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Is working enough? A study on low-paid workers in Italy.

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Is working enough?
A study on low-paid workers in Italy.

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Is working enough? A study on low-paid workers in Italy*

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Abstract

The paper adopts workers' administrative records to study the low-pay phenomenon in Italy between 1990 and 2017. We compute different indicators, in particular a relative measure (threshold set at 0.6 of the median of yearly and monthly labour earnings) jointly with an absolute measure based on absolute poverty thresholds for single individuals. Then, we study the determinants of low-pay with a descriptive regression framework. Finally, we verify the possible role of the labour market de-regulation reforms in shaping low-pay dynamics. The main results are the increasing trend of low-pay incidence between 1990 and 2017 and the growing role of low-pay persistence from 2000 up to 2017.

Keywords: Labour market ; Low-pay ; Wages ; Poverty ; Persistence

JEL : J3, J6, I3

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Introduction

Is being employed a sufficient condition to avoid poverty? When we talk about household or individual poverty it is usually assumed that it derives from the lack of work; however, in recent years, a growing number of economics and sociology studies has shown that even those who are employed risk falling into poverty due to their particularly low income from work (Lucifora et al., 2005; Maître et al., 2012). The low-pay concept adopted in this study is related to the question of whether labour remuneration is enough to guarantee an adequate living standard for a single individual, or in other words whether the remuneration capacity of the labour market can sufficiently sustain the needs of those who participate in it.

As suggested by Lucifora (1997), some economic views consider low wages as a false problem, since, according to marginalist theory, wages correspond to differences in marginal productivity and even their low level is a result of an efficient market mechanism. However, this vision does not take into account the additional consequences of this phenomenon: first of all, an increase in the number of low-paid workers coupled with a surge in wage inequality may pose relevant questions on the labour market equity; secondly, those who are considered low-paid would be more vulnerable in terms of household poverty; finally, public policies are involved, because a labour market that generates low-paid workers may cause an increase in the public expenses on other sort of transfers and, more importantly, the consequences of an intermittent or low-remunerated working career on social security expenses are serious. This topic is particularly relevant in Italy, a country in which, according to the Eurostat in-work poverty indicator, 11.8% of workers were working poor in 2019, almost 3 percentage points lower with respect to the European average.[1] Moreover, Italy is also interesting in regard to the major changes occurred to the structure of its labour market institutions in the last thirty years.

Earning a low-wage does not automatically imply a condition of disadvantage for the household in which an individual lives. Many studies have focused on the relationship between a condition of low-pay and household poverty underlining its weakness (Nolan and Marx, 2000; Brandolini et al., 2002; Andreß and Lohmann, 2008). However, in most of these studies part-time workers are excluded from the analysis, while in this article workers are defined as individuals who earn

[1] As explained in the following, the indicator adopted in this study is intrinsically different from the Eurostat one.

a positive yearly labour income.[2] The low-pay status may be due both to low wages and to what Fraser et al. (2011) define as low labour force attachment; for example part-time workers, underemployed workers (defined as individuals who would like to work more), as well as individuals, usually women, who cannot or are not willing to work more due the presence of children in the household.[3] Therefore, we use a definition of low-pay that includes a larger group of individuals, those who have a reduced labour attachment. In particular, three different indicators are adopted. The main one is the yearly relative low-pay, which defines as low-paid workers those who earn less than 60% of the national median in a working year. The second consists in an absolute indicator, in which the workers' individual yearly labour earnings are compared with an individual threshold that depends on the standard of living. Finally, the third indicator is the monthly relative low-pay incidence.

This paper is divided in two parts: the first aims at offering a descriptive study on the low-pay evolution in Italy during the last three decades and its determinants in the most recent years, while the second one aims at studying the low-pay dynamics with a focus on the early career trajectories of different cohorts. While the paper contribution to the literature is mainly descriptive, we nonetheless believe it is important for academic and policy debates. Firstly, the use of the administrative dataset which encompasses all private-sector Italian workers provides a complete overview of the phenomenon. Secondly, we provide a comparison of low-pay measurement and determinants with relative and absolute indicators, that help to capture different economic concepts and mechanisms, the extent of the low-pay phenomenon and the contribution of labour remuneration to achieve decent living standards. Finally, the opportunity given by the dataset to study the evolution of low-pay persistence by cohort constitutes a novelty in the related literature.

The paper is inspired and follows the related works by Lucifora (1997), Brandolini et al. (2002), Raitano et al. (2019) who, in different points in time and with various indicators, depict the low-pay tendencies in Italy. The paper inserts itself into the literature on methodological measurement of low-pay (Fraser et al., 2011; Ponthieux, 2010a; Filandri and Struffolino, 2019) and on the one about labour market segmentation (Eichhorst et al., 2017; Liotti, 2020) since the status of low-paid workers is a form of segmentation (division between secure and insecure jobs) that may interact with other factors such as gender, age or type of contract. Moreover, the contribution on early-career

[2]Even though tighter definitions are also provided (more months worked during the year as a requirement).
[3]The percentage of involuntary part-time in Italy is the highest among OECD countries.

low-pay persistence is inserted in the literature on low-pay dynamics (Cappellari, 2007), young careers prospects (Naticchioni et al., 2016), and side labour market reforms' effects (Struffolino and Raitano, 2020; Barbieri and Scherer, 2009).

The paper is organized as follows. In Section 1, we describe the related literature and the Italian institutional and structural background, in Section 2, we discuss the various low-pay indicators and our chosen methodologies are displayed. Section 3 illustrates the findings of the first part of the empirical analysis on the low-pay measurement and its determinants. Section 4 includes the study on low-pay dynamics at an early-stage of the career. Finally, concluding remarks are provided.

1 Institutional and structural background

The evolution of wage inequality has been thoroughly debated in the economic literature since the Western economies have seen a surge in wage inequality in the last decades (Blau and Kahn, 1996; Acemoglu and Autor, 2011). As explained by Katz et al. (1999) and Lemieux (2008), there are both institutional and demand-side explanations for any change in inequality.

Job polarization, i.e. the rise of both high and low-skilled employment at the expense of medium-skilled employment, has been investigated as the main reason for the increase in inequality. The literature has been divided in identifying the source of job polarization, in the 90s the main hypothesis was the one of the skill-biased technological change (Bound and Johnson, 1992), while in the 00s the routinization hypothesis rose strongly thanks to the contributions by Autor et al. (2003), Goos and Manning (2007) and Autor et al. (2006). An additional but less analyzed channel sees globalization in general, and offshoring in particular, as an important source of change in the wage and job structure, as described by Blinder (2009).[4] Finally, an interpretation that links job polarization to wage inequality is the one claiming that an increase in the share of income of the rich may lead to an increase in the demand for low-skill workers whose jobs consist of providing services to the rich (Mazzolari and Ragusa, 2013).

Another strand of literature focuses on the role of labour market institutions in shaping the wage inequality and distribution (DiNardo et al., 1996; Fortin and Lemieux, 1997; Blau and Kahn, 1999). This literature has developed in recent years as European countries have undergone significant changes in their labour market structure, following the economic idea that greater flexibility,

[4]On the impact of the flow of immigrants on the employment structure in Europe, see D'Amuri and Peri (2014).

especially in wage setting, reduces the unemployment.[5] Although, as suggested by Salverda and Checchi (2015), it not easy to precisely describe what labour market institutions are, the literature usually covers the topics of wage-setting rules, collective bargaining, minimum wage and union density. The work by Blau and Kahn (1999) shows empirically that centralized collective bargaining, minimum wages and antidiscrimination policies raise the relative wages of the low paid. The paper by DiNardo and Lemieux (1997) shows also a significant role of union density in shaping the difference in wage inequality between US and Canada.[6] The work by Fitzenberger et al. (2013) disentangles the effect of collective bargaining and unions in Germany. The recent works by Cengiz et al. (2019) on US and Dustmann et al. (2022) on Germany, find that establishing a minimum wage has a positive impact on the lowest part of the earnings distribution.

The link between demand-side as well as institutional factors and the phenomenon of low-pay is clear. The effect of structural change between sectors (Bárány and Siegel, 2018) has shifted from Fordist to post-Fordist modes of production, resulting in the increase of the demand for service sector jobs. Furthermore, the job and wage polarization due to the routine-biased within-sector technological change leads to an increase in low-skilled and low-paid employment. Therefore, the median wage is certainly affected by these changes and so is the low-pay incidence, which is expected to rise. Moreover, labour market institutions such as collective bargaining, minimum wages and union density have a recognized reducing effect on the number of workers who are low-paid or poor. The role of labour market regulation, for example spreading non-standard work such as part-time jobs, is also not negligible. Indeed, if in the 90s rigid European labour markets prevented the earnings distribution from widening at the expense of an increasing rate of unemployment, more recently the de-regulation and flexibilization reforms have had an important role in explaining the increase of wage inequality.

1.1 The Italian context

In this paragraph, we initially provide a brief overview of the main economic facts connected to the Italian labour market and then we describe the structural and institutional changes in Italy. In the last decades, the Italian development has followed the same path as other major European countries,

[5] See Boeri (2011) for a complete coverage of the reduction in employment protection legislation (EPL) process in Europe.

[6] Another relevant contribution is the one by Card (1996).

for instance, at the beginning of the last decade Italy had to face a serious economic and financial crisis related to its sovereign debt, nonetheless the Italian context presents some peculiarities. Indeed, the level of employment in Italy is significantly lower with respect to European Union averages (about 10 percentage points lower than the average). As shown in Figure 1, the total employment rate has risen from 54% in 1990 to 58% in 2017, with two opposite trends in the men's and women's employment (respectively decreasing and increasing), even though the issue of women employment still remains one of the most important in Italy (with a gap of about 20% in 2017).[7] Other characteristics of the Italian labour market are the increasing youth unemployment and more generally a deterioration of the young workers' labour conditions, discussed by several works such as Naticchioni et al. (2016) and Bianchi and Paradisi (2021). The paper by Brandolini et al. (2018) focuses on the growing relevance of foreign-born workers, studied deeply also by Bonifazi and Marini (2014). As argued by Andreß and Lohmann (2008), the supply of low-paid jobs have met a certain demand that could be related to discriminatory practices, and therefore it is crucial to study this phenomenon along with the more recent demographic changes occurred in a country.

Regarding the role of demand-side changes, the seminal work by Goos et al. (2009) presents Italy as a country in which the job polarization occurred due to modifications in the highest part of the job distribution rather than in the middle and lowest, questioning whether the routine-biased technological change hypothesis would hold in this country.[8] Basso (2020) shows mixed evidence: middle-pay jobs have declined and all the employment growth has been among low-pay, however middle-class wages have not declined, differently from as opposed to the US. Indeed, Vannutelli et al. (2021) find empirically evidence even on wage polarization. Other papers, such as Intraligi et al. (2021) study the reasons behind the decrease in middle-class jobs, underlining that it does not exclusively depend on the reduction in the relevance of the manufacturing sector (due to technology, international trade or import competition from China) but also depends on job polarization within sectors since a greater relative importance of low and high class jobs is also found in the rising service sector. Similarly, Brunetti et al. (2020) show that in Italy specialization in routine-tasks significantly leads to a higher growth in the employment shares of low-skill occupations.

Next, we discuss the Italian labour market institutions. Wages, in Italy, are set after collective

[7]For a long-run study on women employment in Italy and other Western economies, see Olivetti and Petrongolo (2016). For recent studies analyzing the gender wage gap in Italy as well as recent reforms which aim to foster the women employment, see Casarico and Lattanzio (2019) and Rubolino (2021). Both the mentioned articles use the same administrative archives adopted in this study.

[8]Indeed, the paper by Olivieri (2012) sustains that in Italy there has not been an employment polarization.

bargaining and there is not any minimum wage scheme (if not within the terms of the collective agreement). The collective agreements are set between trade unions and employer organizations at the sectoral and at the firm or sometimes local level (two-tier structure, introduced by the "Giugni" agreement in July 1994) where sector-level bargaining has the goal of keeping wages' purchasing power while firm-level bargaining aims at redistributing productivity gains. However, as explained by Brandolini et al. (2002), although an independent firm (outside the employers' association) may always pay lower wages than the contractual ones, the national minima are adopted by courts as a "yardstick". As a result of the structure of the Italian collective bargaining, the total number of national collective agreements currently registered at National Council of Economics and Labor (CNEL) has almost tripled between 2005 and 2019 (from fewer than 300 agreements to almost 900). This phenomenon is related to the spread of the so called "pirate" agreements signed by non-representative workers' unions or employers' associations. Lucifora and Vigani (2021) find that non-representative agreements are associated with significant wage penalties. Moreover, Garnero (2018) shows that the non-compliance to collective agreements is not negligible: around 10% of workers are paid 20% less than the minimum wage established in their reference collective agreement.

In terms of labour market regulation, Italy has seen several policies and reforms implemented to foster employment (and reduce unemployment). Following a wave that involved the entire Europe, the focus has been on the employment protection legislation (EPL) and its negative effects on employment levels. In the paper by Boeri and Garibaldi (2007) there is a complete description of the policies implemented, which we will briefly outline. Indeed, the process of de-regulation started back in the mid-80s, when, in 1984, the law introducing part-time jobs was implemented;[9] at the beginning of the 90s, there were some significant novelties in terms of collective firing (standards related to notice and consultation were established, Law 223/1991). In the mid-90s, the first of the main reforms was adopted, the so-called "Pacchetto Treu" (Law n.196/1997), which aimed at improving the quantity and quality of the employment by introducing a number of modifications to the existing legislation (use of temporary work agency; new fiscal treatment of part-time work; atypical contracts encouraged by reducing social security contributions, pension provisions and removing automatic transformation into open-ended jobs). Responding to an EU Directive, a new reform was adopted in 2001 (Decree-Law no. 368/2001), liberalizing the use of fixed-term contracts by removing the list of specific circumstances in which their use was foreseen. The

[9]Before 1984 part-time contracts were permitted but not explicitly regulated by the law.

"Legge Biagi" (Law No. 30/2003) continued of the de-regulation process started with the 1997 reform. Other types of atypical or non-standard contracts such as on-call-employment, job sharing and supplementary work were introduced.[10] In more recent years, among the reforms requested to overcome the financial crisis there was a pension reform ("Legge Fornero", Law No. 92/2012) which moved up the retirement age in Italy but also hit the employment protection legislation by faciliting firm dismissals. This process was then completed by the "Jobs act" (Law n. 183/2014) which abolished the previous version of Art. 18 of Law. No. 300/1970.

2 Definitions of low-pay and working poverty

The phenomenon of workers earning wages below a certain threshold has been studied with different approaches, both economic and sociological such as low-pay or working poverty, by the economic and sociological literature (Fraser et al., 2011; Peña-Casas and Latta, 2004). Moreover, being a widely recognized phenomenon among most institutions in industrialized countries, it is also a major topic of discussion at an institutional level. Still, there is a number of open points in the discussion of the best indicator while investigating the low-wage phenomenon. These are related to the non-trivial definition of employment, answering to the question: who are the workers? Then there is the choice between an individual or household concept of low-wages; finally, there is the selection of the threshold, that may be relative or absolute.

We start from the identification of workers, who constitute the set of individuals at the center of the study. In the employment definition, depending on the data source in the literature, it is typical to focus on a time occasion in the year, e.g. working status at the time of the interview (usual with household surveys) or on certain time spans, e.g. time worked during the month or year (when using administrative datasets). As explained by Ponthieux (2010b), choosing the number of months that constitute the threshold of employment to define a worker is not a trivial matter. Indeed, even among major institutions there is no agreement. The US and French statistics adopt definitions that refer to the participation in the labour market, whereas the EU statistics head more towards standard employment criteria. This implies that the indicators adopted in France and the US have a less restrictive definition of workers compared to their European counterparts.

[10] Moreover, within the already existing profile of collaborators, the project collaborator position was introduced ("co.co.pro." in Italian).

In particular, the US Bureau of Labor Statistics defines workers as individuals in working age who participated in the labour market for more than half of the previous year, either employed or unemployed (Klein and Rones, 1989). In France, the INSEE adopts a definition that is based on the BLS approach but adds one month in employment as a condition, with the goal of excluding the long-term unemployed. Finally, the EU definition only takes employment into account. Individuals "in-work" are those who have spent more than half the reference period in employment, i.e. whose most frequent activity status is "employed". Evidently, adopting one definition or another results in different sizes of the working population as well as different low-wage incidence. Assuming that an individual is employed if they work more than a certain threshold in terms of weeks and months has other relevant implications; for instance, by excluding those who work less than half a year from the analysis, the selectivity bias is ignored (Gronau, 1974; Heckman, 1979) and whether the unemployment is voluntary or involuntary is also disregarded. The issue of involuntary unemployment is particularly relevant for women as shown by Olivetti and Petrongolo (2008), that is why these thresholds cannot be considered gender-neutral, since the study will turn up a lower percentage of low-paid women than what is really observed in the labour market. Finally, when applying strong employment thresholds, a paradox emerges: the increase of employment fragmentation and precariousness reduces the yearly individual employment below a certain threshold, causing potential improvement of the low-pay indicator.

The second major point of discussion concerns the individual or household level of the analysis. According to Filandri and Struffolino (2019) there are two ways to define the general concept of working poor. The first is an individual concept, that relates to the condition of workers and their labour earnings during a certain time span; this concept identifies the working poor as low-paid workers, i.e. workers whose individual labour earnings are below a given threshold of the country median (Lucifora et al., 2005). The second definition refers to household-related characteristics. The working poors are workers who live in households with an household income below a given threshold of the country median that corresponds to the poverty line. The main example in this regard is offered by the Eurostat's indicator of in-work poverty, according to which workers who enjoy a family income of less than 60% of the median household equivalent disposable income are considered to be in this condition. Therefore, the state of in-work poverty is computed based on household disposable income, as for the relative poverty indicator (the "at risk of poverty", or AROP, rate). The result is an "hybrid" indicator that takes into account both individual, to

ascertain the status of employed, and family characteristics, those relating to income, used to establish the state of poverty.

The choice of individual indicators implies that the labour market outcomes are evaluated independently from the intra-household decisions. This assumption may be problematic in the case of households with a male breadwinner and a woman that is involved in care services and children upbringing. However, this household model may generate distortions, indeed one major issue of considering the household as the reference for working poverty measurement is its consequential paradox, defined by Ponthieux (2010b, 2018) as "gender paradox": women workers are underestimated in terms of working poverty because the individual remuneration within the household (or the intra-household inequality) is not taken into account and on the contrary there is an income pooling or equal sharing assumption, where income is assumed to be equally distributed within the family. This assumption, defined by Jenkins (1991) as "not unproblematic", has proven to be empirically wrong, as reported by several authors (Lundberg et al., 1997; Attanasio and Lechene, 2002; Ward-Batts, 2008).

Household indicators involve as well the inclusion of other income sources different from the labour income, for instance capital or transfer income. However, in Italy the role played by capital income in the lowest part of the income distribution is questionable. According to SHIW 2016 (Bank of Italy), capital income constitute the 3% of the household income of households in the lowest quintile of the income distribution. Moreover, as explained by Gardiner and Millar (2006), the role of transfers escaping the household poverty when an individual is low-paid is limited with respect to household sharing. Indeed, the labour income is still the main income source for the average individual in Italy. Again, according to SHIW 2016, about 86% of the individual income of employed individuals aged between 18 and 65 is constituted by labour income (either as employees or self-employed).

Indeed, the difference between individual and household indicators has been captured by several studies comparing individual low-pay and household poverty results (Brandolini et al., 2002; Andreß and Lohmann, 2008), which conclude that the two indicators are modestly correlated since they analyze two distinct economic phenomena.

Finally, one last point regards the threshold that discriminates between low and high paid workers. As for the household poverty lines (Sen, 1983; Ravallion, 2015), the low-pay threshold may be relative or absolute. With the relative approach, the low-pay threshold is defined with

respect to the income or earnings level of the reference population, usually fixing the line at a certain proportion of the mean or the median of the distribution. Instead, the absolute approach foresees that the threshold is theoretically based on the identification of basic goods and on their cost, i.e. on reference budgets. When adopting an individual concept, a relative threshold provides the low-pay indicator itself, while an absolute threshold provides an indicator that is close to what Ponthieux (2010a) defines as "poverty in earned income", i.e. people earn less than the amount required to reach the threshold for a single person.

Therefore, in the final part of the Section, we illustrate the indicators adopted in this study. Starting from the employment, given the available administrative dataset, we avoid double-level construction of the indicator (one level for the employment status and another for the low-pay status). Therefore, we select as employed those who have a positive level of labour earnings in every specific year of the study.[11] Secondly, we adopt the individual rather than the household concept since we want to obtain results that are easy to interpret in terms of risk-of-poverty and provide a clear overview of the phenomenon at the individual level (avoiding gender non-neutral implications).

The main economic dimension is the yearly level of individual labour earnings.[12] Finally, our main indicator follows a relative approach and is computed as the percentage of workers who earn less than 0.6 of the median level of labour earnings. Furthermore, we propose other two indicators: an absolute indicator in which the low-paid are identified as workers whose individual labour earnings are below the individual absolute poverty line provided by Istat. These thresholds are set based on household consumption.[13] Since they are available from 2005 to 2017, we adjusted the absolute thresholds before 2005 for the inflation, which implies that the absolute low-pay results not take into account eventual changes in the consumption time-varying attitudes. This second indicator is similar to what Ponthieux (2010b) defines as "poverty in earned income", since it captures the contribution of work remuneration in reaching an individual decent living standard. Finally, the third indicator is a relative one based on the monthly individual labour earnings, with

[11] Look at Section 3.3 for the case of less loose employment thresholds.

[12] Most of the papers in the wage inequality literature adopt hourly wages, however, we should underline that choosing this dimension is crucial for the results. This happens since, trivially, this phenomenon is influenced by both the amount of time worked daily, monthly or yearly and by the wage received. Using hourly wages implies that the focus is exclusively on the (low) level of salaries as a source of low-pay incidence and the (low) working time is ignored.

[13] Cutillo et al. (2020) describe the possible weaknesses of the Italian consumption-based absolute poverty lines as compared to income-based poverty lines.

the aim of taking into the account the number of months worked during the year.

3 Evolution and determinants of low-pay in Italy

3.1 Data description

The analysis is based on administrative data provided by the Italian Social Security Administration (INPS, *Istituto Nazionale di Previdenza Sociale*) that record the work and pay history of the whole population of employees in the private non-agricultural sector.[14] The source of information for these data is the form that employers have to fill in order to pay pension contributions to their employees. The main archive is the one of the private employees, while other archives contain information on collaborators, professionals and domestic workers. Essentially, the dataset thus constructed excludes two groups of workers, the public workers or civil servants and the artisans, traders and farmers (self-employed). The time span of the dataset is between 1990 and 2017, with the intent of analyzing the major changes occurred in the Italian labour market in the last thirty years. The baseline dataset includes workers who are less than 65 years old.[15] This database is the largest ever used to study the phenomenon of low wages in Italy with about 383 billions observations in the 1990-2017 time span. Figure 2 shows the overall number of workers in the 1990-2017 time span. The increase in the overall number of workers in the 90s coincides with a period of economic development (rise in the employment rate according to Istat) and with the reduction in the public sector employment.

The main variable in this study is constituted by the level of individual labour earnings. From the administrative dataset we have information on gross annual earnings. Besides the full net annual earnings, this includes all kinds of pecuniary compensation, grossed up with labour income taxes and social security contributions on the employee. Since an individual may have more than one record for each year, when registering job and occupation-related information such as sector or type of contract, we pinpoint for each individual its "main" job. This job coincides with the one providing the highest level of earnings in each year. Nonetheless, the overall yearly earnings take into account wages from each job performed, not only the main one. The information available from the administrative archives include age, gender, birth place, geographical area and region of

[14] The administrative data from the INPS archives are provided within the VisitInps Scholars Program.
[15] In the Appendix D we modify the baseline dataset in order to encompass alternative age selection rules.

work, years of experience. Working related information are the number of firm employees, the firm industrial sector[16] and the characteristics of the job contract such as full-time or part-time as well as fixed-term or long-term contract.

In Table 1, a description of the dataset is provided. In Column 1 of the Table, the overall dataset, from 1990 to 2017, is summarized and compared in Columns 2 and 3 to the the initial and final year's values. The total number of observations accounts for 383.7 billions. The structure of the Italian labour market has severely changed during the observed time span, both in terms of demographic composition of the labour force and in terms of workers' labour conditions. There are nine well-known economic facts of which we provide evidence in this paragraph, and we briefly cover them in the remaining part of this paragraph.

i) Reduction in the gender employment gap: the first major change concerns the women's employment, as we already observed in Section 1, the percentage of employed women over the total employed individuals rose from 34.5% in 1990 to 44.1% in 2017.

ii) Increase in the age gap: in 1990 those under 35 years old were the age group with the highest number of workers and those above 50 years old were the one with the lowest, while in 2017 this relationship is reversed. This result is due to the effect of the pension reforms that moved up the retirement age and to the strong rise in the youth unemployment.

iii) Role of foreigners in the renovated labour market: the percentage of foreign workers (individuals whose birth place is outside Italy) has surged from just above the 2% in 1990 till 16.7% in 2017, showing the more and more relevant role played by this minority.

iv) Increase of non-standard work: when looking at the descriptive statistics directly related to the labour market we can see that the employees, that initially (1990) compose the whole labour force, reduce their relevance until 2017 when more than 10% of employed individuals are self-employed (professionals), collaborators or domestic workers.

v) Rise in part-time contracts: the huge increase in the number of part-time workers (from less than 5% in 1990 to almost 31% in 2017) is probably the greatest change occurred in the Italian labour market in the last thirty years.

vi) Rise in fixed-term contracts: the rise in job instability is captured by the high number of fixed-term workers (23% in 2017, while in 1990 they were not registered).

vii) Rise in the service sector: the labour demand has shifted from the manufacture and con-

[16]Classified according to NACE rev. 2 sectoral codes (whose Italian counterpart is ATECO 2007).

structions sectors to services (in this last sector the percentage of workers was just 29% in 1990 and became 51.6% in 2017).

viii) Labour market fragmentation: in this case, by fragmentation we mean the increase in the number of jobs yearly performed by each individual. In Figure 2, we show that whilst in 1990 the 86.7% of the workers was employed in one single job during the year, in 2017 this percentage drops to 78.7%.[17]

ix) Increased labour earnings inequality: as shown in Figure 3, there has been a significant rise in labour earnings inequality in the time span, moving from 36.6 Gini points in 1990 to 44.7 in 2017. The role of job and wage polarization, discussed in Section 1, is crucial in explaining this dynamics of the Italian labour market.

[17]The augmented number of jobs in the year does not correspond to a rise in the labour earnings, since these multiple jobs may be a signal of jobs that last few months or even weeks and therefore, imply periods of absence of work and income during the year.

3.2 Results

3.2.1 Low-pay measurement in Italy, 1990-2017

This Section contains our main results about low-pay. We start with Figure 4 and 5 showing the evolution of the relative, yearly and monthly, and absolute low-pay thresholds.[18] All the figures are expressed in terms of 2017 prices. The relative low-pay threshold in Italy has decreased during the observed time span (about 8% less for the yearly earnings, and about 7% for the monthly earnings) reaching € 10,919 per year and € 977 per month, starting respectively from € 11,673 and € 1,031 in 1990. This finding depicts the relative decay of the levels of Italian wages in the last thirty years. The decline in Italian wages may constitute the tenth economic fact, indeed Italy is the only European country which has seen a reduction in the average wages in the last thirty years, according to OECD (2021). The absolute low-pay threshold showed in Figure 4 is averaged between the population-weighted Italian geographical areas (North, Centre and South). We see that the evolution of the absolute low-pay threshold is slightly different from the relative one, since it remained substantially the same in the observed time period (€ 8,438 in 1990 and € 8,413 in 2017).

In Figure 6, the main indicator of this study, the percentage of yearly relative low-paid workers, increases from 25.9 pp in 1990 to 32.2 pp in 2017. The rise is concentrated in the second half of the 90s decade and in the second half of the 00s decade. The percentage of absolute low-pay incidence rises from 18.9 pp in 1990 to 25.4 pp in 2017. The difference in the levels of relative and absolute low-pay thresholds, showed previously, translates in the lower percentage of absolute low-pay incidence (about 5% gap between the two indicators); indeed, the trend of the absolute low-pay incidence is the same as the main indicator. Figure 7 illustrates a comparison between yearly and monthly indicators. The monthly relative low-pay incidence increases from 15.0 in 1990 to 26.8 in 2017. This surge is steady and more serious than the one in the yearly indicator. However, as seen in Figure 5, the low-pay thresholds' trend is analogous between the two indicators. A possible explanation of this behaviour lies in the different level of variance in the months worked between the workers' population at the beginning and ending of the time span. In particular, the variance of months worked equals to 14.0 in 1990 and 15.5 in 2017. Even though the individual earnings are similar in 1990 and 2017, the working time is diverging as a growing number of workers is only

[18] The complete figures regarding the main results (1990-2017) are shown in the Tables in Appendix A.

employed for a few months per year, causing the level of low-pay incidence to rise over time.

To capture the intensity of the low-pay incidence, we adopt the low-pay gap index and the squared low-pay gap index (or severity index) which are computed as follows:

$$P_1 = \frac{1}{N} \sum_{i}^{q} \left(\frac{z - y_i}{z} \right)$$

$$P_2 = \frac{1}{N} \sum_{i}^{q} \left(\frac{z - y_i}{z} \right)^2$$

These two indicators, belonging to the Foster-Greer-Thorbecke class, account for the relative size of earnings shortfalls from the threshold. If the low-pay gap index shows the individual earnings deficit without taking into account the inequality among low-paid individuals, the low-pay severity does so by giving more weight to those who have larger shortfalls from the threshold before averaging the results across population. Both the indicators have increased over time. Figure 8 illustrates the relative (absolute) low-pay gap index, which has surged respectively from 13.3 (9.7) pp in 1990 to 17.1 (13.7) pp in 2017. Figure 8 shows the relative (absolute) low-pay severity index, which have surged respectively from 8.9 (6.4) pp in 1990 to 12.0 (9.6) pp in 2017. The discrepancy between relative and absolute low-pay is also apparent when looking at the low-pay intensity but the trends between indicators remain similar and continue to surge over time.

The next set of results regards the relative and absolute low-pay incidence breakdown by major demographic factors such as gender, age, area of work and birth place.[19] In Figure 10 and 11, we show the relative and absolute low-pay incidence. Starting from gender in the top left figure, we find a striking result: the relative gender gap is about 15 pp in 2017 (24.9% of men was low-paid as opposed to 41.4% of women) and has even increased over time. The gap is also significant when looking at the absolute indicator (in 2017 it equals to 19.8% for men and 32.4% for women). This result, one of the most crucial of the paper, explains how women, even after a significant rise in their participation in the labour market (displayed in Section 1 and 3.1), have not coupled this improvement with an adequate level of labour earnings. In other words, the quality of the jobs created for a significant part of women workers has not been high enough to reach the low-pay threshold. When looking at the age groups in the top right figure, the results show a clear pattern

[19]The results of the monthly relative low-pay incidence by gender, age, area of work and birth place are available in Appendix B.

of separation between the generation of those beyond 35 years old and the older one, since the two groups of 35-49 and 50-65 show similar figures. The trend in youth relative low-pay incidence is increasing in the time span, moving from 34.1% in 1990 to 45.5% in 2017. The gap between generations is significant even when looking at the absolute indicator: in 2017 the youngest age group displays the 37.3% of workers below the low-pay threshold, while the oldest group has 20.1%. When looking at the geographical area of work (bottom left figure), we can see that Southern Italy presents a major issue of low wages with almost half of all workers that are below the relative low-pay threshold. Interestingly, the South-North gap has lowered in the 90s and up until the financial crisis, after which it has peaked in 2017 (45.6 pp in the South against 26.0 pp in the North). This breakdown displays very different results in relative and absolute indicators, since this last indicator is computed based on low-pay thresholds which are set at the geographical level accounting for the varying cost of living (as explained in Section 2). The absolute geographical gap is low, even though, like the relative indicator, it has been increasing over the last years (in 2017 the level of absolute low-pay incidence equals to 31.1 pp in the South and 22.1 pp in the North).[20]

Finally, the birth place must be considered (bottom right figure). As seen in the descriptive statistics, in the last thirty years the Italian labour market has seen an upsurge of foreigners workforce, accounting for about 17% of the total employed individuals in 2017. Even though there has been a rise in the extensive margin, this has not translated into a reduction in the relative low-pay incidence gap between foreign born and Italian born salaries. Indeed, in 2017 this gap is about 23 pp (51.6% of the foreign born are low-paid against the 28.3% of the Italian born). The peak in 2002 coincides with the extensive regularization of migrants. The results are confirmed when looking at the absolute indicator.

3.2.2 Low-pay determinants

Beyond the demographic characteristics, one key role in explaining the extent and trend of the Italian low-pay incidence is played by the lack of labour attachment, which has two sources, the unemployment risk, made evident by a lower number of months worked during the year, and the use of part-time contracts, that reduces the daily working time. If the percentage of workers who work less than 12 months per year has remained stable 2017), the weight of part-time work has

[20]For a more specific geographical decomposition at the regional and local labour market level with a comparison of the relative-absolute results, look at Appendix C.

surged, as seen in Section 3.1. Therefore, disentangling the figures by months worked and the full or part-time contract is crucial. In Figure 12, we show the relative indicator results by work duration (more or less than 12 months) and by contract type. The workers who have stable jobs throughout the year (12 months worked, full-time) see small incidence of relative low-pay incidence (about 4% in all the time period, 2.6% in 2017). On the contrary, individuals who are characterized by yearly job instability (less than 12 months, part-time) have very high percentages (93.5% in 2017). The other two possible conditions (less than 12 months, full-time and 12 months, part-time) see intermediate figures, with those who work full-time but less than 12 months a year that see 66% low-pay incidence in 2017 and those who work 12 months a year but part-time see 36% low-pay incidence in 2017. Indeed, these figures confirm the increasing weight of part-time workers in leading relative low-pay incidence in Italy. However, one key point is represented by the part-time status, and whether it is voluntary or involuntary. Even though the administrative dataset does not allow to solve this doubt, we still provide the full-time equivalent results.[21] In Figure 14, we compare the findings of relative and absolute indicators for the employees group (since the other categories does not include this contract categorization) and for employees applying the full-time equivalent to part-time workers. This information is available exclusively from 2005 to 2017. The relative low-pay findings (left panel) do not show a collapse of this percentage for full-time equivalent employees (in 2017, 24.5% of workers opposed to 31.1%). The decay is also limited for the absolute indicator (in 2017, 17.3% of workers opposed to 23.1%). But the main implication of these figures is the one regarding the trend: full-time equivalent low-pay incidence is stationary in the time span, as opposed to the one considering part-timers implying that the sharp increase in the use of part-time contracts in Italy is one of the main drivers of the excess of low-pay incidence that we see in the data.

Finally, let us examine the determinants of low-pay incidence in a descriptive regression framework conducted with multivariate probit models. Given the huge sample size, the focus is on 2017, the last year of the study. The average partial effects are shown in Table 3. We focus on two separate samples, the first made up of all the workers (employees, professionals, collaborators and domestic workers) and the other constituted only by the employees. Moreover, we use the three different low-pay indicators adopted in the study as dependent variables. In the first set of regres-

[21] Italy is the OECD country with the highest percentage of involuntary part-time work. More than 60% of the part-time workers was involuntary in 2017, according to OECD (2021).

sions, the explanatory variables are mostly demographic information such as gender, age, birth place, geographical area of work and work experience while in the second set of regressions we add variables on labour conditions such as the number of employees of the firm, the firm sector and the type of contract (full-time or part-time, fixed-term or long-term).

Looking at all the workers, the most relevant factors in explaining the relative low-pay state (Column 1a of the Table) are gender (women have higher probabilities), state of birth (foreigners are penalized) and place of work (people working in Southern Italy have an higher probability of being low-paid). Furthermore, the marginal effect for age is negative, meaning that young individuals are another at-risk category. The results in terms of the absolute indicator (Column 2a of the Table) are in line with those with the relative indicator, except for a reduction in the gender marginal effect and in the geographical marginal effect caused by the differences in geographical living standards that the absolute indicator takes into account. The findings with the monthly indicator (Column 3a of the Table) show that women are more penalized with respect to the yearly relative indicator.[22] The regressions with employees are presented in Columns 1b to 3b of the Table. Interestingly, the probability of being relative low-paid is less influenced by the gender of the employee, instead depending strongly on the labour contract characteristics, in particular on being employed part-time and having a fixed-term contract. The place of work still remains a significant determinant of the employees' low-pay incidence, a result that is exacerbated when looking at the monthly relative indicator. The firm sector plays as well a significant role, indeed the probability of being low-paid is higher for those working in the agriculture, constructions and service sectors (the reference is the industry sector). Finally, the highest is the number of firm employees, the lowest is the probability of being low-paid.

Table 4 shows the results of a multivariate regression that studies the low-pay incidence at the local labour market level.[23] The observations coincide with the total number of Italian local labour markets in 2017 (611). The dependent variables are the percentages of yearly relative (Columns 1a to 4a) and absolute indicators (Columns 1b to 4b). As explanatory variables, we include the gender, age and birth place local labour market composition, the geographical location, the value

[22]The marginal effect on the low-pay probability of being a women in 1990 is significantly higher than the one in 2017, meaning that the role of gender, although still relevant, is slowly decreasing over time. The same change occurred for foreigners, whose marginal effect on the probability of being low-paid has decreased over time.

[23]Local labour markets (SLL in Italian) represent a territorial grid whose boundaries, regardless of the administrative structure of the territory, are defined using the flows of daily home/work travel (commuting) detected on the occasion of the general population and housing censuses by Istat.

added per worker to capture the productivity level (taken from Istat), and the percentage of service and part-time workers for each local labour market. The four regression specifications are useful for disentangling the effects of relevant explanatory variables such as the number of working women, the service sector workers and the part-time workers. The gender factor is relevant in Columns 1a and 1b, but it becomes not significant when other controls are added. In other words, the interaction between the part-time and service variables with gender makes this last one not significant in explaining the relative and absolute incidence. As expected, there is a negative and significant relationship between the value added per worker level and the low-pay rates, meaning that sustaining the productivity is surely a factor that may help in reducing the number of low-paid workers. The age findings confirm that the youngest age group is the most penalized in all the adopted specifications, and that the same happens for foreigners, whereas being in a Southern local labour markets may be still crucial when looking at the relative indicator but not at the absolute indicator.

3.3 Robustness check

This Section contains the main robustness analyses of the descriptive study, that consists in the revision of the low-pay definition and in a review of the measurement error issue.

As explained in Section 2, there are three key components that contribute to the main low-pay definition: employment, individual vs household concept and the relative vs absolute threshold. Here, we describe the findings obtained when modifying the definition of employment.[24] Six additional specifications show workers who have worked more than one, two, three, four, five and six months. This last threshold corresponds to the one applied in the Eurostat in-work poverty indicator. Figure 15 and 16 shows the evolution of relative and absolute indicators between 1990 and 2017 with the different employment thresholds. As expected, the level of the relative incidence is a negative function of the number of months required to be considered a worker. A low labour attachment is one of the two main explanations for the phenomenon, as explained in previous Sections. What is interesting to underline is that the gap between the relative indicator computed with the least and most parsimonious employment threshold (respectively one month and six months) decreases over the time span. If in 1990 this gap was equal to 9.3 pp, it becomes 5.9 pp in 2017.

[24] In Appendix D the results for different age sample selection are shown while Appendix E contains the findings with other relative low-pay thresholds (other fractions of the population median).

In other words, the high labour attachment in months worked has not been remunerated in terms of lower low-pay incidence in recent years, the reason for this is related to the sharp increase of part-time jobs, as shown in the end of Section 3.2. This tendency is less relevant for the absolute incidence, where the distance between the low-pay figures by number of employment months required to be considered a worker is constant across all the time span.[25]

The other main robustness check regards the role of the measurement error in our single-year low-pay measurement. The effects of the correction for measurement error on low-pay incidence are covered by Breen and Moisio (2004). The assumption that administrative records can be considered error-free has been questioned in papers such as Abowd and Stinson (2013) and Kapteyn and Ypma (2007). These authors link their skepticism for this type of data to mismatching, because a value recorded in an administrative file is likely to refer to a different observation. Unlike this literature, we exploit the dynamic structure of the built dataset and evaluate whether our low-pay figures computed with administrative records may be influenced by the choice of a specific observational time span (one calendar year). This in-depth analysis is useful since we adopt a broad definition of employment and it may help in understanding the difference between short and medium term low-pay status. We compare the relative identification with one-year labour earnings to the relative identification with two-year labour earnings, using information from the reference year and the previous year (e.g. we compare low-pay incidence computed with 2017 records to the one computed with 2017 and 2016 records). In Figure 17, we show the extent of the difference in low-pay identification when adopting two-year against one-year earnings observation. In the period 1991-2017, the average for all workers is 10.9 pp, while it drops to 8.4 pp when we consider those who have worked more than six months per year. This means that there is a potential mismatch between short-term and medium-term low-paid workers that accounts for about one tenth of the yearly low-paid. The decline of these percentages over time may imply that the level of intergenerational mobility will tend to decline causing an increasing persistence in the state of low-pay. We analyze in greater detail the topic in the next Section.

[25]For the monthly relative low-pay incidence by different employment thresholds, see Appendix B.

4 Low-pay dynamics in the early stage of the career

This last part of the paper focuses on an empirical application on the low-pay dynamics in the early stage of the career for those who entered in the labour market from year 2000 onwards. The choice of this empirical application is guided by three objectives: the first is to study the dynamics of low-pay given the panel structure provided by the large dataset built and described in the previous Sections. A key issue in the discussion of low-wage employment is whether having a low paid job is a persistent or transitory state, particularly in a country like Italy with such a high level of unemployment and youth unemployment. Some workers will experience low pay as a random event at some point in their working lives, however others will find themselves trapped in low-pay employment which is hard to get out of. Undoubtedly, labour market segmentation becomes an issue when workers are trapped in insecure or low-paid jobs. The literature on wage dynamics in Italy owes much to the work of Cappellari (2007), who uses SHIW data to analyse transitions at the bottom of the Italian earnings distribution and concludes that becoming low-paid strongly increases the probability of being in the low-wage sector in the future.[26]

The second reason behind this empirical application is to focus on those who enter in the labour market and are at the beginning of their career. As showed by several papers such as Rosolia and Torrini (2007), Naticchioni et al. (2016) and more recently by Bianchi and Paradisi (2021) the generation gap has become a significant issue in Italy, with a deterioration of labour market conditions of young workers across cohorts.

Finally, the third intent is to focus on a precise time span, from 2000 until 2017, when major de-regulating labour market reforms were introduced in Italy (described in the final part of Section 1). The work is inspired by the paper of Struffolino and Raitano (2020) that uses an indicator to account for the complexity of early-stage careers and shows an increasing level of complexity in young workers' careers over the last few years that coincide with the de-regulation process. Other crucial papers on the role of labour market institutions are the ones by DiNardo and Lemieux (1997), Lucifora (1999) and Eichhorst et al. (2017). The paper by Barbieri and Scherer (2009) directly analyzes the impact of the flexibilization reforms on the Italian employment structure while the paper by Berton et al. (2011) focuses on temporary jobs.

The data used in this last part of the paper pertains workers in Italy between 2000 and 2017.

[26] See also Clark and Kanellopoulos (2013) for a study on low-pay persistence in Europe.

We analyze continuous 5-year-long early-stage careers, starting from the first employment episode reported in the INPS archives across cohorts of young Italian workers who entered the labour market between 2000 and 2012. We have selected these years to study the possible impact of the reforms which reduced the employment protection legislation in Italy on the low-pay dynamics. Even though our analyses could not test causal relations, they allowed us to display the pace at which exposure to the labour market deregulation process was associated with early-career persistence. This final part of the work contributes to the literature on the low-pay persistence and dynamics in Italy, to the literature regarding the early-career transitions and peculiarities and finally, to the studies of the consequences of labour market flexibilization on the Italian labour market.

4.1 Data and methodology

We select new entrants in the labour market in a certain set of cohorts (2000-12) and follow their early-stage career for the subsequent 5 years. We keep individuals who have positive values of labour earnings for the whole six-year time period (initial working year plus the next five). Moreover, we focus on individuals who are less than 40 years old when they enter in the labour market. Therefore, we obtain a five-year panel dataset divided by cohort of entrance in the labour market, and for each worker we have demographic and labour information such as gender, age, geographical area and region of work, birth place, years of experience, number of firm employees, the firm industrial sector, and type of contract. The obtained dataset is described in Table 5. The number of new entrants is lower in the last cohorts, as the labour market effects of the financial crisis were unfolding in Italy. The other peculiarity in the data on new workers in Italy in the period 2000-12 is constituted by the relatively high percentage of foreign-born workers with peaks in the years coinciding with massive migrants' regularizations (2002 and 2009).

Given the panel structure of the data, following earlier contributions (Biewen and Steffes, 2010), we use a dynamic binary choice model to model the evolution of individual relative low-pay status over time. Our estimations are based on a the dynamic correlated random-effects probit model as popularized by Wooldridge (2000, 2005).

A dynamic unobserved-effects probit model for y_{it}, $i = 1, \ldots, n$, $t = 1, \ldots, T$, may be written as:

$$y_{i,t} = 1\{\theta y_{i,t-1} + \beta x_{i,t} + c_i + u_{i,t} \geq 0\} \tag{1}$$

where

$$c_i = \alpha_0 + \alpha_1 y_{i0} + \alpha_2 \bar{x}_i + a_i, \qquad a_i \sim N(0, \sigma_a^2); \quad u_{i,t} \sim N(0,1). \tag{2}$$

Here, $y_{i,t}$ denotes low-pay status of an individual i in period t (= 1 if the individual is low-paid, = 0 otherwise). The error terms u_{it} are assumed to be i.i.d. standard normal random variables, and x_{it} is a vector of covariates. The parameter of interest is θ that captures the true state dependence and therefore the persistence in the state of low-pay. In Eq. 2, c_i is the time-invariant unobserved individual effect that, since the initial conditions are endogenous[27], is modeled taking account of the initial condition y_{i0} and the possible relationship between unobserved characteristics c_i and the time average of observed characteristics $\bar{x}_i$, as in Wooldridge (2005).

4.2 Results

This paragraph displays the main results of this part of the paper. First of all, we show the evolution of the probability of being relative low-paid for new entrants in the labour market. In Figure 18, we select three cohorts in the chosen time span: at the beginning (in 2000), in the middle (in 2006, just before the start of the financial crisis) and at the end (in 2012). There is an upward trend in the probability of being relative low-paid, going from those who entered in the labour market in 2000, in 2006, and in 2012. Clearly, moving away from the entrance year (from year t to year $t + 5$) the percentage of low-pay workers in the selected sample drops. The persistence in the low-pay condition at the early stage of the career is particularly spread among women.

Additionally, in Figure 19, we show the probability of being relative low-paid by starting year of work, given that in the starting year you are low-paid. These probabilities are obviously higher than the ones shown in the previous Figure. The upward trend in the low-pay persistence throughout the first decade of year 00s is confirmed, for instance, among those who start working in 2012 and are low-paid in the initial year of work about 40% are low-paid five years afterwards while this percentage is just above 20% for those who entered in 2000. These results denote a reduction in the level of earnings mobility at the beginning of the working career.

Finally, in Table 6, the results of the dynamic random-effects probit model are shown. The units are constituted by the year-to-year transitions in the five-year balanced panel. The model is run

[27]The initial conditions may be considered exogenous only if the panel dataset starts with the stochastic processes (Akay, 2012).

for different indicators and samples. In particular, the first three columns contain the findings for the larger sample (all workers included) while in the subsequent three columns only the employees are selected. The three indicators are the yearly relative, the absolute and the monthly relative. In the Table the average partial effects of the θ parameter that captures the persistence in the low-pay status are displayed.[28] The whole probit regression includes the following covariates: gender, birth place (time-constant), age, number of jobs performed during the year, firm and number of employees and the type of contract (time varying). The state dependence shrinks by using the monthly relative or absolute indicators with respect to the yearly relative one. However, the main finding consists in the steady increase in the low-pay persistence by cohort from year 2000 to year 2012. This result implies that the individual mobility of early-stage careers has decreased over time in the last two decades in Italy, increasing wage insecurity. The effectiveness of reforms that aimed to de-regulate the labour market on the low-pay persistence is, therefore, questionable.

5 Conclusion

Even though the study has some limitations due to the absence of information regarding individual educational achievements and the household, the large and comprehensive dataset provided by INPS within the VisitINPS Scholars Program allowed to complete a detailed descriptive study on the extent of the low-pay phenomenon in Italy in the last three decades. The main results are the increasing trend in the time span considered and the growing role of persistence from 2000 up to 2017. More in detail, this study has three objectives: i) compute the levels of low-pay incidence in Italy with different indicators and with administrative records; ii) study its determinants; iii) verify the possible role of the labour market de-regulation reforms in shaping low-pay dynamics.

Regarding the levels, we provided a comparison between relative and absolute indicators, with the goal of capturing the capacity of the labour earnings for reaching a certain individual level of relative decency and absolute standard of living. Moreover, we added an additional comparison between relative indicators, among yearly and monthly labour earnings. The level of the relative indicator is higher than the level of absolute indicator, although the rising trend over time is shared among the two indicators. The demographic breakdown clarifies which are the most vulnerable social groups, the women workers, the youth, foreigners and Southern workers. The main deter-

[28] The complete set of results is available upon request.

minant of low-pay incidence is the reduced labour attachment, which coincides in Italy with the extended use (or abuse) of part-time contracts. Indeed, one conclusion in terms of gender employment and low-pay gap is that the role of part-time in reducing the employment gap is significant but from this analysis it seems that the issue has merely been shifted to the wage gap, since women are mostly working part-time and this does not allow them to reach a decent level of earnings as defined in this study (relative and absolute low-pay thresholds). In other words, we can say that the role of part-time in reducing the gender gap is questionable. In the second part of the paper, individual low-pay dynamics has been further analyzed to understand the relevance of persistence in explaining the low-pay status at time t. We showed that this relevance has been rising in the last two decades for young labour market entrants, therefore there is a lower level of mobility: a counter-intuitive result if the various reforms that aimed at increasing the flexibility of the labour market are taken in consideration.

To wrap up, the study offers results that recommend to focus on the quality of the job and on pre-distributive policies, which influence the distribution of market labour earnings, for instance we refer to what we have defined as labour market institutions, such as minimum wage and collective agreements, but also the labour market regulation, such as the reduction in the use of non standard work. An increasing low-pay incidence is not sustainable when looking at both equity and public policies, as the growing number of the workers whose contributions are scarce will probably generate a great burden on the social security system. Neither is it possible to transform the individual low-pay condition into a household prosperity, leaning only on family internal redistribution.

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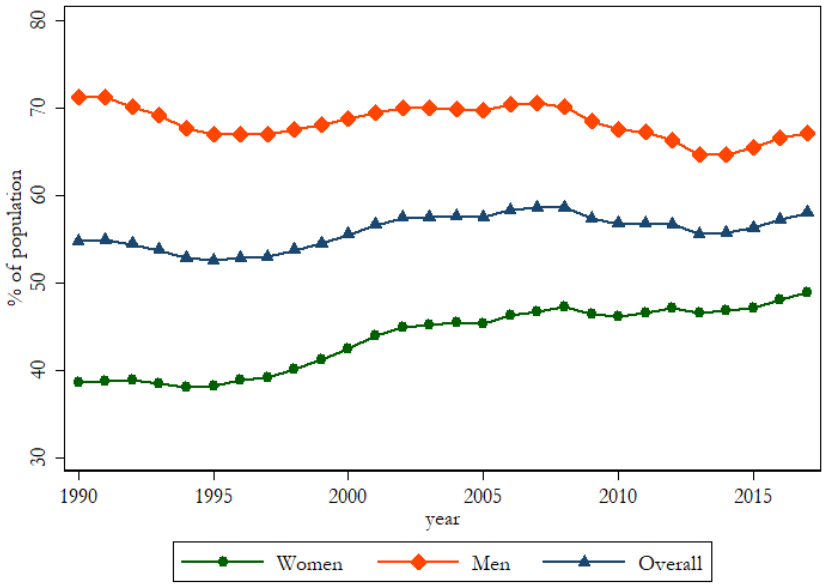
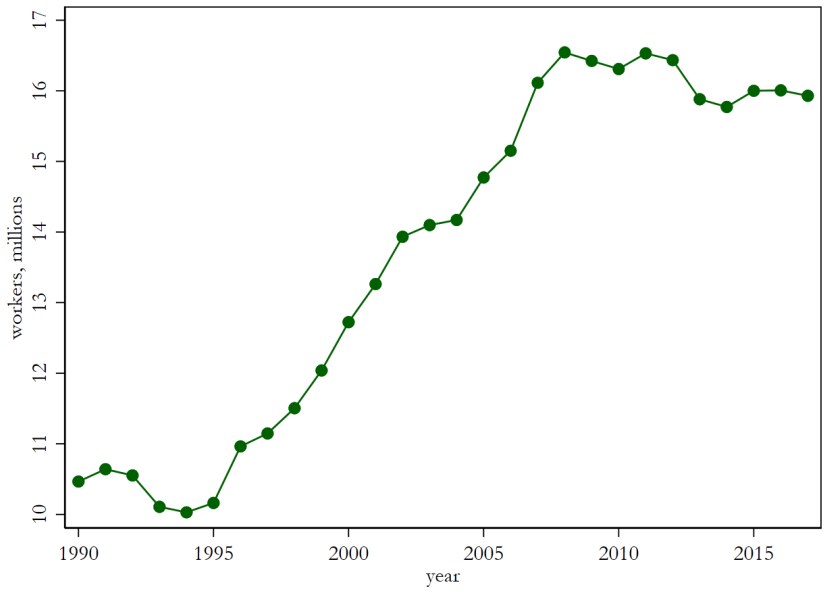
Figure 1: Employment rate, Italy



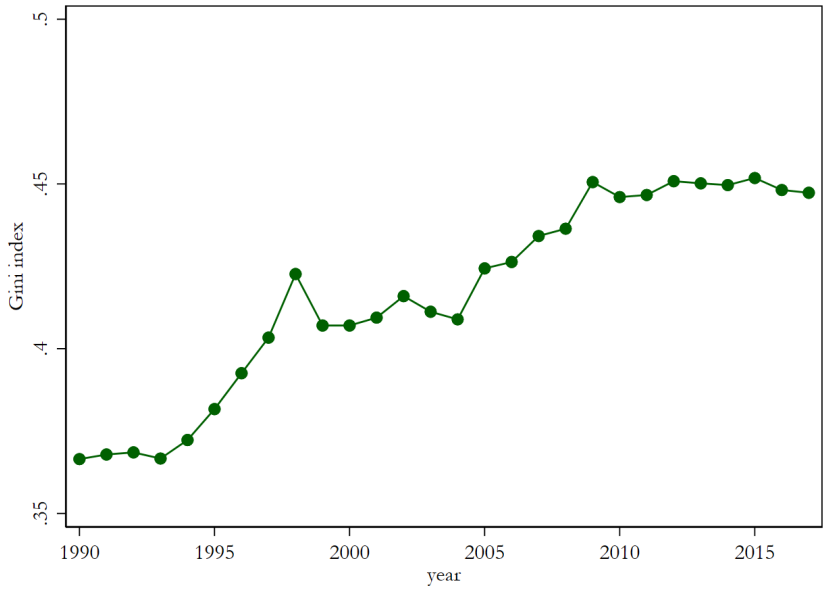
Time period: 1990-2017. Data source: Istat.

Figure 2: Total number of workers 1990-2017



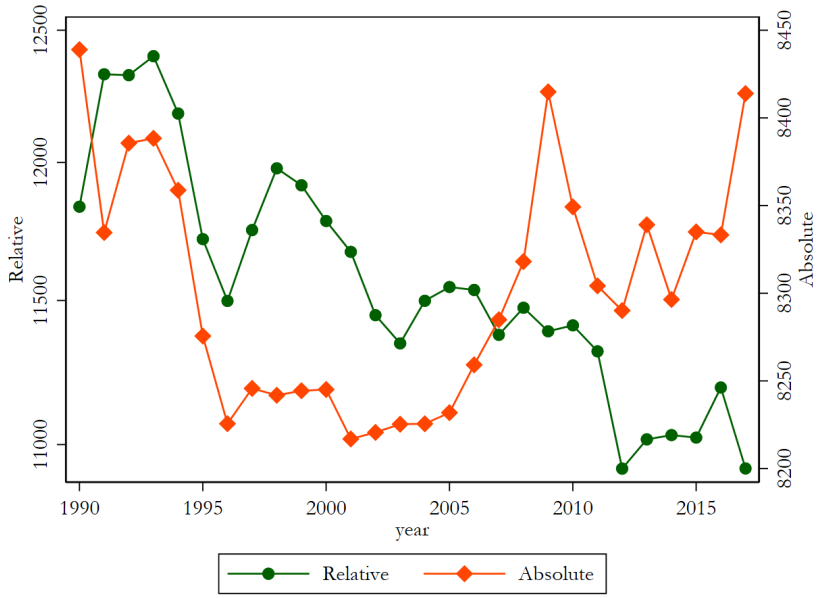
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 3: Gini index



Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 4: Relative and absolute low-pay thresholds

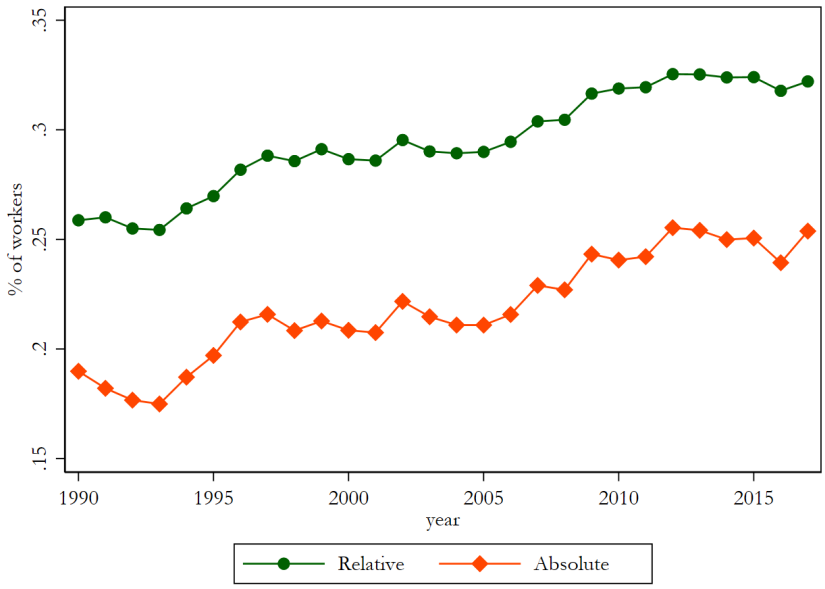


Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 5: Yearly and monthly relative low-pay thresholds

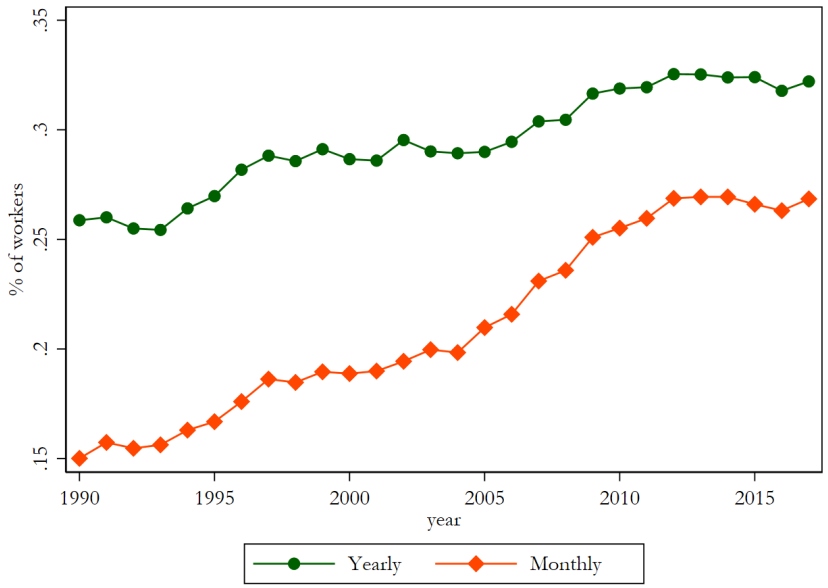
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 6: Relative and absolute low-pay incidence, 1990-2017



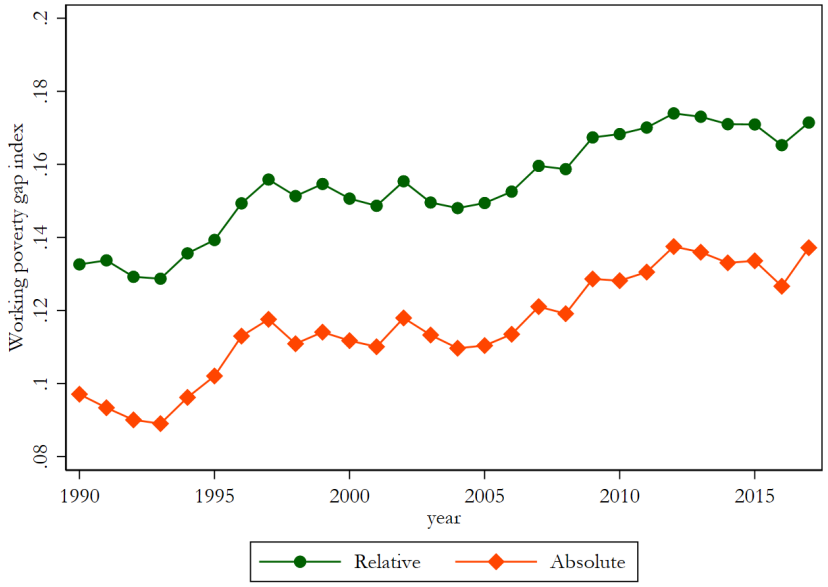
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 7: Yearly and monthly relative low-pay incidence



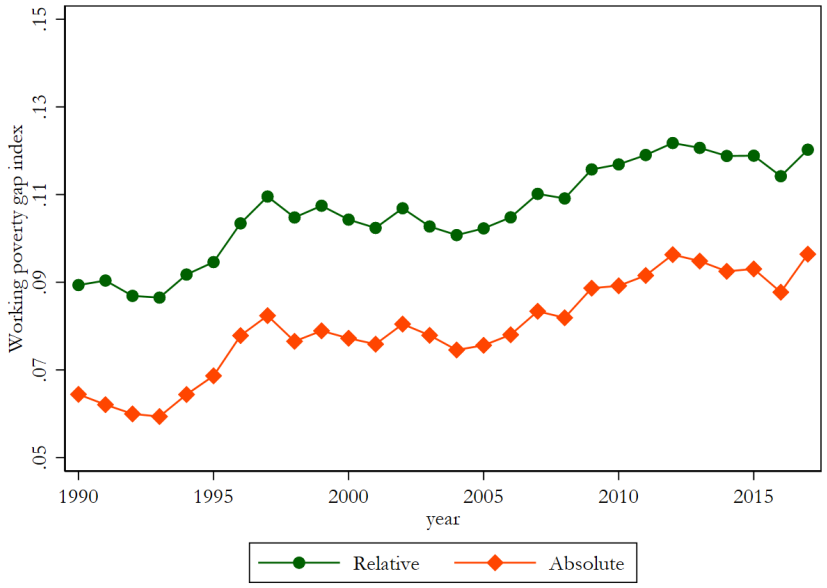
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 8: Relative and absolute low-pay gap index



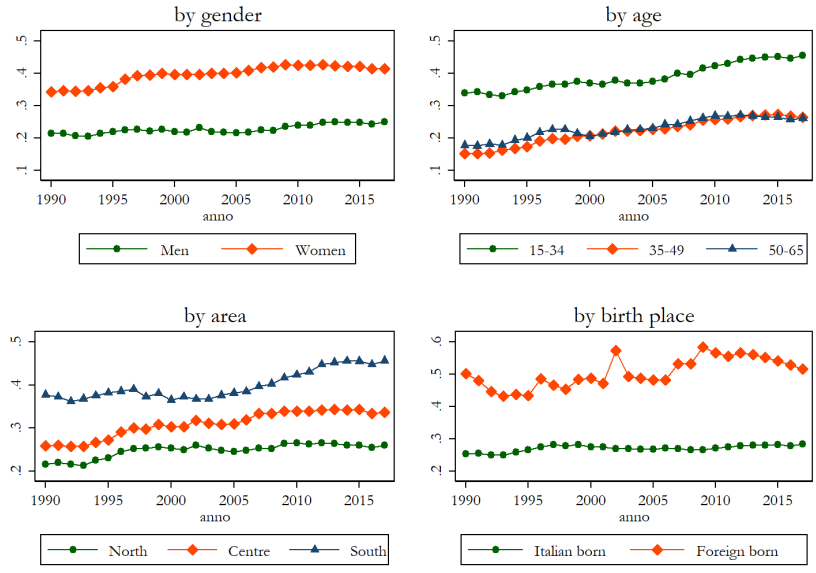
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 9: Relative and absolute squared low-pay gap index



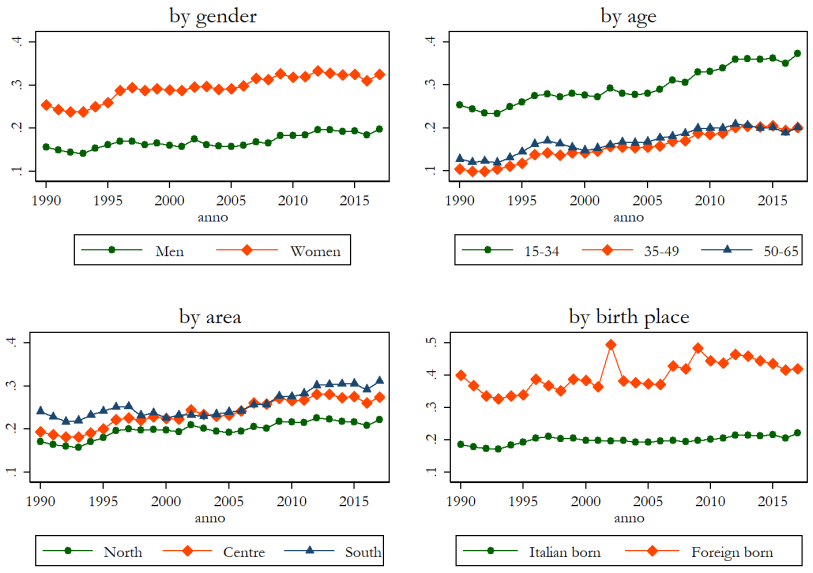
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 10: Relative low-pay incidence, by gender, age, area and birth place



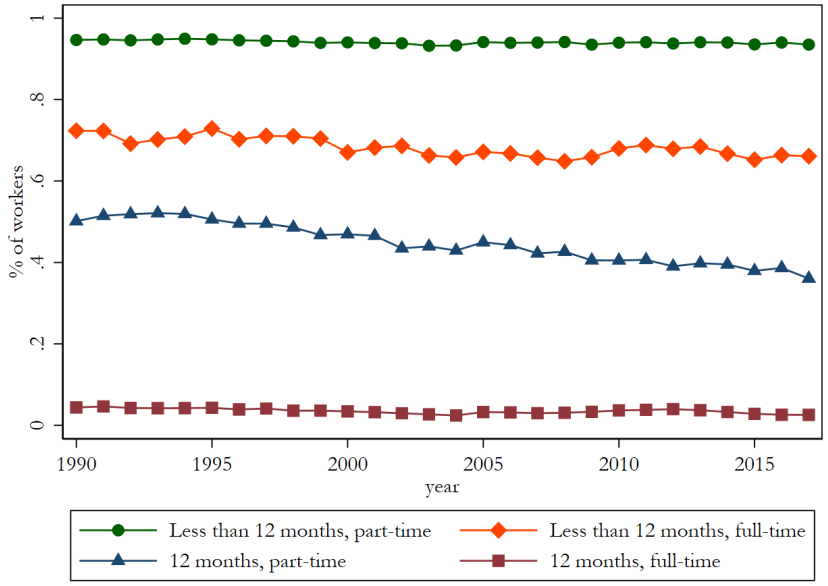
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 11: Absolute low-pay incidence, by gender, age, area and birth place



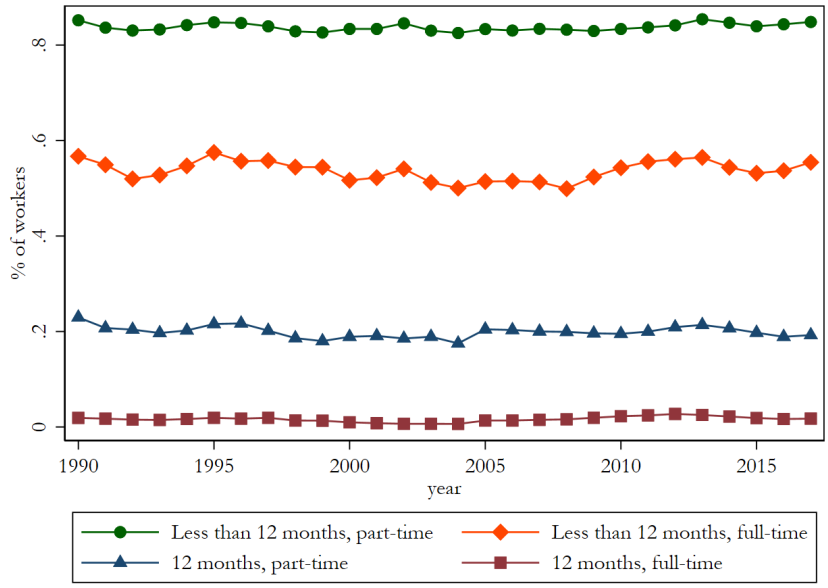
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 12: Relative low-pay incidence by work duration and contract type



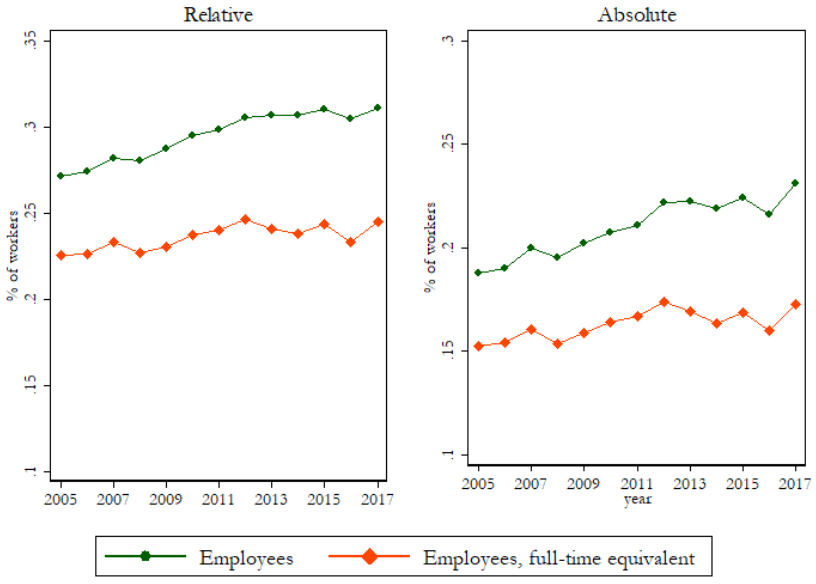
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 13: Absolute low-pay incidence by work duration and contract type



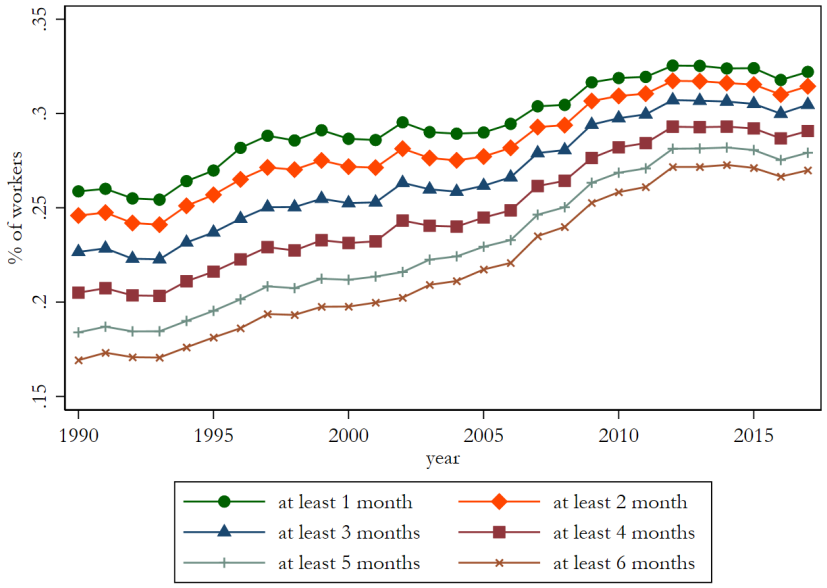
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 14: Employees, full-time equivalent



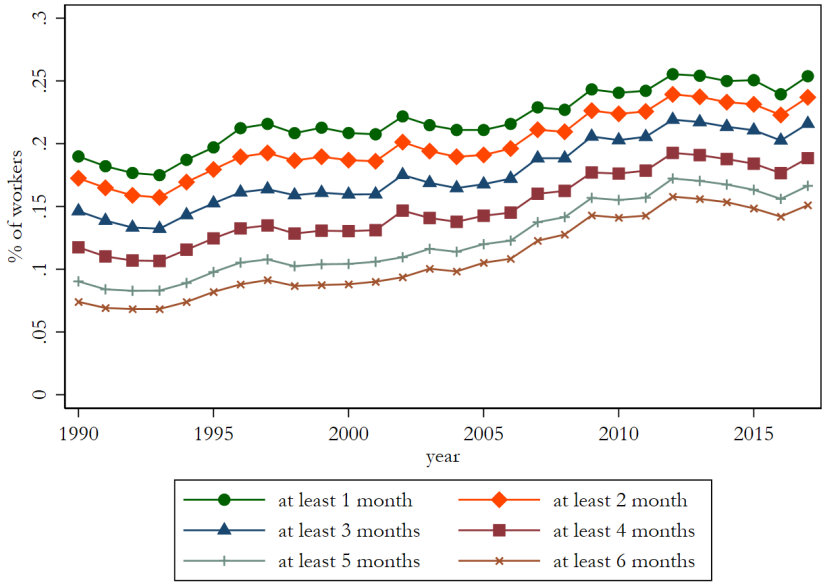
Time period: 2005-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 15: Relative low-pay incidence by different employment thresholds



Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 16: Absolute low-pay incidence by different employment thresholds

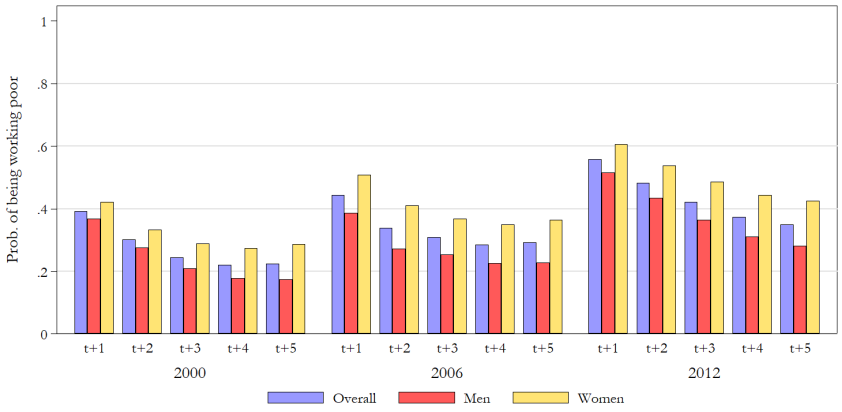


Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 17: Measurement error

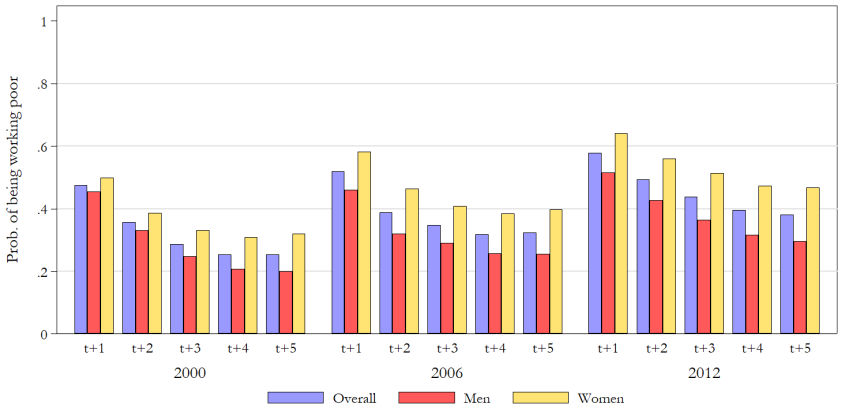
Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 18: Probability of being relative low-paid by starting year of work



Time period: 2000, 2006, 2012. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure 19: Probability of being relative low-paid by starting year of work, given that in the starting year you are low-paid



Time period: 2000, 2006, 2012. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Table 1: Summary statistics

	(1) Overall	(2) 1990	(3) 2017
Women	40.07	34.44	44.11
Age Group (%)			
<35	42.23	55.18	30.70
35-50	39.78	30.99	41.49
50-65	17.98	13.83	27.81
Area(%)			
North	56.87	59.08	55.27
Center	20.74	19.43	21.31
South	22.40	21.49	23.43
Foreigner	10.48	2.06	16.71
Median wage	22,222	21,074	21,627
Main job			
Employee	89.30	99.91	89.68
Not-employee	10.70	0.09	10.32
Part-time	17.23	4.76	30.95
Fixed-term	15.92	0.00	23.02
Sector (%)			
Agriculture	0.67	0.79	0.65
Industry	35.27	48.21	26.26
Constructions	9.11	9.68	5.92
Trade	14.33	12.18	15.56
Services	40.63	29.13	51.61
Obs.	383.7	10.5	15.9

Wages are expressed into constant 2017 euros using the consumer price index provided by Istat. Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Table 2: Number of jobs perfomed per worker

No.	1990		2017	
	Freq	%	Freq	%
1	9,081,370	86.77	12,534,639	78.69
2	1,213,892	11.60	2,600,481	16.33
3	148,105	1.42	581,726	3.65
4	18,471	0.18	146,639	0.92
5	3,051	0.03	41,844	0.26
6	695	0.01	13,647	0.09
7	204	0.00	5,169	0.03
8	63	0.00	2,360	0.01
9	45	0.00	1,187	0.01
10	70	0.00	2,275	0.01
obs.	10,465,966	100.00	15,929,967	100.00

Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Table 3: Multivariate probit regression analysis: working poverty probability analysis, average partial effects, 2017

	All workers			Employees		
	(1a) YrR	(2a) Abs	(3a) MoR	(1b) YrR	(2b) Abs	(3b) MoR
Women	0.158***	0.120***	0.188***	0.040***	0.032***	0.041***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.045***	-0.042***	-0.033***	-0.030***	-0.027***	-0.0223***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age Squared	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Experience	-0.032***	-0.025***	-0.027***	-0.015***	-0.013***	-0.011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Foreigner	0.197***	0.160***	0.179***	0.085***	0.071***	0.071***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Centre	0.072***	0.050***	0.072***	0.036***	0.023***	0.030***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
South	0.212***	0.103***	0.192***	0.117***	0.035***	0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. Employees				-0.031***	-0.024***	-0.024***
				(0.000)	(0.000)	(0.000)
Agriculture				0.113***	0.073***	0.117***
				(0.001)	(0.001)	(0.001)
Constructions				0.115***	0.109***	0.059***
				(0.001)	(0.001)	(0.001)
Trade				-0.017***	-0.013***	-0.021***
				(0.001)	(0.001)	(0.001)
Services				0.051***	0.048***	0.055***
				(0.001)	(0.001)	(0.001)
Part-time				0.291***	0.204***	0.385***
				(0.000)	(0.000)	(0.000)
Fixed-term				0.343***	0.330***	0.163***
				(0.000)	(0.000)	(0.000)
Obs.	15929967	15929967	15929967	13804885	13804885	13804885

Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Time period: 2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Table 4: Multivariate regression at the local labour market level, working poverty probability analysis, average partial effects, 2017.

	Yearly Relative				Absolute			
	(1a)	(2a)	(3a)	(4a)	(1b)	(2b)	(3b)	(4b)
Women	0.147**	-0.0517	0.057	-0.114*	0.152**	-0.016	0.068	-0.074
	(0.053)	(0.058)	(0.054)	(0.054)	(0.047)	(0.052)	(0.048)	(0.049)
Centre	0.039***	0.033***	0.029***	0.025***	0.025***	0.021***	0.017**	0.013*
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.005)
South	0.125***	0.097***	0.105***	0.082***	0.031**	0.007	0.012	-0.007
	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Aged 15-34	0.653***	0.628***	0.503***	0.495***	0.484***	0.463***	0.345***	0.338***
	(0.094)	(0.095)	(0.084)	(0.082)	(0.087)	(0.086)	(0.079)	(0.075)
Aged 35-49	-0.838***	-0.513**	-0.977***	-0.670***	-0.859***	-0.584***	-0.989***	-0.732***
	(0.175)	(0.174)	(0.148)	(0.150)	(0.156)	(0.150)	(0.134)	(0.129)
Foreigner	0.262***	0.147**	0.380***	0.264***	0.215***	0.117	0.324***	0.227***
	(0.060)	(0.056)	(0.064)	(0.056)	(0.064)	(0.062)	(0.067)	(0.061)
Value added per worker	-0.005***	-0.005***	-0.004***	-0.004***	-0.004***	-0.004***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Service workers		0.226***		0.204***		0.191***		0.171***
		(0.029)		(0.027)		(0.026)		(0.025)
Part-time			0.339***	0.306***			0.315***	0.287***
			(0.047)	(0.044)			(0.042)	(0.040)
Constant	0.520***	0.412***	0.504***	0.408***	0.509***	0.418***	0.494***	0.414***
	(0.100)	(0.097)	(0.086)	(0.085)	(0.089)	(0.083)	(0.078)	(0.075)
Observations	611	611	611	611	611	611	611	611

Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Time period: 2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Table 5: Descriptive statistics of labour market entrants, 2000-12

Year	Obs.	Women	Foreigners	North	Centre	South
2000	356,418	0.442	0.167	0.570	0.209	0.221
2001	332,536	0.459	0.155	0.538	0.214	0.248
2002	406,748	0.396	0.386	9.552	0.228	0.200
2003	279,938	0.444	0.193	0.521	0.213	0.266
2004	263,781	0.450	0.185	0.519	0.212	0.264
2005	255,709	0.466	0.178	0.510	0.222	0.268
2006	276,673	0.473	0.191	0.517	0.227	0.256
2007	374,367	0.461	0.396	0.527	0.236	0.237
2008	266,358	0.484	0.326	0.519	0.229	0.252
2009	243,022	0.502	0.461	0.534	0.225	0.241
2010	198,183	0.485	0.251	0.529	0.220	0.251
2011	194,987	0.484	0.247	0.542	0.217	0.242
2012	183,581	0.471	0.308	0.536	0.207	0.259

Notes: Year denotes the entrance year in the labour market. The area of work is referred to the entrance year.
Time period: 2000-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Table 6: Average partial effects of being poor in $t-1$ on being poor in t, by cohort, random-effects dynamic model

	All workers			Employees		
	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
Year	YrR	MoR	Abs	YrR	MoR	Abs
2000	0.492	0.289	0.243	0.398	0.246	0.195
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2001	0.510	0.303	0.249	0.404	0.256	0.197
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2002	0.488	0.304	0.252	0.375	0.247	0.200
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
2003	0.509	0.311	0.254	0.398	0.257	0.200
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2004	0.521	0.321	0.266	0.406	0.265	0.207
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
2005	0.512	0.313	0.265	0.396	0.258	0.205
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2006	0.520	0.312	0.273	0.396	0.258	0.212
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2007	0.541	0.323	0.296	0.404	0.262	0.233
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2008	0.566	0.336	0.314	0.435	0.282	0.250
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2009	0.570	0.343	0.323	0.439	0.291	0.264
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
2010	0.582	0.335	0.328	0.453	0.288	0.262
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
2011	0.586	0.340	0.335	0.457	0.284	0.256
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
2012	0.582	0.347	0.326	0.453	0.285	0.247
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)

Notes: Significance levels: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The Table reports average partial effects of the θ parameter of poverty persistence from random-effects dynamic probit model. The dependent variable is the probability of being working poor in year t. All the reported coefficients are significant at the 1% level. Standard errors in parentheses.
Time period: 2000-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Appendix A

Table A1: Low-pay incidence complete tables, Italy 1990-2017

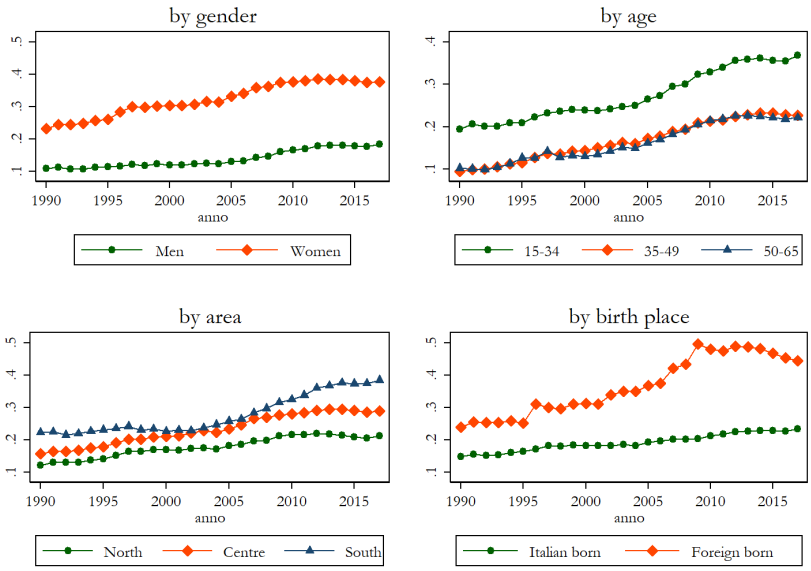
	Thresholds			Headcount			Gender		Area			Age group			Birth place	
	YrR	Abs	MoR	YrR	Abs	MoR	Male	Female	North	Centre	South	15-35	35-50	50-65	Italian	Foreign
1990	11838	8439	1030	25.87	18.98	15.01	21.45	34.29	21.56	25.90	37.71	34.00	15.05	17.70	25.36	50.13
1991	12331	8335	1072	26.01	18.21	15.74	21.41	34.68	21.90	26.00	37.27	34.30	15.14	17.55	25.46	48.06
1992	12328	8386	1076	25.50	17.67	15.47	20.73	34.44	21.52	25.67	36.19	33.33	15.28	18.07	24.98	44.70
1993	12400	8388	1077	25.43	17.49	15.63	20.45	34.61	21.26	25.75	36.77	33.08	16.14	17.80	24.95	43.26
1994	12183	8359	1060	26.42	18.72	16.30	21.38	35.51	22.45	26.64	37.52	34.33	16.73	19.28	25.93	43.67
1995	11720	8276	1017	26.98	19.71	16.69	21.90	35.90	23.06	27.17	38.17	34.81	17.19	20.02	26.48	43.31
1996	11499	8226	1020	28.18	21.23	17.60	22.40	38.24	24.47	29.13	38.56	35.90	19.12	21.75	27.40	48.52
1997	11753	8246	1040	28.82	21.58	18.63	22.63	39.33	25.15	30.01	38.99	36.60	19.84	22.62	28.11	46.61
1998	11979	8242	1061	28.57	20.84	18.48	22.15	39.45	25.35	29.81	37.25	36.62	19.60	22.59	27.88	45.41
1999	11916	8244	1058	29.12	21.28	18.96	22.55	40.02	25.53	30.76	38.10	37.50	20.48	21.40	28.19	48.46
2000	11786	8245	1042	28.66	20.85	18.88	21.94	39.72	25.33	30.35	36.53	37.02	20.64	20.57	27.51	48.72
2001	11674	8217	1032	28.60	20.75	18.99	21.75	39.58	24.87	30.27	37.24	36.58	21.21	21.19	27.38	47.06
2002	11448	8221	1016	29.53	22.17	19.44	23.10	39.70	26.05	31.79	36.72	37.86	22.10	21.75	26.94	57.42
2003	11349	8225	1007	29.01	21.47	19.97	21.88	40.04	25.32	31.09	36.71	36.92	22.10	22.52	26.94	49.33
2004	11499	8226	1023	28.93	21.09	19.84	21.69	39.97	24.85	30.81	37.62	37.03	22.22	22.66	26.74	48.75
2005	11548	8232	1018	28.99	21.09	20.98	21.59	40.19	24.51	31.00	38.15	37.46	22.58	22.96	26.79	48.30
2006	11537	8259	1019	29.45	21.58	21.58	21.75	40.81	24.80	31.93	38.45	38.20	22.90	24.12	27.15	48.22
2007	11379	8285	1005	30.38	22.90	23.10	22.42	41.80	25.33	33.41	39.64	39.97	23.54	24.20	26.85	53.20
2008	11475	8318	1012	30.46	22.70	23.59	22.21	42.00	25.15	33.31	40.28	39.69	24.09	25.25	26.56	53.18
2009	11391	8415	1010	31.65	24.33	25.10	23.60	42.65	26.44	33.88	41.71	41.55	25.53	26.14	26.54	58.37
2010	11412	8349	1012	31.88	24.06	25.52	23.94	42.56	26.56	33.87	42.33	42.27	25.71	26.86	27.14	56.57
2011	11321	8304	1004	31.94	24.21	25.96	23.93	42.54	26.31	33.91	43.06	43.03	25.81	26.74	27.38	55.60
2012	10919	8290	976	32.54	25.54	26.87	24.78	42.63	26.56	34.19	44.79	44.23	26.54	27.06	27.76	56.60
2013	11018	8339	983	32.53	25.42	26.94	24.93	42.31	26.38	34.28	45.23	44.63	26.97	26.87	27.93	56.11
2014	11032	8296	987	32.39	24.99	26.94	24.74	42.23	26.02	34.13	45.59	44.98	27.17	26.39	27.99	55.29
2015	11024	8335	991	32.40	25.06	26.60	24.85	42.17	25.92	34.26	45.54	45.11	27.33	26.48	28.23	54.18
2016	11195	8333	994	31.78	23.94	26.31	24.27	41.40	25.48	33.32	44.77	44.64	26.76	25.71	27.73	52.92
2017	10919	8414	977	32.21	25.38	26.85	24.95	41.40	25.97	33.63	45.64	45.54	26.42	26.12	28.31	51.63

Notes: The thresholds are expressed in euros (constant prices, 2017). The headcount are expressed in terms of percentages. The figures by gender, area, age group and birth place, expressed in percentages, refer to the relative low-pay incidence. The rest of the detailed figures are available upon request.

Time period: 1990-2017. Database: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Appendix B

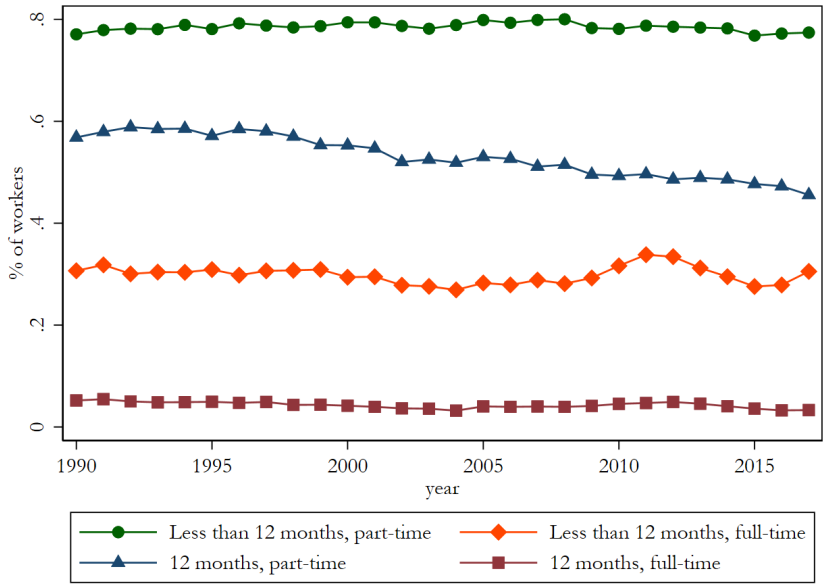
Figure B1: Monthly relative low-pay incidence, by gender, age, area and birth place



Notes: The graphs above show the monthly relative low-pay incidence by different demographic individual characteristics. In the top left panel we show the evolution of the monthly relative low-pay incidence by gender, in the top right corner by age, in the down left corner by area and in the down right corner by birth place. The results follow the ones on yearly relative low-pay incidence even though there is a consistent difference in the age decomposition. The three age group presents a similar level oh monthly relative low-pay incidence at the beginning of the 00s decade that has increased again in the final years of the time span. This U-shaped trend in the age-gap in monthly low-pay incidence deserves more attention in the future and could be interpreted as a missed opportunity for the younger generation to recover.

Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure B2: Monthly relative low-pay incidence by work duration and contract type



Notes: The Figure above illustrates the evolution of the monthly relative low-pay incidence by the type of contract (full/part-time) and months worked in the year. The ranking of the yearly relative and absolute low-pay incidence indicators is confirmed.

Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

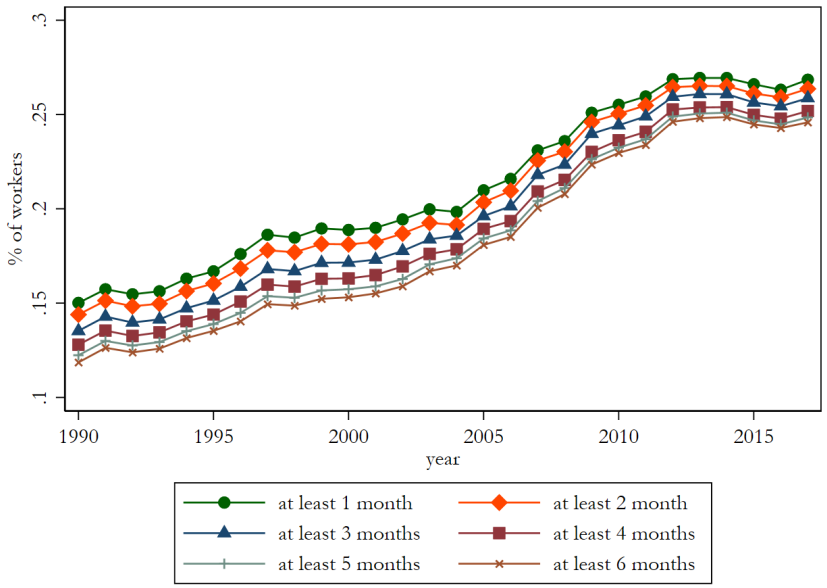
Figure B3: Monthly relative low-pay incidence employees full-time equivalent

Notes: The Figure above illustrates the evolution of the monthly relative low-pay incidence for the employees

and the full-rime equivalent employees. As for the case of yearly relative and absolute low-pay incidence, there is a widening gap between the measures of low-pay for employees and full-time equivalent employees that means that much of the increase in low-pay incidence is due to the spread of part-time jobs.

Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure B4: Monthly relative low-pay incidence by different employment thresholds

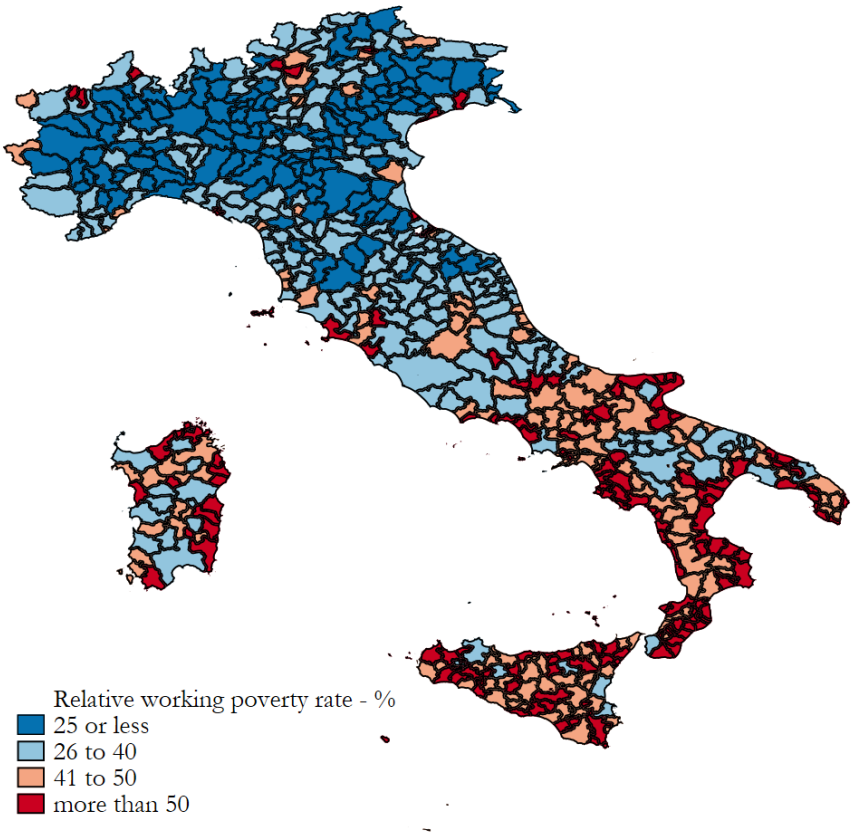


Notes: The Figure above illustrates the evolution of the monthly relative low-pay incidence by different employment threshold (from at least 1 to at least 6 months to be considered a worker). Interestingly, the gap between the indicators is less relevant with respect to the one that is present in the yearly relative indicator (2.4 pp).

Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Appendix C

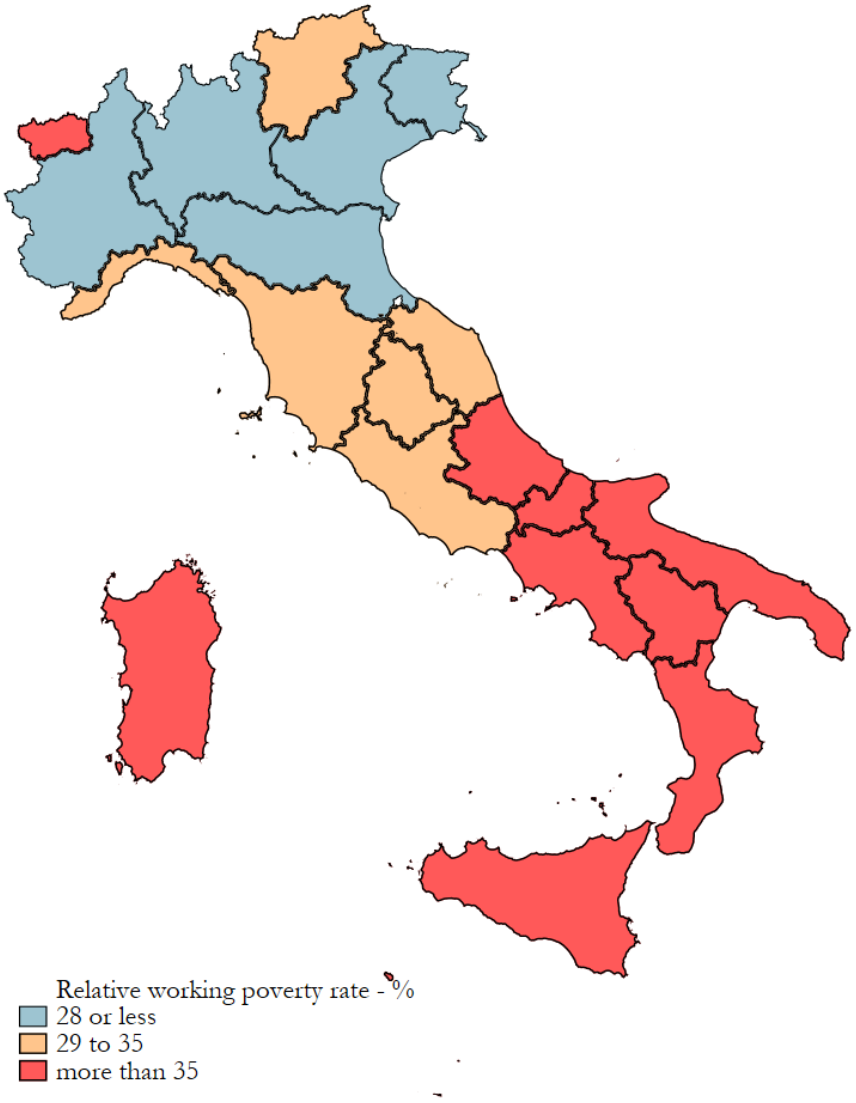
Figure C1: Relative low-pay incidence by local labour markets, 2017



Notes: This Appendix aims at deepening the geographical distribution of the low-pay phenomenon in Italy in 2017. In Figure C1 we map the distribution of relative low-pay incidence by local labour markets. Local labour markets (SLL in Italian) represent a territorial grid whose boundaries, regardless of the administrative structure of the territory, are defined using the flows of daily home/work travel (commuting) detected on the occasion of the general population and housing censuses by Istat. The detailed figures by local labour market are available upon request.

Time period: 2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

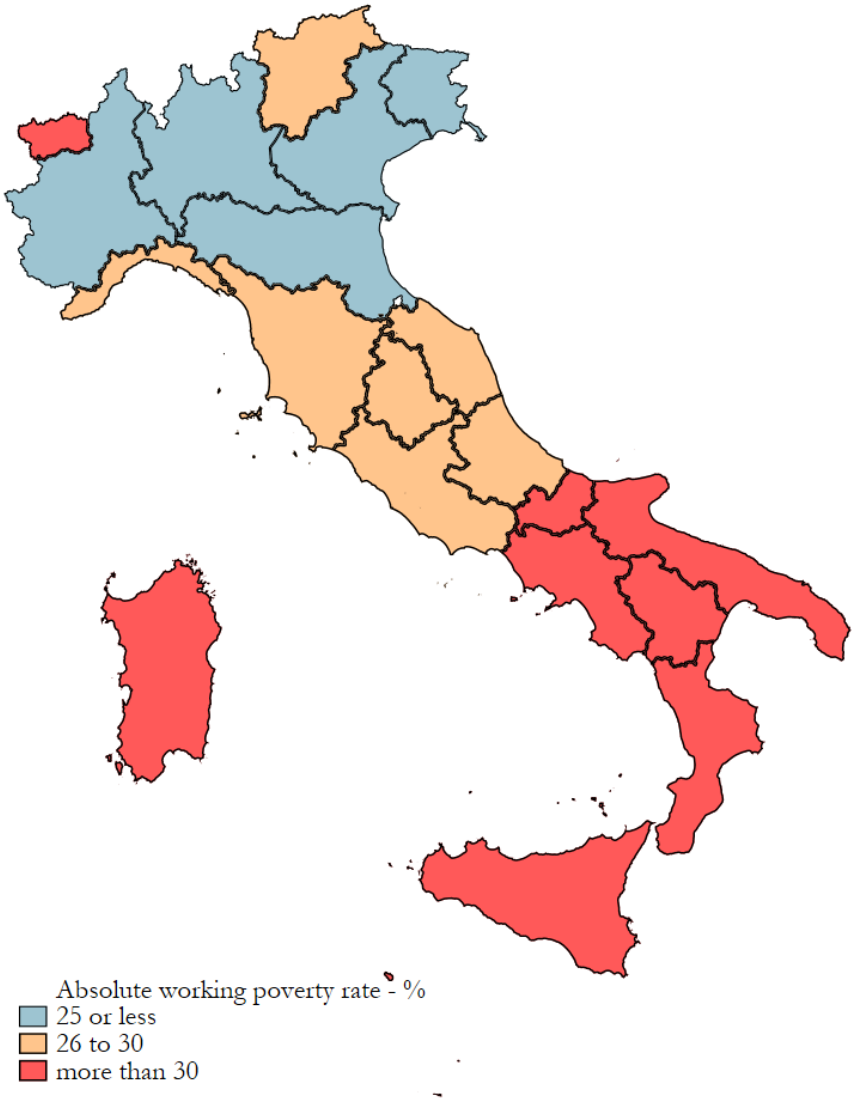
Figure C2: Relative low-pay incidence, by regions



Notes: In the above Figure we propose the Italian map of relative low-pay incidence at the regional level. As showed in Section 4.2.1, the Southern regions are the most penalized and present the highest low-pay incidence percentages. However, the highest incidence of low-pay is found in Valle d'Aosta where the 51.6% of workers is low-paid, while the lowest is 24.2% found in Lombardia. The detailed figures are shown in Table C1.

Time period: 2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

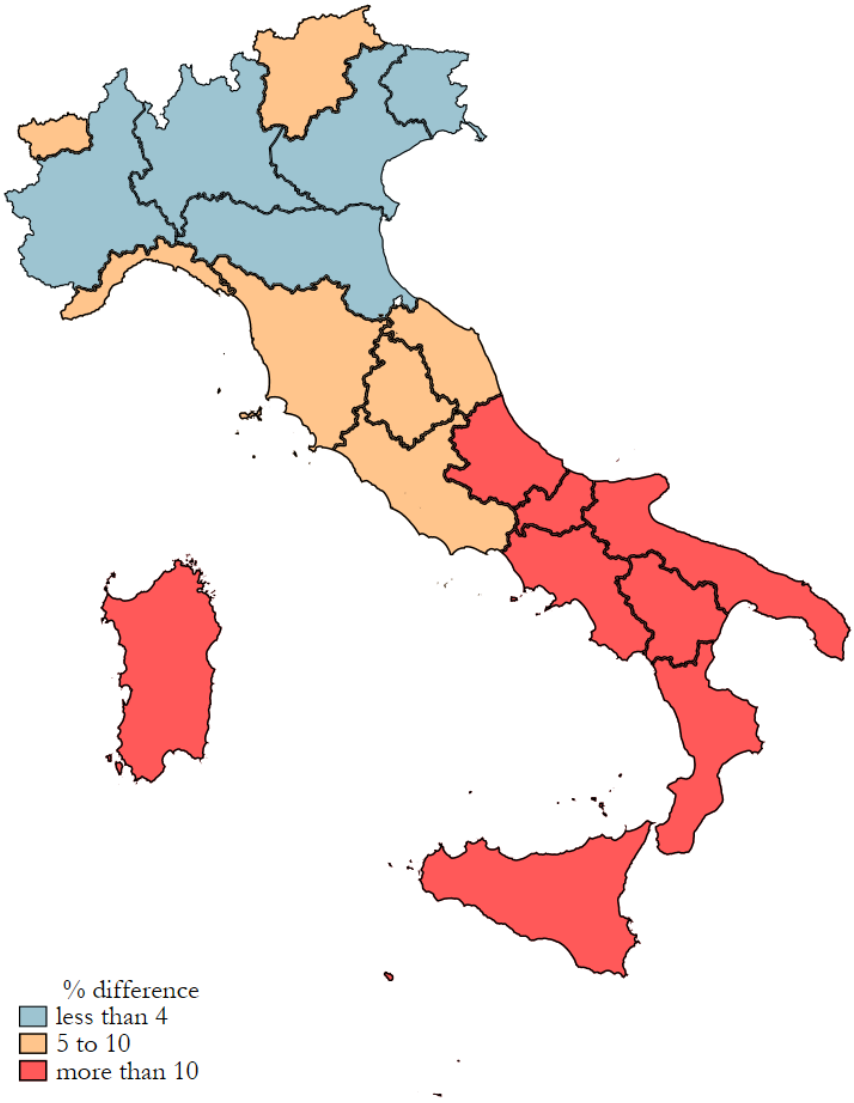
Figure C3: Absolute working low-pay incidence, by regions



Notes: In Figure C3 we show the Italian map of absolute low-pay incidence at the regional level. As showed in Section 4.2.1, the Southern regions are the most penalized and present the highest low-pay incidence percentages. The highest incidence of low-pay is found in Calabria where the 35.9% of workers is low-paid, while the lowest is 20.5% found again in Lombardia.

Time period: 2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Figure C4: Difference relative-absolute, by regions



Notes: In the Figure above we show the Italian map of the difference between relative and absolute low-pay incidence at the regional level.

Time period: 2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

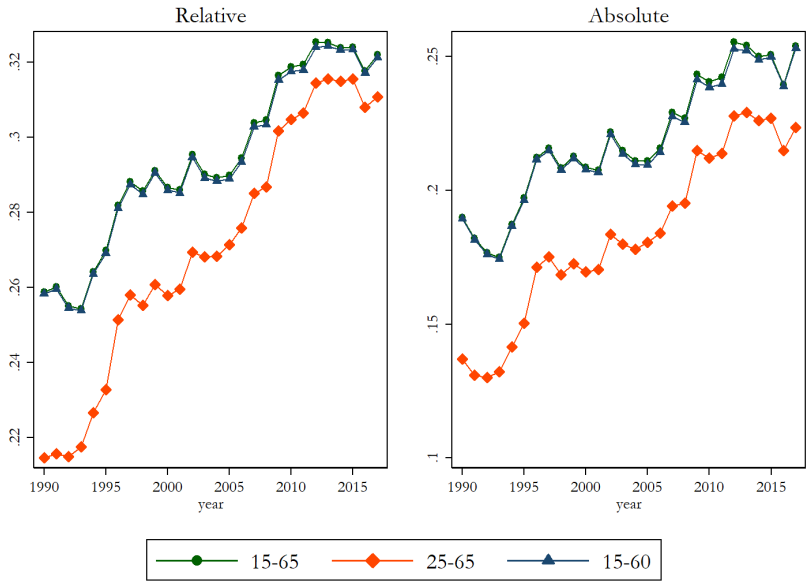
Table C1: Regional working poverty complete tables, 2017

	Yr Relative	Absolute	Difference
Piemonte	0.261	0.222	0.039
Valle d'Aosta	0.358	0.313	0.045
Lombardia	0.242	0.205	0.037
Trentino Alto-Adige	0.293	0.253	0.040
Veneto	0.260	0.200	0.039
Friuli Venezia-Giulia	0.263	0.224	0.039
Liguria	0.323	0.276	0.047
Emilia Romagna	0.270	0.233	0.038
Toscana	0.320	0.261	0.059
Umbria	0.332	0.272	0.060
Marche	0.328	0.274	0.054
Lazio	0.350	0.284	0.066
Abruzzo	0.400	0.284	0.116
Molise	0.447	0.311	0.135
Campania	0.455	0.305	0.150
Puglia	0.455	0.313	0.141
Basilicata	0.433	0.302	0.131
Calabria	0.516	0.360	0.156
Sicilia	0.459	0.307	0.152
Sardegna	0.468	0.325	0.142

Notes: The low-pay figures are expressed in terms of percentages. Time period: 2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Appendix D

Figure D1: Relative and absolute low-pay incidence: different age restrictions

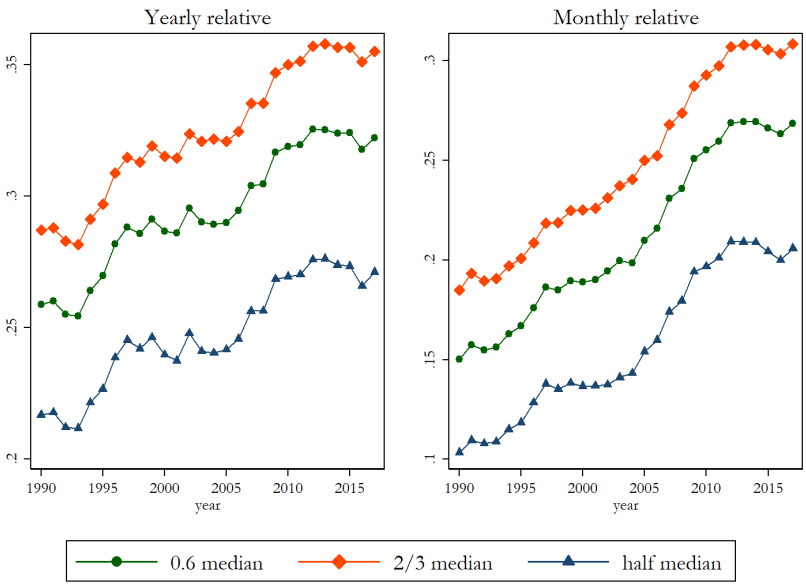


Notes: The graphs above show the low-pay incidence results when adopting different age sample selections. In the left (right) panel we show the evolution of the relative (absolute) low-pay incidence between 1990 and 2017. We consider two age restrictions, one excluding the oldest workers who are close to the retirement age (older than 60 years old) and the other excluding the youngest who may be involved in education and therefore not active in the labour market (youngest than 25 years old). The exclusion of those who are older than 60 years old does not change the percentages of relative and absolute low-pay all along the time span. The exclusion of those who are less than 25 years old implies a reduction in the low-pay incidence, interestingly this reduction is shrinking over time when looking at relative low-pay incidence.

Time period: 1990-2017. Data source: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).

Appendix E

Figure E1: Different relative thresholds



Notes: These graphs show the low-pay results when adopting different relative thresholds. In the left (right) panel we show the evolution of the yearly (monthly) relative low-pay incidence between 1990 and 2017. We compare our reference threshold that corresponds to the 60 % of the earnings median to other two thresholds, one higher (2/3 of the median) and one lower (half of the median). The gap between the two extremes is significant, in 2017 using the highest threshold the level of yearly (monthly) relative low-pay incidence is 35.5 (30.8) and 27.1 (20.6) with the lowest threshold.

Time period: 1990-2017. Database: UNIEMENS, Istituto Nazionale della Previdenza Sociale (INPS).