average establishment size, precarious employment and unionization rate normalized over the whole period and divided by three.
Note: the industrial sectors included are: extractive, manufacturing, utilities, construction and transport.

Fig. 8.a. Activism index B for Italy and Macroregions (1951-1991)



Source: own elaborations on the reconstructed variables described in section 3. The Activism index B includes average establishment size, precarious employment, unionization rate and cumulated hours of strikes per worker (10 previous years) normalized over the whole period and divided by four.
Note: the industrial sectors included are: extractive, manufacturing, utilities, construction and transport.

Conclusions

As evident from all the essays comprising this thesis, post-WWII Italy was characterized by a chaotic growth and distribution path. The general lack of government intervention in labor relations and income distribution led to alternating phases of wage restraint and surges in workers' claims, with the period from the early 1960s to the late 1970s representing the central focus of the post-war distributive and political struggle. As a matter of fact, except for a brief period in the early 1960s — with the so-called *Programmazione* attempt — the government made no effort to expand regulations, coordinate social actors, or develop the welfare state, all necessary elements to accompany phases of strong economic growth where, as shown by Eichengreen (2006) for other European countries, a democratic counterbalance to markets is fundamental. According to this picture, we could argue that the unemployment dynamics, essentially shaping the relative forces of workers and employers in labor markets, determined the long-term income distribution and main economic events of Italian post-WWII history.

Within this framework, the thesis has studied various aspects of the historical relationship linking labor relations, income distribution, macroeconomic phenomena, and institutional arrangements during this period. The first essay fundamentally poses the basis for the other chapters, as it aims at reconstructing the history of income inequality during the Golden Age, recomposing a long-term picture for the Italian income distribution. The second essay examines the consequences of the unbalanced income distribution of the Golden Age for inflation, a phenomenon that would become central to the economic history of the 1970s and 1980s. In this essay, the provincial-level analysis becomes central, as the distinctive egalitarian spirit of Italian trade unions — rooted in ideological and institutional factors — played a crucial role in shaping the phenomenon. The third essay explores the evolution of the informal economy in the post–WWII period, an aspect often overlooked in economic history, yet closely linked to — and enriching our understanding of — the development of income distribution, labor relations, and economic growth. Indeed, the lack of government effort in tax regulation and collection facilitated the expansion of the informal economy, which surreptitiously redistributed resources from marginal workers — and employees in general — to employers, while also distorting the industrial structure (Di Martino and Vasta, 2018). Although the results remain preliminary, it is evident that this distinctive configuration of the Italian economy could significantly influence its long-term development trajectories. Finally, the fourth essay analyzes Occupational Health and Safety (OHS) in industry during the post–WWII period, another aspect often overlooked in economic history, yet closely intertwined with the evolution of labor relations and income distribution. Indeed, as an additional consequence of Italy's unregulated growth path, OHS was largely neglected in industrial relations during the Golden Age, generating significant social issues that were addressed only in the 1970s. Here again, the provincial-level analysis proves

pivotal, as it allows us to examine how different socio-economic environments produced varied outcomes in this regard.

To conclude, despite its importance, this thesis does not directly address the crucial historical link between income distribution, growth, and long-term development, thereby constituting a sort of "missing chapter." As discussed above, the unregulated growth and distribution path of the Golden Age (1950s-1960s) produced significant economic and social imbalances that ultimately hampered the development of the Italian economy (Rossi and Toniolo, 1996; Graziani, 1998). When labor movements were finally able to advocate for substantial redistribution in the 1970s — bringing clear benefits such as lower inequality, greater regional convergence, higher wages, and better workplace safety — the intense distributive conflict prompted a strong reaction within Italian capitalism. Indeed, the high inflation and the gradual decline of high value-added sectors experienced during the 1970s and the 1980s were both consequences of the intensified confrontation between social classes in the country. Together with the concurrent international crises of the 1970s, these factors fundamentally transformed the industrial structure, leading to the emergence of light industry as the dominant development paradigm. These sectors, mainly focused on exporting low-value-added goods and relying on low production costs and cheap labor as competitive tools, required a new phase of moderation in wages and workers' rights during the 1980s and 1990s. Thus, the new sectoral specialization ultimately transformed Italy into a predominantly stagnant economy, in which productivity growth and innovation lagged significantly behind international competitors. In a nutshell, as argued by Cesaratto and Zezza (2019), income distribution was the true focal center of Italy's post-war growth trajectory, which initially impressed the world during the "economic miracle" (1958–1963) but soon stagnated as distributive tensions surfaced.

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