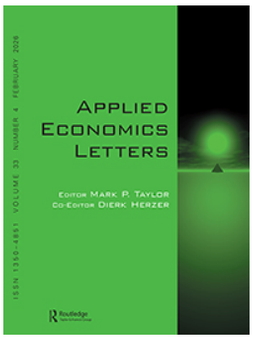

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Applied Economics Letters

ISSN: 1350-4851 (Print) 1466-4291 (Online) Journal homepage: www.tandfonline.com/journals/rael20

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To cite this article: Michele Bavaro (11 Dec 2025): Low-pay persistence in the early stage of the career in Italy, Applied Economics Letters, DOI: 10.1080/13504851.2025.2592797

To link to this article: https://doi.org/10.1080/13504851.2025.2592797

Published online: 11 Dec 2025.

APPLIED ECONOMICS LETTERS
https://doi.org/10.1080/13504851.2025.2592797

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Low-pay persistence in the early stage of the career in Italy

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ABSTRACT

This paper investigates the persistence of low pay during the early stages of workers' careers in Italy, a labour market characterized by wage stagnation, low employment rates, and rising job insecurity. Using rich administrative data from the Istituto Nazionale di Previdenza Sociale (INPS), we construct a balanced panel of labour market entrants from 1995 to 2012 and estimate a dynamic random-effects probit model to assess year-to-year transitions in low-wage employment. Results reveal a marked increase in low-pay persistence over time, with the estimated state dependence parameter rising from 0.46 for the 1995 cohort to 0.58 for the 2012 cohort. Persistence remains significant even when the analysis is restricted to employees, though at lower levels. These findings suggest growing difficulties in escaping low-wage conditions among young Italian workers. The period's coincidence with major labour market deregulation reforms raises questions about the effectiveness of flexibility-enhancing policies in mitigating wage insecurity.

KEYWORDS
Labour market; low-pay; wages; persistence

JEL CLASSIFICATION
J31; J60; I32

I. Introduction

Italy constitutes a particularly instructive case for the study of labour market trajectories, owing to its prolonged wage stagnation, persistently low employment rates, and the increasing prevalence of low-paid employment (Bavaro and Raitano 2024).

This article examines three interrelated dimensions of the Italian labour market. The first concerns the persistence of low-wage employment: whether low pay represents a temporary condition or an enduring state. While some workers experience low pay as a transitory episode, others become entrenched in positions from which upward mobility proves difficult. In such contexts, labour market segmentation emerges as a salient issue, signalling that some groups remain confined to insecure or poorly remunerated jobs. Foundational to this line of inquiry is the contribution of Cappellari (2007), who, using SHIW data, demonstrated that entering low-wage employment substantially increases the probability of remaining in that segment in subsequent periods. The second dimension pertains to labour market entrants at the outset of their careers. A growing body of evidence (Bianchi and Paradisi 2021; Naticchioni, Raitano, and Vittori 2016) highlights a widening intergenerational divide, as younger cohorts encounter progressively deteriorating employment conditions. Third, the analysis concentrates on the period from the mid-1990s onwards, marked by major labour market deregulation reforms (Barbieri and Scherer 2009; Boeri and Garibaldi 2007).

Within this context, the article empirically examines year-to-year persistence in low pay during the initial stages of employment among Italian entrants between 1995 and 2012. The study exploits the rich administrative archives of the Istituto Nazionale di Previdenza Sociale (INPS), which provide detailed longitudinal data on employment histories and enable the construction of a balanced panel dataset. The analysis focuses on continuous five-year early-career trajectories, beginning with the first employment episode recorded in the INPS archives for each cohort of young entrants.

This work is informed by recent contributions such as Bavaro and Tullio (2024), who examine the joint dynamics of unemployment and low-wage employment, and Struffolino and Raitano (2020), who propose an indicator capturing the increasing complexity of early-career trajectories. The study

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contributes to three main strands of research: (i) the persistence and dynamics of low pay in Italy; (ii) early-career transitions and their distinctive patterns; and (iii) the potential association, acknowledged without causal testing, between labour market flexibilization and wage insecurity outcomes.

The rest of the article unfolds as follows. Section II describes the data, Section III explains the methodology, and Section IV presents the results and concluding remarks.

II. Data

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.[1] 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 private employees, while other archives contain information on collaborators, professionals and domestic workers. The administrative database excludes public workers (or civil servants) and artisans, traders and farmers, which constitute the great majority of the self-employed occupational category. Each individual (unit of analysis) may display multiple records for a specific time period (the year in this case), which may be due to either multiple experiences in the same occupational group (say, more than one employee contract per year) or in different groups (say, an employee which has also labour incomes from collaboration contracts).

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. Employed individuals are those who have a positive level of labour earnings in every specific year of the study. The administrative records provide limited demographic information, such as gender, age, and citizenship. We are, also, able to provide information on job characteristics such as the area of work, the type of contract (whether the individual is an employee or not), and, only for employees, we can observe the firm industrial sector.[2]

We examine new entrants to the labour market from a series of annual cohorts spanning 1995 to 2012 and track their early career progression over the subsequent five years. For instance, individuals who begin their careers in 1995 are followed through 2000, while those entering in 2012 are observed through 2017. The sample is restricted to individuals with positive labour earnings in each of the six consecutive years (the entry year plus the following five). In addition, we limit the analysis to individuals who are younger than 40 years old at the time of labour market entry. Therefore, we obtain a five-year balanced panel dataset divided by entry cohort in the labour market.[3]

We use labour earnings to construct measures of low-pay status. The yearly low-pay indicator identifies as low-paid those workers whose yearly individual labour earnings fall below 60% of the median. In addition, we construct a complementary indicator based on monthly individual labour earnings, designed to account for the number of months worked during the year and, consequently, to capture within-year variations in work intensity arising from unemployment spells or seasonal employment.

Table 1 presents a descriptive overview of the sample of labour market entrants, reporting the number of entrants by year of entry, their demographic characteristics, and their area of employment. The absolute number of new entrants peaks in the early 2000s, reaching over 400,000 workers in 2002, before declining steadily to a minimum of approximately 183,000 in 2012. This pattern reflects a concerning trend in the Italian labour market, which can be partly attributed to structural factors, including the impact of the global financial crisis that significantly reduced male employment rates (Lilla and Staffolani 2011). Although the trend is not uniform over time, the share of women among labour market entrants exhibits an overall

[1]The administrative data were provided within the VisitInps Scholars Program.
[2]Classified according to NACE rev. 2 sectoral codes (whose Italian counterpart is ATECO 2007).
[3]Information on working hours is not available in this INPS administrative records, which is a limitation of this study.

Table 1. Descriptive statistics of labour market entrants, 1995–2012.

Year	Obs.	Women	Foreigners	North	Centre	South
1995	243,928	43.63	4.84	65.88	17.33	16.79
1996	286,982	43.08	12.97	64.35	19.56	16.09
1997	264,379	44.72	6.77	61.83	19.61	18.56
1998	295,048	45.84	6.53	60.23	19.99	19.78
1999	339,257	44.72	11.81	56.15	20.35	23.50
2000	356,418	44.18	16.70	56.97	20.89	22.14
2001	332,536	45.90	15.45	53.80	21.42	24.78
2002	406,748	39.56	38.53	55.24	22.75	22.01
2003	279,938	44.43	19.34	52.12	21.33	26.55
2004	263,781	44.96	18.46	51.93	21.22	26.85
2005	255,709	46.60	17.82	50.94	22.24	26.82
2006	276,673	47.31	19.10	51.74	22.69	25.57
2007	374,367	46.09	39.59	52.72	23.58	23.70
2008	266,358	48.45	32.55	51.85	22.91	25.24
2009	243,022	50.21	46.07	53.39	22.49	24.12
2010	198,183	48.55	25.11	52.89	21.97	25.14
2011	194,987	48.37	24.73	54.20	21.65	24.15
2012	183,581	47.12	30.79	53.55	20.66	25.79

Notes: Year denotes the year of entry in the labour market. Foreigners are individuals whose birth place is outside Italy. The area of work (North, Centre or South) refers to the entry year. Source: Authors' elaborations based on INPS administrative records (1995–2017).

upward trajectory, exceeding 50% in 2009. The proportion of foreign-born entrants is both high and increasing, with pronounced peaks in 2002 and 2009, corresponding to periods of large-scale migrant regularization. Moreover, the share of entrants employed in Central and Southern Italy displays a sustained rise throughout the observation period.

III. Methodology

Given the balanced 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 the dynamic correlated random-effects (RE) probit model as popularized by Wooldridge (2005).

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

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

where

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

Here, $y_{i,t}$ denotes low-pay status (yearly or monthly) 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, which includes gender, birth place, area of work (time-constant), age, number of jobs performed during the year, firm and number of employees and the type of contract (time varying). The parameter of interest is θ that captures true state dependence and therefore 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, is modelled taking account of the initial condition y_{i0} (low-pay status in the starting year of work, which denotes the labour market entry cohort) and the possible relationship between unobserved characteristics c_i and the time average of observed characteristics $\bar{x}_i$, as in Wooldridge (2005).

IV. Empirical results and discussion

This section presents the main results of the analysis, focusing on state dependence in low-pay status and its evolution over time, defined by the year of labour market entry. We employ two measures of low pay: one based on annual labour earnings and the other on monthly labour earnings. In addition, we report results for an alternative sample restricted to employees. Accordingly, the dynamic random-effects probit model described in the previous section is estimated separately for each entry

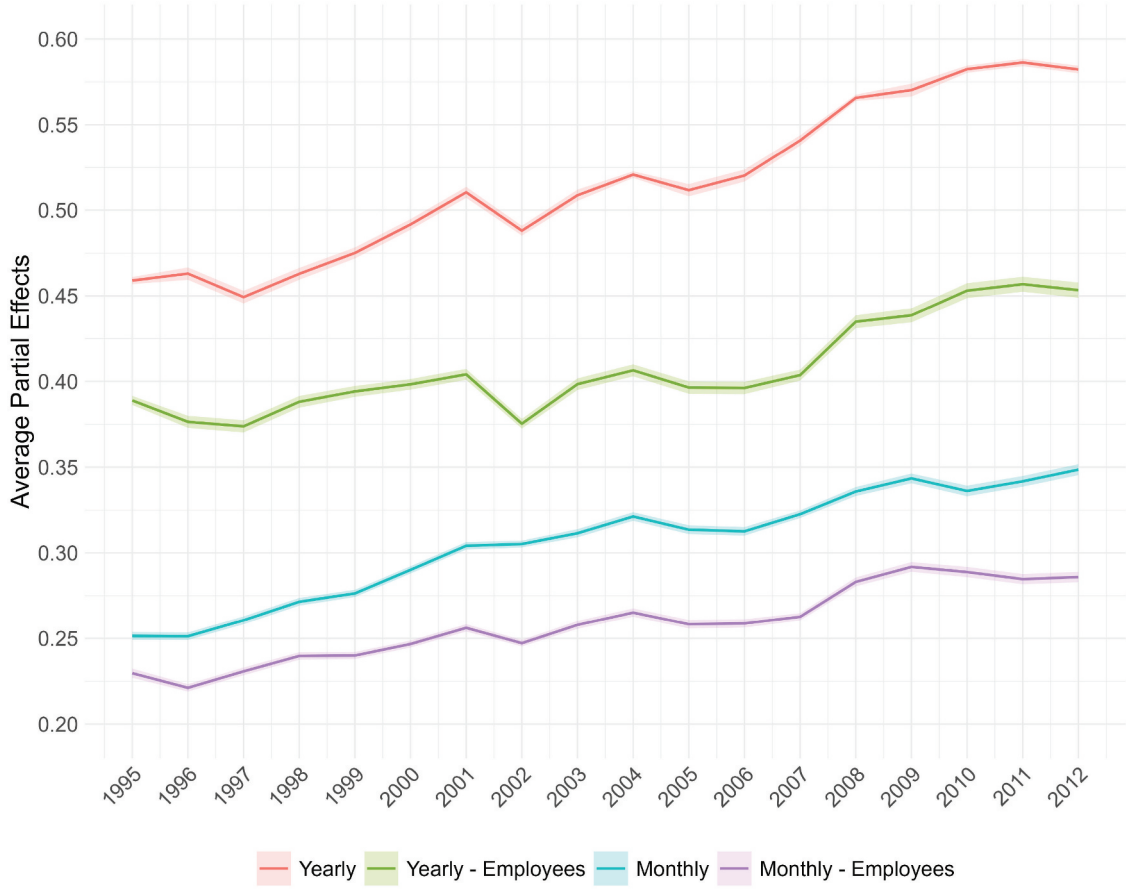

Figure 1. Average partial effects of being low-paid in $t-1$ on being low-paid in t, by labour market entry cohort (1995–2012), re dynamic model. Note: The Figure displays average partial effects of the θ parameter of low-pay persistence from RE dynamic probit model. The dependent variable is the probability of being low-paid in year t, with four different model specifications: i) yearly low-pay (full sample); ii) yearly low-pay (employees' sample); iii) monthly low-pay (full sample); iv) monthly low-pay (employees' sample). All the reported coefficients are significant at the 1% level. Source: Authors' elaborations based on INPS administrative records (1995–2017).

cohort, low-pay indicator, and sample specification.

Figure 1 reports the average partial effects of the θ parameter, estimated through the dynamic random-effects probit model, which measures the year-to-year persistence of low-pay status. All estimates are presented with 95% confidence intervals and are statistically significant at the 1% level. Considering the annual low-pay indicator for the entire sample, a clear upward trend in early-career low-pay persistence emerges over the observation period. Specifically, the estimated θ parameter increases from approximately 0.46 for individuals entering the labour market in 1995 to around 0.58 for those entering in 2012. When restricting the analysis to employees only, the overall level of persistence decreases, as expected, given that employees generally experience more stable career trajectories compared with other occupational groups. Nonetheless, the upward trend remains evident, with θ values rising from 0.39 for the 1995 cohort to 0.45 for the 2012 cohort. Interestingly, the inclusion of firm-sector controls in the employees-only model does not substantially alter either the level or the trend of persistence, as illustrated in Figure A1 (Chart A). Overall, analysis of the annual low-pay indicator reveals that the only entry cohort exhibiting a slight decline in year-to-year persistence is that of 2002. As illustrated in Figure A1 (Chart B), this cohort coincides with a peak in the average partial effects observed for foreign workers and those residing in Southern Italy.

The low-pay persistence is also reduced when using monthly rather than yearly earnings. Accounting for low within-year work intensity

implies a decrease in the low-pay persistence levels. Still, a strong upward trend is confirmed (from 0.25 for 1995 cohort to 0.35 for 2012 cohort). As for yearly earnings, when the sample is restricted to employees, persistence in monthly low-pay shifts downward, but, also in this case, there is an upward trend across the year of entry in the labour market (values of persistence go from 0.22 for 1995 cohort to around 0.29 for 2012 cohort).

This evidence portrays the early stages of Italian workers' careers as a particularly challenging period, during which low-pay persistence emerges as a significant and enduring issue. The upward trend in this phenomenon is cause for concern, as it may have long-term implications for both wage insecurity and subsequent career development. This result may be influenced by macroeconomic trends, such as the effects of the late-2000s financial crisis, which are also reflected in the decline in labour market entrants shown in Table 1.

Notably, the period under investigation, covering entry cohorts from 1995 to 2012, coincides with a series of major deregulation reforms in the Italian labour market. Although the present study is descriptive in nature and does not establish causal relationships, the effectiveness of these reforms, which were designed to enhance labour market flexibility, appears questionable in light of the observed rising persistence of low pay. Future research should aim to incorporate causal analyses of the potential effects of such reforms, particularly those related to the expansion of part-time employment, on workers' low-wage trajectories.

Acknowledgements

The realization of this article was possible thanks to the sponsorships and donations in favour of the VisitINPS Scholars Program. The findings and conclusions expressed are solely those of the author and do not represent the views of INPS.

Author contributions

CRediT: **Michele Bavaro:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Validation, Writing – original draft, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work has been funded by the European Research Council Synergy Grant 856455 for project DINA.

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Appendix A

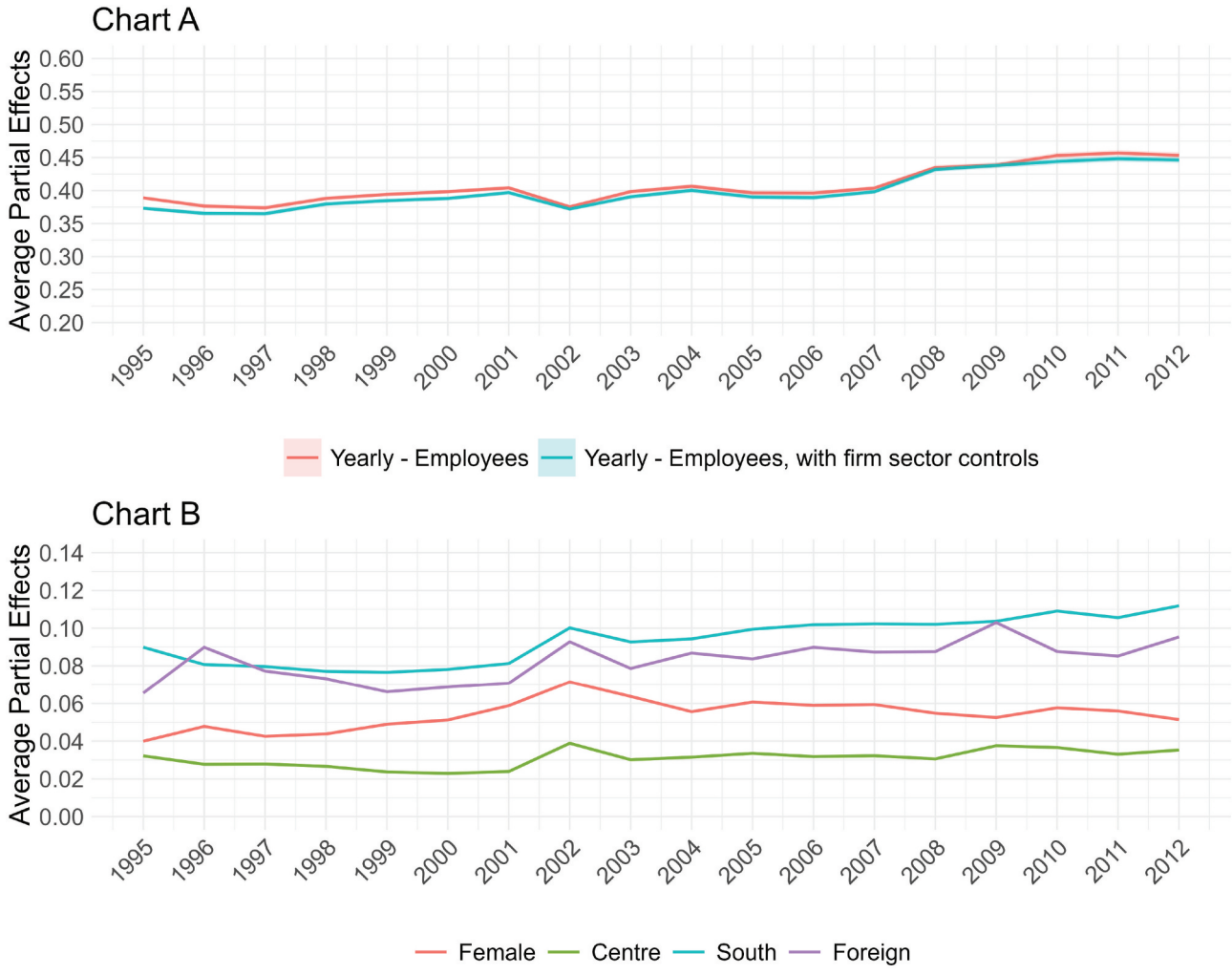

Figure A1. Average partial effects of being low-paid in $t-1$ on being low-paid in t, by labour market entry cohort (1995–2012), re dynamic model. Note: The Figure displays average partial effects from dynamic probit model estimations, where the dependent variable is the probability of being low-paid in year t. Chart A shows average partial effects from the employees' sample, with and without firm-sector controls. In Chart B we show average partial effects from workers' characteristics (gender, area of work and birth place). All the reported coefficients are significant at the 1% level. Source: Authors' elaborations based on INPS administrative records (1995–2017).