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Working paper

# Work after retirement in Italy: evidence from merged data survey and administrative records

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## Abstract

This paper explores the labour market participation of Italian pensioners between 2004 and 2017, exploiting a novel dataset that combines administrative and survey data. In line with official statistics, about 10% of pensioners in our data also engage in paid employment. We characterise these working pensioners and investigate their motivations for working. We find that 60% of working pensioners are self-employed and that the vast majority (nine out of ten) of these were also self-employed before retiring. We observe a strong persistence in post-retirement self-employment: 84% of former non-professional self-employed stay in work for at least four years after retirement, compared to 46% of private employees. In addition, the characteristics of being male, married, resident in the Centre-North, highly educated, having a partner in work and being in good health are associated with a higher probability of being a working pensioner. Regarding the motivation for working, our regression analysis indicates that financial need plays a limited role. We find weak evidence that the very poorest pensioners exhibit a higher probability of working, and this effect mostly disappears when using panel data to control for unobserved individual characteristics. These results suggest that the decision to continue working is primarily driven by preference rather than financial need.

## Keywords

Working pensioners; preferences; financial need; administrative data; self-employed; unretirement; labour-market participation.

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# **Work after retirement in Italy: Evidence from merged survey data and administrative records**

## **1. Introduction**

Starting from the last decade of the twentieth century, labour-force participation among older workers has substantially increased in all advanced economies. An important role in this trend is played by public pension policies: higher legal retirement ages and increased actuarial fairness in the computation of pension benefits have been common responses to increasing life expectancy. Another important factor is given by changes in the transition from work to retirement, as retirement is now more flexible in many advanced economies and people can choose forms of gradual retirement and pensioners are allowed to (return to) work after retirement.

In the present paper we investigate the labour market participation of Italian pensioners for the period 2004-2017, using a novel dataset that combines administrative and survey data. Our aim is to document the characteristics of working pensioners and shed some light on what motivates their participation, particularly with regard to the distinction between working as a result of financial need or of a lifestyle choice.

Italy represents an interesting case in the international panorama for at least two reasons. First, the notional defined contribution system that was introduced in 1995 has contributed to make the Italian pension system less distortive with respect to labour market choices. The increase in the legal and effective retirement age,<sup>1</sup> and more restricted routes into early retirement, have contributed to an increase in labour market participation later in life in the last two decades. Despite this, employment to population ratios among older workers are low compared to other developed economies: according to OECD statistics, in the age brackets 60-64, 65-69 and 70-74, in 2023 employment to population ratios in Italy were 44.1%, 14.7% and 9.7%, respectively, compared to 55%, 29% and 23.2%, for the average of OECD countries. The second relevant feature of Italy concerns rules for the labour market participation of pensioners. For a relatively long period, having a job after retirement was discouraged through means-testing procedures that reduced the amount of pension benefits in case of participation in the labour market. It was only starting in 2001 that Italian law allowed individuals to fully cumulate old-age pension benefits and earnings, albeit with some relevant exceptions.<sup>2</sup> From 2009 onwards, the possibility to fully cumulate earnings and old-age pension benefits without constraint has been guaranteed to most pensioners. The contribution rate is the same for working pensioners as for other workers, and it depends on the pension scheme of the individual/sector. Artisan workers and shopkeepers who receive an old-age pension, can apply for a 50% reduction in contributions. In any case, as for all other workers, contributions cumulate in a notional account and receive a notional interest rate equal to the 5-year average growth rate of the Italian nominal GDP. This notional capital can be converted into an annuity, which gets added to the existing one of the pensioners, after a 5-year period. Notwithstanding the relaxation of the rules, aggregate data on working pensioners do not show significant increases. In fact, statistics from the Italian National Institute of Social Security (INPS) suggest a decline from 0.8 million individuals in 2014 to 0.7 million in 2017, though a decrease may be partly driven by the increase in legal retirement age.

Our study contributes to the literature on working pensioners on two distinct fronts. First, we document the characteristics of working pensioners in Italy. In our analysis we combine administrative data on contribution

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<sup>1</sup> According to INPS data on old-age pension benefits for private employees, the average retirement age was 57 in 1997. It has reached 62.7 (64.2) in 2017 (2023).

<sup>2</sup> Exceptions concerned part-time workers, which were only allowed a partial degree of cumulation, and cases of early withdrawal of pension benefits, where earned labour income would be reduced up to 30%, unless a pensioner had at least 40 years of seniority.

records and retirement, with survey data on socio-demographic characteristics and income., This allows us to carefully define employment status and, at the same time, exploit a rich set of information about the individual and the household. Consistent with external statistics, we find that working pensioners are mostly self-employed individuals – especially non-professional self-employed, i.e. shop owners, farmers and craftsmen – both before and after retirement. In addition, among the pool of working pensioners, we observe that there is a higher fraction of individuals with a university degree, that are married, that reside in the Centre-North, and that are male, relative to the group of pensioners who are not in work.

Moreover, we study participation of working pensioners, in terms of probability of working at any given year, in relation to a set of individual and household characteristics. With the aim of contributing to the debate on whether working pensioners are motivated by financial need or are making a lifestyle choice, we investigate whether participation is associated with being in different deciles of the distribution of household income. Estimates from pooled Probit regressions point in the direction of small effects of increased participation only for those in the poorest decile, and no significant differences in participation associated with being in any other deciles. Once controlling for fixed characteristics through panel data regressions, there is no, or very weak, evidence of any association between participation and household income. We take these results as evidence that, over the time frame that we have analysed, Italian working pensioners have chosen to work for reasons other than financial need. This is in line with recent descriptive evidence, outside the time frame of our study, provided by the National Institute of Statistics (ISTAT) in the 2023 report on labour market participation of the over 50s (ISTAT, 2023). More than half of those who continue to work straight after drawing a pension, declare that the main reason for doing so has to do with personal satisfaction and to continue being productive in the society, and this number reaches about two thirds among university graduates.

The rest of the paper is organised as follows. Section 2 provides a summary of the literature of related studies. Section 3 describes the datasets used, explains how participation in the labour market is defined and presents the basic characteristics of working pensioners in our sample. Further descriptive evidence to characterise working pensioners is presented in Section 4, together with a preliminary analysis on the distribution of household income between working and non-working pensioners and within the group of working pensioners. In Section 5, we present the results of Probit regressions and panel data regressions. Finally, Section 6 concludes.

## **2. Related literature**

Previous research on working pensioners has mainly been performed using survey data. For the US, Haywall et al. (1994) and Cahill et al. (2011) study the probability of re-entering the labour force after retirement (“unretirement”) using, respectively, the National Longitudinal Survey of Older Men and the Health and Retirement Study (HRS). Age is found to be a strong predictor of re-entry into the US labour market. Using pooled logistic regressions, the authors find that health and pension status, as well as spousal work, play a role in the decision to unretire. The role of income is such that post-retirement employment is more common among those with the lowest as well as the highest wage rates than among those in the middle of the wage distribution. Maestas (2010) uses the HRS to focus on the distinction between planned and unexpected unretirement in the US. A specific question on expected paid work when the individual retires allows her to conclude that most unretirements were planned before retiring and that, among unplanned retirements, the cause rests on a change in preferences rather than income. Along this line, Johnsen and Willén (2022) exploit a feature of the Swedish pension system to study labour supply responses to income shocks for full-time pensioners, and conclude that the decision to re-enter work is unrelated to income.

An earlier study on Swedish register data by Petterson (2014) produced mixed conclusions about the role of economic factors in the decision to unretire: as well as there being some evidence of a role of financial motives, there is evidence of a role played by lifestyle decisions, too. Nolan and Barrett (2019a) look at the probability of working beyond age 65 by using data from four waves of The Irish Longitudinal Study of Ageing (TILDA). With a pooled Probit model, they find that the absence of supplementary pension income or state pension income in the household is associated with a higher probability of working; moreover, that the higher the individual and spousal income from supplementary private, state pension and other state benefits, the lower is the probability of working. The mixed evidence in the literature on the reasons behind the decision to work after retirement is summarized by Montizaan (2017). In his paper, he also summarises the variation across EU countries that emerges from a direct question on the main reason for which persons who receive a pension decide to continue working. This question is posed in the 2012 wave of the EU Labour Force Survey and reveals that countries in which there is a high fraction of post-retirement workers motivated by financial reasons are those in Central and Eastern Europe, whereas in countries such as Denmark, Sweden and the Netherlands, non-financial reasons are the main driver to continue working.

The role of lifestyle choices, as opposed to financial reasons, has been documented above all for the UK. Kanabar (2015) performs a duration analysis of unretirement based on the English Longitudinal Study of Ageing and finds that the hazard of unretirement is highest for individuals in their mid-to-late sixties, and that unretirement is a type of behaviour more likely to be exhibited by individuals who retired relatively early. Moreover, his analysis suggests that unretirement is not generally a response to suboptimal retirement savings, but is instead likely to be a lifestyle choice. Similarly, Platts et al. (2019) focus on the decision to return to work after retirement, by undertaking survival analysis based on panel data from the British Household Panel Survey/Understanding Society. Their conclusion is in line with Kanabar (2015) in that unretirement is not associated with being in greater financial need. Moreover, they find that the more common features of those who unretire include being male, more educated, in better health, and having a partner in paid work.

### **3. Data**

We use three data sources, two administrative sources from the National Institute for Social Security (INPS), and the Italian component of the European Union Statistics on Income and Living Conditions (IT-SILC) survey in the period 2004-2017. IT-SILC data are collected by the National Institute of Statistics (ISTAT), with reference population being private households and their members. It contains a cross-sectional and a longitudinal component, which observations can stay in for up to four years.

SILC data provides us with socio-demographic and economic information for household heads and other household members, which we cannot recover from INPS administrative data. Education, family composition, health status and household income, are some of the crucial elements of the dataset that we use in our analysis. Income information refers to the calendar year before interview, whereas the other variables refer to the time of interview.

Our reference is SILC data for the years 2004-2017. INPS data is linked to SILC records via the tax code identifier, the so-called "*codice fiscale*", which is then substituted by an anonymised unique code. Information on pensions is available only (and at most) for the SILC years, whereas the individual contribution history is available in full.

INPS data includes data on contribution history as well as information on pensions. Through the contribution history, we can recover a rich set of work characteristics: occupational status (private employee, self-employed, atypical contract or “mixed”<sup>3</sup>) both as a working pensioner and for the last occupation prior to retirement; contract characteristics of the last job prior to retirement and of the job as working pensioner (full-time or part-time, and fixed-term or open-ended contract); the type of position (blue collar, white collar and manager); and the total duration in days in each occupational status prior to retirement. For private employees and atypical workers, we also know the sector (agriculture, manufacturing, services and construction). Administrative data on pensions includes the type of pension (old-age, seniority, survivors, disability, and invalidity), the starting date of each pension and its monthly amount gross of income tax.

INPS data is our main source to identify working pensioners, which are a relatively small group of workers and therefore typically not well represented in general survey data. On the other hand, SILC survey data provides information on household characteristics and on household income, which we think is crucial to our investigation and that we could not recover from INPS data.<sup>4</sup> Linking these two sources of data is therefore at the core of our analysis. The way in which we define a working pensioner is described in section 3.1.

All monetary values reported in the paper are in real terms, in 2017 values, and are deflated using the Italian consumer price index for the families of workers and employees (the “FOI”).

### 3.1. Participation in the labour market

Participation of the pensioner in the labour market is defined according to the information in INPS administrative data: the pensioner is a *working pensioner* if she/he has at least one contribution record, of any duration, in the year(s) of observation, starting from two years after retirement. That is, we do not consider as working those pensioners that have a contribution record from work after retiring but in the same year as retirement or in the year after (of course, if they continue working, they will be recorded as such in the subsequent years). The reason for this is related to the way income data is recorded in SILC, which refers to the year before interview. To illustrate this with an example, say one retires in 2014 and works in the same year and until 2017. We only record this person as a working pensioner for the years 2016 and 2017. If we recorded the individual as a working pensioner also for 2014 and 2015, his/her income in period  $t-1$  would include income from employment prior to retirement. In particular, in 2014 SILC data, income would refer to 2013, when the individual was not retired yet, and in 2015 SILC data, income would refer to 2014, when the individual partly worked before retiring and partly worked as a working pensioner, with labour income in SILC being pooled across these two periods.<sup>5</sup> For the self-employed, the definition of

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<sup>3</sup> Atypical workers are intended as workers with collaboration contracts, so-called “Co.Co.Co.” according to the Italian acronym. The “Mixed” category includes individuals whose pre-retirement occupational status is a mix of two or more statuses, for instance, someone who worked partly as a private sector employee and partly as a professional in the most recent year prior to retirement.

<sup>4</sup> INPS contribution histories do record the amount of labour earnings that form the base for pension contributions, but these are not helpful in our analysis. For self-employed individuals (especially non-professional self-employed), which is the largest group among working pensioners, labour earnings are often reported around a lower bound that ranges between twelve and sixteen thousand euros (in current prices) in the period 2004-2017, which corresponds to the minimum contribution base used for SICs calculations. Therefore, in many cases INPS data is not informative regarding the actual earnings of self-employed workers.

<sup>5</sup> More than eighty percent of working pensioners work for more than two years, and therefore are picked up in our sample anyway. See Table 2 for evidence on the duration of work spells among working pensioners.

participation in the main analysis, based on observing a contribution record, boils down to observing an active VAT account<sup>6</sup> for the individual.

Recording whether a pensioner works in a given year in our data allows us to relate work participation to evolving socio-economic situation, in particular to income (in the year before) and to whether the partner is in work. This differs from the analysis in Petterson (2014) where the focus is on the probability of going back to work (referred to as unretirement), at least once, in the period of observation.

For sensitivity analysis, we use an alternative definition of working pensioner, based also on SILC data, which refers to the individual's self-declared current economic status. In this case, of those with at least one contribution record from work after retirement (i.e. identified by the INPS-based definition above), we define as working pensioners individuals that declare themselves as "mainly working" in SILC.<sup>7</sup> Therefore, the set of working pensioners according to this definition is a subset of the one identified by the main definition based on INPS records. Using self-reported current working status to identify a working pensioner is partly in line with Maestas (2010) and Platts et al (2019), where unretirement is defined in relation to transitions from full or partial retirement to full-time or part-time employment on the basis of survey questions on hours of work and self-reported retirement status. The difference, in our case, is that self-reported working status is combined with information from administrative records.

### 3.2. Sample selection and description

We select people aged 45 to 80, who have retired after 1960, whose age at retirement is above 40, who do not have missing information on self-reported health status, on pre-retirement contribution history, or on pre-retirement occupational status / position. Due to the way we define working pensioners, as described in subsection 3.1, we also exclude individuals in the year they retire or the year after, otherwise their working status and the source of their income would not be aligned in time.

Our analysis is performed on a sample that does not include public sector employees. Administrative data had very few observations for individuals that were employed in the public sector prior to retirement and, at the same time, most of the observations with missing pre-retirement information turned out to be public sector employees when we matched administrative data and SILC self-reported data. In fact, evidence from INPS (2025) reports that, among pensioners that are active in the labour market, only 0.9% was employed in the public sector before retiring. We therefore dropped the few observations on public sector employees from our analysis. We also drop observations that record zero old-age and seniority pension in SILC data despite being retired according to INPS data. As a result, we end up with 94,812 (individual-year) observations for the period 2004-2017.<sup>8</sup>

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<sup>6</sup> The Value Added Tax (VAT) account (*Partita IVA* in Italian) is a unique identifier issued by the government to businesses and self-employed. It allows them to collect VAT on their sales, claim VAT back on their purchases and comply with tax regulations.

<sup>7</sup> For instance, in year 2011, we retrieve this information from SILC question PL031, which asks basic labour information on self-defined current activity status and current job. In line with this, SILC variable "CONDIZ" recovers information on whether the individual is an employee, either full-time or part-time, or self-employed, either full-time or part-time.

<sup>8</sup> Restricting the original sample only to people aged 45 to 80, who retire after 1960 and whose retirement age is above 40, we have a total of 111,611 individual-year observations. Having a missing pre-retirement contribution history is the factor that contributes the most to sample size reduction.

For the main definition adopted in our analysis, the one based on INPS data, we have approximately 10% of old-age pensioners participating in the labour market in each year, as reported in Table 1.<sup>9</sup> Overall, we have 9,532 working pensioners according to the INPS-based definition. When we use the alternative definition, based on the combination of administrative and self-reported data, working pensioners are 4,048. The smaller sample obtained from the combined data sets is due to the fact that, within the set of working pensioners identified from administrative data, we select those that declare themselves as mainly working, leaving out all those that have at least a contribution record in administrative data but do not consider “working” as their main current activity. In the rest of the paper, we use the INPS-based definition, except in the regression analysis, where we perform sensitivity analysis using the alternative definition based also on SILC data.

**Table 1 – Number of working pensioners over time**

Year	Non-working pensioners		Working pensioners	
	Obs.		Obs.	% of total pensioners
2004	6,689		679	9.2
2005	6,449		702	9.8
2006	6,566		714	9.8
2007	6,381		733	10.3
2008	6,648		718	9.7
2009	6,516		782	10.7
2010	5,924		723	10.9
2011	5,985		682	10.2
2012	5,878		680	10.4
2013	5,607		608	9.8
2014	5,990		655	9.9
2015	5,151		618	10.7
2016	5,670		648	10.3
2017	5,826		590	9.2
Total	85,280		9,532	10.1

*Source:* Authors’ elaborations based on merged INPS and SILC data.

Table 2 provides evidence on how long people wait before unretiring and the duration of the work spells by occupational status before retirement (excluding public sector employees for the reasons highlighted above).<sup>10</sup> By unretirement we mean going back to work after retiring, so that a zero time span before unretiring is equivalent to carrying on working across retirement. Please note that in Table 2 observations are non-repeated individuals, and not individual-year observations, and statistics are based on the subset of working pensioners.

Evidence not included in Table 2 indicates that most individuals have only one working spell after retirement and almost all have no more than three. With this in mind, from Table 2 we conclude that about 73% of working pensioners continue working straight after retirement, i.e. they become working pensioners the day after retiring, and that about 70% of first work spells after retirement are four years or longer. We think that this high proportion might be first evidence of preference for work rather than financial need, and that it is likely to be the result of planned, rather than unplanned, decisions, as found in Maestas (2010). Looking at the occupational status before retirement, we find that more than 92% of the working pensioners that were self-employed before retiring (either professionals or other self-employed) do not stop working once retired,

<sup>9</sup> This is in line with more recent evidence from INPS (2025), that reports that 8.4% of pensioners are still active in the labour market in the year after retiring and from ISTAT (2023), that reports that 9.4% of pensioners declares having worked in the first six months after retiring.

<sup>10</sup> “Before retirement” refers to the most recent year prior to the retirement year in which workers report INPS contribution records.

i.e. their time span to resume work is zero. This can be due to fiscal rules, since self-employed workers are required to have a VAT account, which is at the basis of the contribution record in the administrative data as we said when we defined participation, and this is probably kept open across retirement for that year. However, the fact that, for the self-employed, we observe work spells after retirement that are longer than one year, leads us to believe that the behaviour that we observe is not just due to this administrative requirement.<sup>11</sup> In fact, for workers that were non-professional self-employed before retiring, the length of the first work spell after retirement is very high: for about 84% of this group, it is longer than 4 years, and, for about 64% of them, it is longer than 8 years. Working pensioners who were private employees before retiring display rather different behaviour relative to former self-employed: only about 31% of them carry on working with no interruption across retirement, whereas the remaining two thirds wait for varying amounts of time, as reported in the first column of the top panel of Table 2. Of this group of working pensioners that was employed in the private sector before retiring, about 46% stays in work for a long period, of at least four years, in their first work spell after retirement, whereas for about 16% this spell is between six months and one year.

**Table 2 – Time spans before and after unretirement by occupational status before retirement**

	Private employee	Self-employed: professional	Self-employed: other	Atypical workers	Mixed	Total
<i>Time span before unretiring</i>						
Zero	31.5%	92.7%	94.5%	89.3%	90.5%	72.5%
1 day – 1 month	1.6%	0.0%	0.0%	0.0%	0.4%	0.6%
1 – 6 months	12.9%	1.9%	0.6%	1.8%	1.8%	5.0%
6 months – 1 year	5.3%	0.0%	0.5%	0.9%	2.6%	2.3%
1 - 2 years	9.1%	0.6%	0.7%	2.7%	0.7%	3.6%
2 – 4 years	11.5%	1.9%	1.3%	3.6%	1.5%	4.9%
4 – 8 years	13.1%	1.9%	1.1%	0.9%	1.5%	5.2%
8 – 16 years	12.7%	1.2%	1.0%	0.9%	1.1%	5.0%
More than 16 years	2.4%	0.0%	0.2%	0.0%	0.0%	0.9%
	100%	100%	100%	100%	100%	100%
<i>Duration of first work spell after unretiring</i>						
1 day – 1 month	5.4%	2.4%	0.6%	0.9%	1.8%	2.4%
1 – 6 months	7.4%	2.4%	2.0%	4.5%	0.4%	3.8%
6 months – 1 year	15.8%	3.7%	2.3%	1.8%	1.5%	6.9%
1 - 2 years	9.6%	1.2%	2.8%	3.6%	4.4%	5.2%
2 – 4 years	15.5%	13.4%	8.3%	14.3%	15.0%	11.5%
4 – 8 years	20.1%	26.8%	18.6%	26.8%	27.5%	20.2%
8 – 16 years	21.2%	36.0%	41.6%	46.4%	41.0%	34.5%
More than 16 years	5.0%	14.0%	23.7%	1.8%	8.4%	15.5%
	100%	100%	100%	100%	100%	100%
Obs.	1,486	164	2,309	112	273	4,344

*Note:* Statistics are based on non-repeated individuals – and not on individual-year observations as for all other tables and figures – including only working pensioners. Atypical workers are intended as workers with collaboration contracts, so-called “Co.Co.Co.” according to the Italian acronym. The “Mixed” category gathers individuals whose pre-retirement occupational status is a mix of two or more statuses, for instance, someone who worked partly as a private sector employee and partly as a professional in the most recent year prior to the retirement year. *Source:* Authors’ elaborations based on merged INPS and SILC data.

<sup>11</sup> Using the alternative definition of working pensioner, based on self-reported working status in SILC survey data as we do in the regression analysis, is another way to deal with this issue.

## 4. Descriptive evidence

To document the characteristics of working pensioners and how their participation is related to household income, we perform a set of descriptive analyses before turning to a regression framework.

### 4.1. Socio-demographic characteristics

We compare the distribution of non-working pensioners and of working pensioners with reference to a set of socio-demographic and economic characteristics. Table 3a is based on features provided by SILC data, whereas Table 3b is based on INPS data.

As expected, working pensioners are more concentrated in younger age groups than non-working pensioners, and about 65% of working pensioners are in the 61-70 age-range. We also observe a higher level of education for working relative to non-working pensioners, both for a high-school completion and for a university degree.<sup>12</sup> Concerning self-reported health status, the group of working pensioners has a higher proportion with good outcomes than the group of non-working pensioners. The proportion of widows is substantially higher in the group of non-working pensioners, possibly in relation to the age composition of the two groups. With regard to family composition, households with more than two members are more common among working pensioners than among non-working ones. Participation by gender is rather uneven: about three quarters of working pensioners are male, whereas among non-working pensioners males are only slightly more than half. Also, 88% of working pensioners reside in the Centre-North as opposed to about 78% in the group of non-working pensioners.

Administrative data in Table 3b indicate that, compared non-working pensioners, the group of working pensioners contains a higher fraction of individuals with partner in work and of individuals who were (non-professional) self-employed prior to retiring. In particular, about 60% of our sample of working pensioners were self-employed before retiring and the vast majority of these (56% of the sample) were non-professional self-employed.

**Table 3a – Descriptive statistics: SILC survey data**

Characteristics	Non-working pensioners		Working pensioners	
	Obs.	%	Obs.	%
<i>Age</i>				
<=50	50	0.1	1	0.0
51-55	420	0.5	57	0.6
56-60	4,335	5.1	969	10.2
61-65	16,467	19.3	3,090	32.4
66-70	24,278	28.5	3,077	32.3
71-75	22,434	26.3	1,675	17.6
76-80	17,296	20.3	663	7.0
<i>Education</i>				
Up to lower secondary education (age 14)	63,782	74.8	6,469	67.9
Secondary education (age 19)	16,996	19.9	2,122	22.3
University degree or above	4,502	5.3	941	9.9
<i>Self-reported health status</i>				
Very good	2,267	2.7	431	4.5

<sup>12</sup> Given that, as reported in Table 3b, the majority of working pensioners comes from the group of self-employed before retiring, and that this group has, on average, lower education, the higher education observed for the group of working pensioners is possibly related to the fact that working pensioners are younger (and thus more educated) than non-working pensioners.

Good	29,674	34.8	4,806	50.4
Fair	38,392	45.0	3,617	37.9
Bad	12,385	14.5	601	6.3
Very bad	2,562	3.0	77	0.8
<i>Area: population density</i>				
High	29,564	34.7	2,690	28.2
Intermediate	34,031	39.9	4,109	43.1
Low	21,655	25.4	2,733	28.7
<i>Housing tenure</i>				
Rent	7,732	9.1	574	6.0
Owner-occupied	71,876	84.3	8,448	88.6
Other	5,672	6.6	510	5.4
<i>Marital status</i>				
Not married	6,215	7.3	547	5.7
Married	60,873	71.4	7,626	80.0
Separated/divorced	3,971	4.7	590	6.2
Widow	14,221	16.7	769	8.1
<i>Macro-area</i>				
North	45,919	53.8	5,756	60.4
Centre	20,452	24.0	2,662	27.9
South	18,909	22.2	1,114	11.7
<i>Number of household members</i>				
1	15,897	18.6	1,140	12.0
2	45,186	53.0	4,423	46.4
3	16,266	19.1	2,495	26.2
4	5,284	6.2	986	10.3
5	1,761	2.1	316	3.3
6 or more	886	1.0	172	1.8
<i>Gender</i>				
Male	46,921	55.0	7,195	75.5
Female	38,359	45.0	2,337	24.5
Total	85,280	100	9,532	100

Source: Authors' elaborations based on merged INPS and SILC data.

**Table 3b – Descriptive statistics: INPS administrative data**

Characteristics	Non-working pensioners		Working pensioners	
	Obs.	%	Obs.	%
<i>Partner's occupational status</i>				
Not in work	54,867	64.3	5,350	56.1
In work	7,312	8.6	2,408	25.3
Without partner	23,101	27.1	1,774	18.6
<i>Occupational sector before retirement</i>				
Private employee: below managerial level	59,696	70.0	2,728	28.6
Private employee: managerial level	1,937	2.3	262	2.7
Self-employed: professional	385	0.5	343	3.6
Self-employed: other	21,497	25.2	5,352	56.1
Atypical workers	733	0.9	244	2.6
Mixed	1,032	1.2	603	6.3
Total	85,280	100	9,532	100

Source: Authors' elaborations based on merged INPS and SILC data.

To complete the characterisation of working pensioners, in Table 4 we illustrate the transitions between occupational status before retirement and current occupational status. More than half of working pensioners are self-employed and we notice high persistence among self-employed professionals and among other self-

employed: roughly nine out of ten self-employed before retiring are self-employed also as working pensioners. This high share of self-employment among working pensioners is in line with the evidence reported in Nolan and Barrett (2019b) for Ireland, which also reflects the situation of many other countries (Montizaan, 2017). Another relevant feature emerges for private sector employees: about half of individuals in positions that were not managerial before retiring, end up in the same group as working pensioners, whereas just over 30% switches to atypical contracts. Instead, among those who were in managerial positions before retiring, more than half take up atypical contracts after retiring. In general, the largest shifts between pre-retirement and current occupational status as a working pensioner occur among self-employed professionals and atypical workers, whose numbers increase from 343 to 674 and from 244 to 1,671, respectively.

**Table 4 – Transitions between occupational status before retirement and current occupational status**

Occupational status before retirement	Current occupational status						Total
	Private employee: below managerial level	Private employee: managerial level	Self-employed: professional	Self-employed: other	Atypical worker	Mixed	
Private employee: below managerial level	1,344 49.3%	13 0.5%	175 6.4%	225 8.3%	868 31.8%	103 3.8%	2,728 100%
Private employee: managerial level	13 5.0%	5 1.9%	49 18.7%	44 16.8%	139 53.1%	12 4.6%	262 100%
Self-employed: professional	0 0%	0 0%	320 93.3%	2 0.6%	7 2.0%	14 4.1%	343 100%
Self-employed: other	236 4.4%	0 0%	20 0.4%	4,667 87.2%	294 5.5%	135 2.5%	5,352 100%
Atypical worker	8 3.3%	2 0.8%	14 5.7%	8 3.3%	196 80.3%	16 6.6%	244 100%
Mixed	42 7.0%	0 0%	96 15.9%	154 25.5%	167 27.7%	144 23.9%	603 100%
Total	1,643 17.2%	20 0.2%	674 7.1%	5,100 53.5%	1,671 17.5%	424 4.5%	9,532 100%

Source: Authors' elaborations based on merged INPS and SILC data.

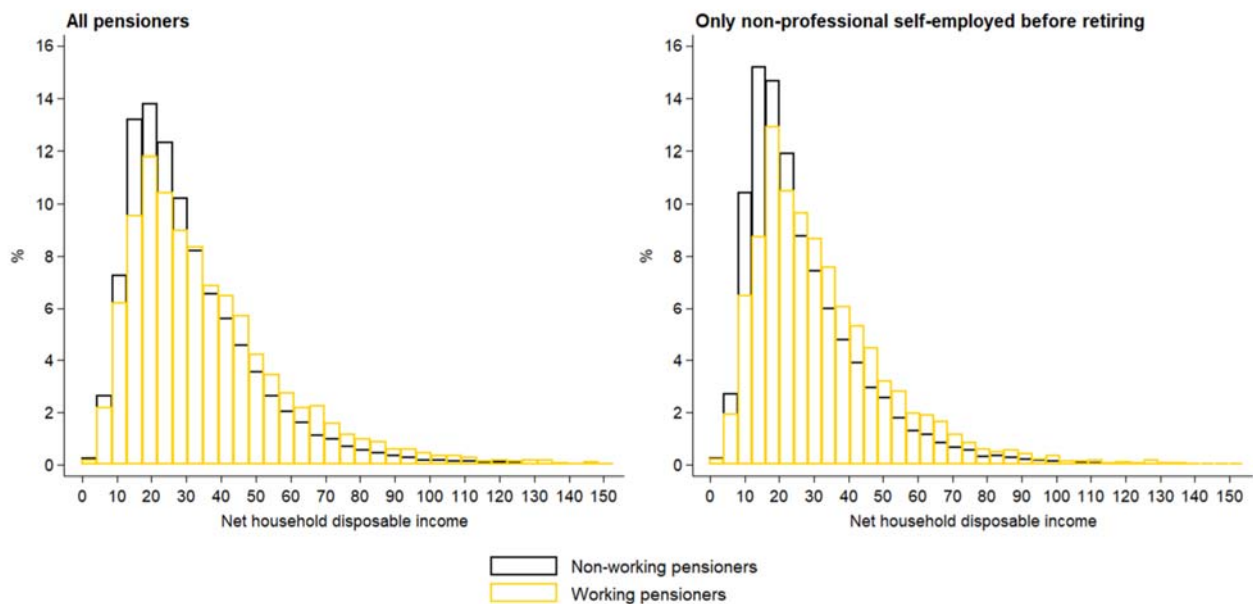
#### 4.2. Income

We have noticed that, among pensioners that are in work, there is a higher fraction of individuals with a university degree, that are married, that reside in the north, and that are male, relative to the group of pensioners who are not in work. Moreover, working pensioners are mostly non-professional self-employed (before and after retirement). We now want to relate individual characteristics to household income, to investigate whether pensioners in low-income households are more likely to participate in the labour market. If this were the case, we would interpret it as evidence that pensioners participate in the labour market for financial reasons rather than as a lifestyle choice. At a descriptive level, we first compare the distributions of household income between working and non-working pensioners, and also provide a focus on the group of non-professional self-employed, given the importance that this group has among working pensioners. We then look at the composition of household income within the group of working pensioners, to document the importance of labour income relative to other income sources across household income deciles.

To compare the distributions of household income between working and non-working pensioners, we consider household disposable income as provided by SILC data, and subtract the working pensioner's labour income (referred to as *net household disposable income* in what follows). Because of the structure of SILC data, for participation in the labour market at time  $t$ , net household disposable income refers to time  $t-1$ . That is, net household disposable income is given by household income in period  $t-1$  minus the pensioner's labour income in the same period if she/he was working.<sup>13</sup> Removing the working pensioner's labour income of period  $t-1$  from household income of the same period allows us to condition out a potential source of endogeneity coming from persistence in participation in the labour market. This way, the decision to work at time  $t$  is related to the part of household income at time  $t-1$  that is not affected by the decision to work as a pensioner at time  $t-1$ , which is likely to be correlated with the decision to work at time  $t$ .

We provide the distribution of such net household disposable income in Figure 1, for the whole sample and for pensioners that were non-professional self-employed before retiring, separately for non-working pensioners (black bars) and for working pensioners (yellow bars).<sup>14</sup> In Table 5, we provide thresholds that define the deciles for net household disposable income, noting that the deciles are constructed using the whole sample of pensioners.<sup>15</sup>

**Figure 1 – Distribution of household disposable income net of pensioner's labour income**  
(values in thousands of euros on the horizontal axis)



Source: Authors' elaborations based on merged INPS and SILC data.

<sup>13</sup> As a sensitivity check, we have repeated the analysis by subtracting labour income of all working pensioners in the household, and obtained results in line with those presented here.

<sup>14</sup> Top and bottom percentiles have been dropped from the figure to remove extreme outliers.

<sup>15</sup> In the first decile, we record negative income for 40 observations, but only 7 are working pensioners and their income is negative due to intra-household transfers.

**Table 5 – Brackets of net household disposable income deciles**

Deciles	Min	Max	Median
1st	-89,132	13,135	10,301
2nd	13,136	16,633	14,906
3rd	16633	20,078	18,394
4th	20,078	23,393	21,678
5th	23,393	27,292	25,221
6th	27,293	31,951	29,457
7th	31,952	37,906	34,663
8th	37,906	45,838	41,540
9th	45,840	58,847	51,150
10th	58,847	1,207,781	73,138

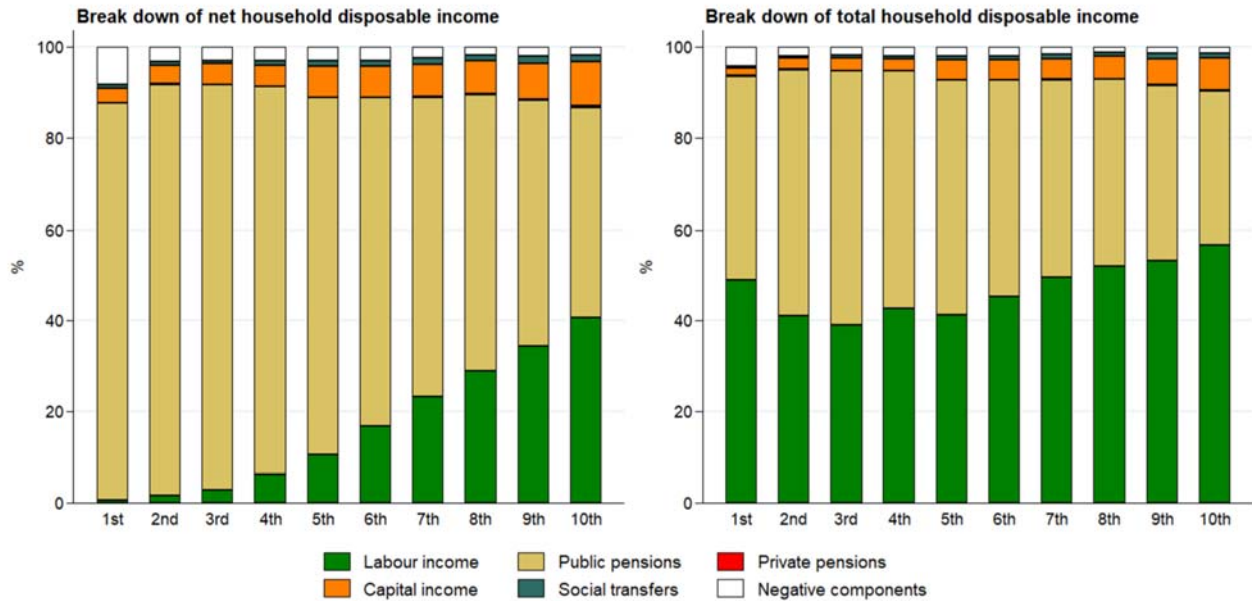
*Note:* Income deciles defined with respect to the whole sample of pensioners.

*Source:* Authors' elaborations based on merged INPS and SILC data.

Comparing the left and right panels in Figure 1, one sees that household disposable income of self-employed individuals before retiring tends to be lower than in the whole sample, in that a higher fraction of observations have net household income below 30,000 euros for the group of non-professional self-employed than for the overall sample. More pertinent for our comparison of working and non-working pensioners, is the fact that in both panels of the figure there are proportionally fewer working pensioners than non-working ones in the lower part of the income distribution, and more working pensioners in the higher part of the distribution. Remember income is measured after the removal of the pensioner's labour income, so that data for working and non-working pensioners are comparable. The evidence that working pensioners tend to have higher non-labour income could be compatible with the idea that working as a pensioner is related to a lifestyle choice, although it is also possible that the choice of working is driven by financial motives in the lower part of the distribution of net household disposable income, and by preferences in the higher part of the distribution.

We are also interested in highlighting the composition of household income by the deciles that we have constructed, to document the relative importance of the pensioner's labour income in relation to household income depending on the position of the household in the income distribution. In Figure 2, in the left-hand panel, we plot the composition of net household disposable income by deciles of the same variable, for working pensioners only. Without labour income, net household income of working pensioners in the first deciles is composed mainly of pension income. In the top deciles, higher proportions are given by labour income from other family members and by capital income. The right-hand panel plots the composition of total household disposable income (i.e. including labour income of the working pensioner) by the deciles of net household disposable income, for working pensioners only, to illustrate the relative importance of labour income of the working pensioner in each decile. This importance is clear for the first deciles, and for the first one in particular: for working pensioners in the first decile of net household disposable income, labour income (of the working pensioner) is about half of total household disposable income. Considering the decline in household labour income in the first three deciles as shown in the right-hand panel, together with the small increase in household labour income of members other than the working pensioner as shown in the left-hand panel, the relative importance of the pensioner's labour income towards household's disposable income decreases as one shifts to higher deciles. This trend continues for deciles higher than the third: the steeper increase of labour income in the left-hand panel relative to the right-hand one must be driven by a higher increase in labour income from household members other than the working pensioner, so that, as household disposable income net of pensioner's income goes up, the relative importance of pensioner's labour income becomes smaller and smaller.

**Figure 2 – Break down of net and total household disposable income by deciles of net household disposable income (only working pensioners)**



*Note:* Net household disposable income is defined as household disposable income net of pensioner’s labour income. The left panel provides the breakdown of net household disposable income, i.e. excluding pensioner’s labour income. The right panel provides the breakdown of total household disposable income, i.e. including pensioner’s labour income. Income deciles defined within the group of working pensioners.

*Source:* Authors’ elaborations based on merged INPS and SILC data.

To look further into the distribution of working pensioners across net household disposable income deciles, we combine information on the income distribution with information on occupation, by conditioning on occupational status *before* retirement, in Table 6, or on *current* occupational status, in Table 7. If working pensioners with different occupations were evenly spread across the income distribution, we would find 10% of each occupation group in each decile group. In general, there is a higher concentration of working pensioners in the top part of the distribution: only about 7-8% of working pensioners are in each of the bottom five deciles, adding up to less than 40% in the bottom half of the distribution, whereas about 41% of working pensioners are to be found in the top three deciles of net household disposable income, suggesting that a substantial fraction of working pensioners work for reasons other than financial need. The only group observed in the first decile with an incidence above 10% is the one of non-professional self-employed. Instead, the concentration at the top is particularly marked for working pensioners who, before retiring, were self-employed professionals or were employed in the private sector, in managerial positions. For instance, Table 6 reveals that in the top decile (10th) of net household income there is about one third of former self-employed professionals, about 45% of former private managerial workers and above 20% of atypical workers. Looking at the situation for current occupational status, in Table 7, we notice that the concentration in the top decile is slightly higher for self-employed professionals, now over 35%, and is still above 20% for atypical workers. Instead, we observe very few working pensioners in managerial positions in the private sector, as already highlighted in Table 4 and cannot draw any insight in distributional terms.

**Table 6 - Distribution of working pensioners by income decile and occupational status before retirement**

Occupational status before retirement	Income deciles									
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Private employee: below managerial level	187	219	229	254	269	250	260	342	348	370
	6.9%	8.0%	8.4%	9.3%	9.9%	9.2%	9.5%	12.5%	12.8%	13.6%
Private employee: managerial level	0	0	0	1	1	16	23	28	75	118
	0%	0%	0%	0.4%	0.4%	6.1%	8.8%	10.7%	28.6%	45.0%
Self-employed: professional	25	11	9	14	13	24	34	51	47	115
	7.3%	3.2%	2.6%	4.1%	3.8%	7.0%	9.9%	14.9%	13.7%	33.5%
Self-employed: other	548	388	525	393	432	516	610	574	607	759
	10.2%	7.3%	9.8%	7.3%	8.1%	9.6%	11.4%	10.7%	11.3%	14.2%
Atypical worker	20	13	10	16	14	29	16	32	36	58
	8.2%	5.3%	4.1%	6.6%	5.7%	11.9%	6.6%	13.1%	14.8%	23.8%
Mixed	31	32	18	23	32	40	60	60	84	223
	5.1%	5.3%	3.0%	3.8%	5.3%	6.6%	10.0%	10.0%	13.9%	37.0%
<b>Total</b>	<b>811</b>	<b>663</b>	<b>791</b>	<b>701</b>	<b>761</b>	<b>875</b>	<b>1,003</b>	<b>1,087</b>	<b>1,197</b>	<b>1,643</b>
	<b>8.5%</b>	<b>7.0%</b>	<b>8.3%</b>	<b>7.4%</b>	<b>8.0%</b>	<b>9.2%</b>	<b>10.5%</b>	<b>11.4%</b>	<b>12.6%</b>	<b>17.2%</b>

*Note:* Income is defined as household income net of labour income of the pensioner. Deciles are defined in relation to the whole sample of pensioners (working and non-working ones). Percentages reported in the second row of each cell refer to the proportion of working pensioners in each income decile, conditional on occupational status.

*Source:* Authors' elaborations based on merged INPS and SILC data.

**Table 7 - Distribution of working pensioners by income decile and current occupational status**

Current occupational status	Income deciles									
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Private employee: below managerial level	162	158	166	139	173	158	162	207	175	143
	9.9%	9.6%	10.1%	8.5%	10.5%	9.6%	9.9%	12.6%	10.7%	8.7%
Private employee: managerial level	0	0	0	0	0	4	1	5	5	5
	--	--	--	--	--	20%	5%	25%	25%	25%
Self-employed: professional	31	21	17	38	24	45	65	86	107	240
	4.6%	3.1%	2.5%	5.6%	3.6%	6.7%	9.6%	12.7%	15.9%	35.6%
Self-employed: other	508	346	459	369	406	474	586	559	608	785
	10.0%	6.8%	9.0%	7.2%	8.0%	9.3%	11.5%	11.0%	11.9%	15.4%
Atypical worker	84	114	130	136	133	152	144	181	237	360
	5.0%	6.8%	7.8%	8.1%	8.0%	9.1%	8.6%	10.8%	14.2%	21.5%
Mixed	26	24	19	19	25	42	45	49	65	110
	6.1%	5.7%	4.5%	4.5%	5.9%	9.9%	10.6%	11.6%	15.3%	25.9%
<b>Total</b>	<b>811</b>	<b>663</b>	<b>791</b>	<b>701</b>	<b>761</b>	<b>875</b>	<b>1,003</b>	<b>1,087</b>	<b>1,197</b>	<b>1,643</b>
	<b>8.5%</b>	<b>7.0%</b>	<b>8.3%</b>	<b>7.4%</b>	<b>8.0%</b>	<b>9.2%</b>	<b>10.5%</b>	<b>11.4%</b>	<b>12.6%</b>	<b>17.2%</b>

*Note:* Income is defined as household income net of labour income of the pensioner. Deciles are defined in relation to the whole sample of pensioners (working and non-working ones). Percentages reported in the second row of each cell refer to the proportion of working pensioners in each income decile, conditional on occupational status.

*Source:* Authors' elaborations based on merged INPS and SILC data.

## 5. Regression analysis

Descriptive evidence highlights the higher concentration of working pensioners in the top deciles of net household income distribution. To investigate whether this evidence is in line with the idea that working pensioners, and more specifically the self-employed – the largest group of working pensioners – work for reasons other than financial need, we turn to regression analysis. This allows us to better exploit the richness of our combined datasets, by being able to control for family and individual socio-economic characteristics while still exploiting the precision in the definition of working pensioners based on administrative data.

We first estimate the probability of being a working pensioner in any given year, with a Probit model, using repeated cross-sections from the sample of pensioners. We then turn to exploit the panel element of our data. Probit estimation with repeated cross-sections allows us to use a wider sample and to explicitly control for characteristics that we have found to be important in our analysis, such as gender, occupational status before retirement, and education. On the other hand, given our aim to understand whether it is preference or need that lies behind participation of older workers, controlling for individual fixed characteristics is potentially crucial, as it allows us to control out any role of a fixed preference for working, and so to focus on the channel related to financial need. We therefore perform panel data regressions on the subset of individuals that are observed more than once in our sample.

The dependent variable for the Probit model is an indicator that the pensioner is working in the current year. We use the two alternative definitions of working pensioner that we have described in data section 3.1. In particular, Probit estimation outputs in columns 1 to 3 of Table 8 refer to the main definition of working pensioner, based on INPS administrative data, and in column 4 they refer to the alternative (tighter) definition, based on the combination of administrative INPS data and SILC survey data. In what follows, we first describe the specification(s) of our model and then comment on estimation results.

We relate the probability of being a working pensioner to the deciles of household disposable income net of working pensioner's income and to a set of controls. The deciles are defined, within year, on the whole sample of pensioners, except for when we perform regressions separately for men and women, or for other subgroups, in which case deciles are defined within these subgroups. If working pensioners chose to work because of financial need, we would expect individuals whose household income (net of their labour income) is in the lower part of the distribution, to be more likely to participate, everything else held constant. As a sensitivity check, we also specify a model in which (log of) the individual's pension income is controlled for separately from the rest of household's income, drawing from the specification in Petterson (2014). Household-income deciles are therefore defined according to household income net of the pensioner's pension and labour income. An additional sensitivity check is performed with a specification that includes shocks to household income in addition to income deciles. We define shocks of different magnitude and sign according to a percent change in net household income between two consecutive waves, i.e. between period  $t-1$  and  $t-2$  for participation in period  $t$ . We therefore consider five dummy variables corresponding to having experienced a large positive shock, higher than 15%, an intermediate positive shock of magnitude between 5% and 15%, a large negative shock, an intermediate negative shock, and "no shock" (a change of less than 5% in magnitude), which we use as reference group. Defining separate dummy variables for shocks of different signs allows us to pick up potential asymmetric responses in participation, which in turn could help us distinguish between the motives underlying participation. If a positive income shock were associated with higher participation, this would support the idea that a pensioner works in relation to his/her preferences rather than because in financial need. Of course, for this alternative specification, we rely on the panel component of our data and the estimation sample is smaller than for the baseline specification.

Demographic regressors include a quadratic in age, a dummy variable for being male, dummy variables for marital status, with the group of singles as a reference group, and the number of household members. To capture the influence of participation in the labour market by the partner, for individuals who are in a couple, we control for whether the partner is in work, no matter whether as a working pensioner or as a worker.<sup>16</sup>

Individual fixed characteristics for working pensioners that we found important in the descriptive analysis are education and the occupational status before retirement. We control for education with dummy variables for having a secondary school degree or a university degree or higher, and having less than secondary school education is the reference group. As for the occupational status before retirement, we include dummy variables for being private employee in managerial positions, for being self-employed, distinguishing professionals from non-professional self-employed, for being an atypical worker, or for falling in more than one of these categories. In this case, the reference group are private employees in non-managerial positions before retiring.

We include dummy variables for self-reported health status, ranging from very bad to very good health, with the latter being the reference group. Maestas (2010) finds that pensioners who declare being in fair or poor health are less likely to unretire than those in better health. The link between health and participation in the labour market can go both ways: it seems plausible to think that those in better health are more likely to participate, likewise one can expect that being active in the labour market brings psychological and health benefits. For this reason, we interpret our estimates as associations between participation and self-reported health. As a sensitivity check, we also estimate a model with a dummy variable for negative health shock at the individual level in place of dummy variables for self-reported health status. To measure health shocks we again exploit the panel component of our sample and the shock variable is based on self-reported health status and takes a value of 1 if health status between two subsequent observations of the same individual goes from very good, good or fair, to bad or very bad, and a value of 0 otherwise.

At a macro level, dummy variables for macro-areas and for population density, with the North and high population density as reference groups, respectively, are meant to capture features of the labour market that can affect the choice of working. Moreover, year dummies capture conditions in the economy that are common to all individuals but vary over time, such as the rate of unemployment, or changes in the institutional setting such as rules to qualify as a (working) pensioner. The reference year is 2004. More generally, area-related and year dummies capture demand factors that affect the probability of working of pensioners.

Finally, in the absence of other measures of wealth in our data, we control for housing tenure, with renters as reference group.

Regression results from the specifications just described are reported in Tables 8 and 9. Table 8 reports average marginal effects from a Probit regression, which give us a descriptive picture of the characteristics of working pensioners as well as evidence to assess the need to participate in the labour market based on household income. In terms of characteristics of working pensioners, estimation results in column 1 reveal that, conditional on other characteristics in the regression, the main factor associated with being a working pensioner is given by being self-employed before retiring: former self-employed professionals have a 20.2ppt higher probability of being a working pensioner relative to former non-managerial private employees. For

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<sup>16</sup> Given that the decision to participate in the labour market is potentially a joint decision in a couple, in which case the dummy for participation of the partner would be endogenous, we also estimate a reduced form without this dummy. The results that we discuss in this section are not affected by this sensitivity check.

other former self-employed, such as shop owners, farmers, and artisans, the probability is 14.4ppt higher than former non-managerial private employees, only slightly higher than the probability of those who used to work under atypical contracts. Being male is another factor that appears to have a high association with the probability of being a working pensioner, about 7.6ppt higher than being a female. Estimates from separate regressions for males and females reveal that the effect on the probability of working of being self-employed or of having an atypical contract before retiring is much more pronounced for males than for females (24ppt vs 16.1ppt for self-employed professionals, 18.5ppt vs 8.8ppt for other self-employed).

Confirming the view that working and retiring is a joint decision in couples, having a partner in work gives a 5.1ppt higher probability of being a working pensioner, relative to not having a partner in work. Education also has a role in participation, particularly for those with a university degree, who have a probability of being a working pensioner 3ppt higher than those with lower-than-secondary education. This effect is even stronger when we focus on males only (see column 2), whereas it is not significant for females.

As expected, the less healthy people are, the less likely they are to be in work after retirement: those in fair health are 2.5ppt less likely to participate in the labour market than those in very good health, and this difference goes up to 9.4ppt for those in very bad health. This effect is stronger for males than for females. The alternative specification (not reported here) that considers negative health shocks, instead of the different health statuses, confirms the qualitative outcome of the baseline model for all other regressors, and experiencing a negative health shock is associated with a 3.4ppt reduction in the probability of participating in the labour market.

Residing in the South carries a 4.7ppt lower probability of being a working pensioner, relative to being in the North. The probability of participation goes up over time, relative to the base year (2004). There is a marked increase in the association between year and participation between 2008 and 2009. This is possibly no coincidence, as in 2009 constraints regarding the possibility to fully cumulate labour earnings and old-age pension benefits were relaxed.

Qualitative effects from the alternative definition of participation in the labour market for pensioners, based on the combination of administrative data and self-reported status as reported in column 4, are similar to those reported in column 1, although magnitudes tend to be smaller.<sup>17</sup>

To assess the incentive to participate in the labour market based on household income, we test the significance of income deciles in our regressions. Estimates from the Probit specifications in Table 8 reveal that being in income deciles from the second to the tenth is associated with a slightly lower probability of being a working pensioner relative to being in the first decile, using either definition of working pensioner. In particular, according to the broader INPS-based definition of working pensioner (see column 1), the effects are such that the probability of participating, for pensioners in income deciles above the first, is between 1

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<sup>17</sup> For former self-employed, the effect is now about 9-10ppt higher than non-managerial private employees, instead of 14-20ppt estimated with the baseline specification that relies on administrative data only. The smaller effect with the tighter definition of participation for former self-employed is possibly no surprise. On the one hand, there is a high persistence among the self-employed regarding their occupation, so that those that were observed in self-employment before retiring are still self-employed. On the other hand, classifying these individuals as participating is based on whether their VAT account is open, on an annual basis, for the definition of participation that relies on administrative data only; whereas it is based on the combination of having an open VAT account and self-reporting as participating for the tighter definition of participation. Therefore, a former self-employed, with an open VAT account in the current year, would be recorded as participating (currently self-employed) according to the INPS-based definition, whereas it might turn out as non-participating according to the tighter definition if, despite having an open VAT account, he/she does not classify him/herself as mainly working in the SILC data.

and 1.35ppt lower than in the first decile, with significance levels at or above 5%, and not significantly different from that of the first decile for individuals in the top three income deciles (eight to ten). Adopting the alternative (tighter) definition of working pensioner (see column 4) produces very similar estimates, with the probability of participating, for pensioners in income deciles above the first, between 0.76ppt and 1.47ppt lower than in the first decile, and the smaller 0.76ppt estimate is associated with the tenth decile and is significant only at the 10% level. The combined evidence that the first and the tenth income deciles are very similar, that the first income decile has only a slightly higher probability of participating than the others, and that all other deciles up to the ninth have very similar effects, suggests that working is not determined by financial need, except possibly for those in the first income decile. Descriptive evidence in Figure 2 highlights the importance, in the lowest income decile, of the working pensioner's labour income towards household income and these regression results appear to be in line with that. The results for the subgroups by gender confirm this first evidence, although for men we find significant effects only for the fourth, sixth, seventh and ninth decile-groups, and of slightly higher magnitude. For females, the only significant effects emerge for the top two deciles, and with a positive effect, to signal a higher probability of participating for females in households with higher income than in households at the bottom of the income distribution, suggesting motives other than financial need. As highlighted in the Introduction, these findings are in line with recent evidence from ISTAT (2023), where more than half of pensioners who continue working straight after drawing a pension declare that the main reason for doing so has to do with personal satisfaction and to continue being productive in the society, and this number reaches about two thirds among graduate individuals.

Sensitivity checks that look at alternative ways to consider income in our specifications, also point in the direction that it is not financial need that appears to underlie a pensioner's decision to work.<sup>18</sup> In particular, a specification based on (log) pension income separate from deciles of household income delivers estimates that are very similar to the baseline model, and the coefficient of log pension income is positive and significant. This means that participation is only slightly lower, between 1 and 2ppt lower, where other household income is higher than in the first decile, and it is not decreasing in pension income, to suggest that the decision to work is not based on financial need. When we consider shocks to income, we obtain positive and significant effects for either a positive or a negative shock of a magnitude greater than 5% in family income, relative to having no shock or a shock of a magnitude smaller than 5%. We think that also this evidence of a positive effect on participation associated with a positive income shock goes against the idea of financial motives behind a pensioner's decision to work.<sup>19</sup>

To further explore the drivers of working as a pensioner, we exploit the panel structure of our data, which allows us to control for unobserved individual characteristics, including preference for work at the individual level. The panel sample is made of 26,575 groups, for a total of 83,981 observations, which are observed for an average span of 3.2 years. To use the same specification as the baseline Probit, we have adopted a linear model with random effects (see Table 9, column 1), so that we can also keep variables that are fixed within individuals and that seem to play a crucial role in the probability of being a working pensioner (such as gender, education level, occupational status before retirement). We have also adopted a linear model with fixed effects (see column 2).

Both the random-effects and the fixed-effects estimators return estimates for income deciles that are very small in magnitude and mostly not significant. Exceptions are the fourth and fifth deciles in the random effects model, and the tenth decile in the fixed effects model, with magnitudes of -0.75ppt and -1ppt,

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<sup>18</sup> Results not reported here but available upon request.

<sup>19</sup> Results not reported here but available upon request.

respectively, relative to the lowest decile, significant at the 10% level. The fact that, once we control for fixed individual preferences, most of the association between income deciles and the labour market participation of pensioners disappears, in our view constitutes further evidence that the decision to work is not driven by financial need.

The indications that emerge in the overall sample are confirmed for the subsample of non-professional self-employed, as documented in the Appendix Table A1. One concern is that this subgroup, which is the biggest among working pensioners, is the group with lower pension wealth – and therefore with lower pension benefits – and that these might be the pensioners who work because of insufficient resources. Estimates from the Probit and panel regressions suggest stronger effects on participation from having the partner in work and in relation to health status, relative to the overall sample, but otherwise return very similar effects. In particular, after redefining income deciles within this subgroup, estimates from the cross-sectional Probit return non-significant effects for deciles up to the sixth and positive and significant effects for deciles higher than the sixth. Moreover, neither random-effects nor fixed-effects panel regressions reveal significant effects of belonging to different income deciles, as it was the case in the overall sample. Once again, we take the fact that there is no significant effect on participation coming from household income once we control for preference for work in panel regressions, in addition to the evidence from the Probit regression that it is individuals with higher household income that are more likely to participate, as an indication that participation is not driven by financial need. This is the case in the subgroup of self-employed as it is for the group that includes private employees. In fact, this could be consistent with the evidence in Borella and Belloni (2019), who find that, on average, pension wealth is not significantly different between the self-employed and employees. Our evidence further confirms that also looking at individual participation in the labour market, there is no sign that this is related to financial need for the subgroup of self-employed.

Additional sensitivity checks involve using an income polynomial (third or fifth degree) instead of income deciles, and estimating a fixed-effects Logit model, instead of a fixed-effects linear model.<sup>20</sup> Once again, there are no significant effects of income in determining participation.

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<sup>20</sup> Please notice that in this case, in order to achieve convergence, we specify a model with dummies for age classes and number of household members. To compare results, we also estimate our baseline cross-sectional Probit with these changes, and do not find any substantial difference relative to the baseline case. As with other sensitivity checks, results are not reported here but available on request.

**Table 8 – Probability of being a working pensioner: marginal effects from Probit estimates**

Marginal effects	Baseline (INPS-based definition)	Baseline: Male	Baseline: Female	Alternative (INPS- and SILC- based definition)
Age	.0224***	.0344***	.0044	.0121***
Age <sup>2</sup>	-.0002***	-.0003***	-.0001	-.0001***
Male	.0757***			.0350***
Partner in work	.0513***	.0517***	.0527***	.0325***
<i>Education</i>				
Secondary school	-.0008	-.0055	.0036	.0083***
University degree	.0298***	.0454***	.0037	.0245***
<i>Self-reported Health</i>				
Good health	-.0059	-.0043	-.0080	-.0034
Fair health	-.0254***	-.0295***	-.0191***	-.0164***
Bad health	-.0578***	-.0706***	-.0395***	-.0372***
Very bad health	-.0941***	-.1089***	-.0764***	-.0566***
<i>Occupational status before retirement</i>				
Private employee: managerial level	.0318***	.0415***	.0393**	.0165***
Self-employed: professional	.2018***	.2399***	.1614***	.0997***
Self-employed: other	.1436***	.1849***	.0880***	.0871***
Atypical worker	.1336***	.1584***	.0919***	.0755***
Mixed	.1767***	.2285***	.1024***	.0930***
<i>Household disposable income net of pensioner's income</i>				
2 <sup>nd</sup> decile	-.0106*	-.0130	-.0005	-.0094**
3 <sup>rd</sup> decile	-.0120*	-.0084	.0023	-.0120***
4 <sup>th</sup> decile	-.0131**	-.0198**	.0023	-.0147***
5 <sup>th</sup> decile	-.0105*	-.0057	-.0019	-.0095**
6 <sup>th</sup> decile	-.0135**	-.0196**	.0017	-.0101**
7 <sup>th</sup> decile	-.0129**	-.0217**	.0108	-.0088**
8 <sup>th</sup> decile	-.0099	-.0097	.0082	-.0106***
9 <sup>th</sup> decile	-.0111	-.0239**	.0151*	-.0107**
10 <sup>th</sup> decile	-.0005	-.0059	.0188**	-.0076*
Number of household members	.0059***	.0134***	-.0041*	.0028***
<i>Population density</i>				
Medium	.0142***	.0170***	.0126***	-.0017
Low	.0166***	.0214***	.0147***	-.0032
<i>Housing tenure</i>				
Tenure status: owner	.0012	.0065	-.0058	-.0002
Tenure status: other	.0022	.0130	-.0093	-.0038
<i>Marital status</i>				
Married	.0030	.0126	-.0122	-.0062
Divorced/Separated	.0334***	.0391***	.0261***	.0117**
Widow	.0072	-.0003	.0041	-.0055
<i>Macro-area</i>				
Centre	.0046	.0032	.0064	-.0039*
South	-.0471***	-.0645***	-.0243***	-.0257***
<i>Time</i>				
2005	.0053*	.0058	.0046	.0018
2006	.0088**	.0126**	.0042	.0038
2007	.0131***	.0164***	.0088	.0023
2008	.0130***	.0170**	.0083	.0031

2009	.0235***	.0315***	.0134**	.0054*
2010	.0236***	.0311***	.0147***	.0032
2011	.0231***	.0329***	.0108*	.0112***
2012	.0259***	.0314***	.0189***	.0129***
2013	.0215***	.0228***	.0200***	.0101***
2014	.0235***	.0256***	.0206***	.0099***
2015	.0299***	.0303***	.0280***	.0094***
2016	.0300***	.0365***	.0212***	-.0064*
2017	.0232***	.0222***	.0235***	-.0129***
Obs.	94,812	54,116	40,696	94,812

Note: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01. Marginal effects are average marginal effects. Baseline results in the first column derive from a regression with the dependent variable defined according to administrative INPS records. The second and third columns split this sample between males and females, and income deciles are defined within these two subgroups (as well as within year of data). The last column reports estimate from a regression where the dependent variable is based on the alternative definition of working pensioner, given by the self-reported status (worker) in SILC survey data, conditional on being a working pensioner according to administrative records. Reference groups are as follows: not having the partner in work; less than secondary school education; very good health status; private employee in non-managerial positions before retiring; first decile of net household disposable income; renters; residing in the North, in an area with High population density; year 2004; singles; females.

Source: Authors' elaborations based on merged INPS and SILC data.

**Table 9 – Panel regressions**

Variables	Random effects	Fixed effects
Age	-.0135***	-.0325***
Age <sup>2</sup>	-.0000	.0002***
Male	.0762***	
Partner in work	.0669***	.0489***
<i>Education</i>		
Secondary school	.0027	
University degree	.0230***	
<i>Self-reported health status</i>		
Good	-.0071*	-.0064*
Fair	-.0126***	-.0085**
Bad	-.0165***	-.0087**
Very bad	-.0175***	-.0062
<i>Occupational status before retirement</i>		
Private sector: managerial	.0264**	
Self-employed: professionals	.3805***	
Self-employed: others	.1677***	
Atypical worker	.1988***	
Mixed	.2951***	
<i>Household disposable income net of pensioner's income</i>		
2 <sup>nd</sup> decile	-.0026	-.0020
3 <sup>rd</sup> decile	-.0039	-.0006
4 <sup>th</sup> decile	-.0075*	-.0051
5 <sup>th</sup> decile	-.0076*	-.0055
6 <sup>th</sup> decile	-.0072	-.0053
7 <sup>th</sup> decile	-.0058	-.0046
8 <sup>th</sup> decile	-.0067	-.0062
9 <sup>th</sup> decile	-.0071	-.0083
10 <sup>th</sup> decile	-.0044	-.0100*
Number of household members	.0051***	.0020

<i>Population density</i>		
Medium	.0092***	-.0008
Low	.0071*	-.0074
<i>Housing tenure</i>		
Tenure status: owner	.0095**	.0158**
Tenure status: other	.0083*	.0137**
<i>Marital status</i>		
Married	-.0039	-.0088
Divorced/Separated	.0103	-.0088
Widow	.0069	-.0024
<i>Macro-area</i>		
Centre	.0018	-.0067
South	-.0447***	-.0019
<i>Time</i>		
2005	.0028	.0022
2006	.0049*	.0034
2007	.0097***	.0072***
2008	.0153***	.0121***
2009	.0217***	.0168***
2010	.0222***	.0156***
2011	.0214***	.0125***
2012	.0252***	.0145***
2013	.0229***	.0103***
2014	.0241***	.0100***
2015	.0244***	.0090***
2016	.0223***	.0055**
2017	.0174***	
Constant	.7272***	1.5034
Obs.	83,981	83,981

Note: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01. The dependent variable is participation in the labour market according to INPS administrative data, as in the baseline specification in the first column of Table 8. Both columns report results from a linear model. Income deciles are defined within the panel sample. Source: Authors' elaborations based on merged INPS and SILC data.

## 6. Conclusions

We have investigated the characteristics of working pensioners in Italy and the motives behind their participation in the labour market. In particular we look at whether participation is a financial, or a lifestyle, choice. To do this, we have used a unique data set, which combines administrative and survey data for the years 2004-2017. Administrative data allows us to define working pensioners in a precise way, and to know their occupational status before (and after) retiring, and survey data allows us to complement this information with socio-demographic characteristics as well as the economic situation of the individual and the household. The analysis is based on a sample in which approximately 10% of old-age pensioners participate in the labour market each year.

We have found that around 60% of working pensioners were self-employed before drawing a pension, mostly non-professional self-employed, and that there is a persistence as about 90% in this group remain self-employed as working pensioners. Furthermore, more than 92% of the working pensioners that were self-employed before retiring resume work straight after retirement, and for eight out of ten the length of their work spell after retirement is at least four years. In contrast, individuals who were private employees pre-retirement (approximately 30% of working pensioners in our sample), wait longer before returning to work

and, when they do, their work spells are shorter, lasting at least four years only half the time. Moreover, more than half of working pensioners who were employed in managerial positions in the private sector, take up atypical contracts after retiring. As a result, the groups of atypical workers and self-employed professionals are the ones with highest inflows of working pensioners. In addition, we have observed that working pensioners are mostly male, married, resident in the Centre-North, they are slightly more educated relative to non-working pensioners, and tend to live in larger households. Having a partner in work and being in good health are associated with a higher probability of being a working pensioner.

To address the question of whether post-retirement participation in the labour market is driven by financial need or is the result of a lifestyle choice, we have looked at household income distributions and performed regression analysis. Both point at the lifestyle choice motive. In distributional terms, working pensioners are more prevalent at the top of the distribution of household income net of the pensioner's labour income: about 41% of working pensioners are concentrated in the top three deciles. For the regression analysis, we use repeated cross-sections to estimate a Probit model for the probability of being a working pensioner in any given year, in relation to deciles of household disposable income net of working pensioner's income and to a set of controls. We also exploit the panel structure of a subset of our data to control for unobserved individual preferences towards work. We find that that only the poorest pensioners in terms of household disposable income, net of their income stemming from work, seem to have a higher probability of working. In particular, the probability of participating, for pensioners in income deciles above the first, is between 1ppt and 1.35ppt lower than in the first decile, and not significantly different from that of the first decile for individuals in the top three income deciles. More generally, all deciles from the second to the ninth have very similar coefficients. This suggests that working is not determined by financial need, except possibly for those in the first income decile. This is confirmed also by the regressions by gender. Indeed, females only see significant effects in the top two deciles, with a higher, rather than a lower, probability of participating than those in the first decile. Panel regressions include random-effects and fixed-effects specifications and reinforce the idea that working pensioners work for reasons other than financial need: once we control for unobserved individual preferences, any effect coming from income on labour market participation of pensioners no longer holds, not even for the poorest. Our conclusions are robust to a set of sensitivity checks regarding the definition of the dependent variable and of the regressors. In particular, we have specifications that include (log) pension income separate from deciles of household income; shocks to income; shocks to health; income polynomial instead of income deciles. Moreover, results are not substantively changed when we perform the main analysis on the subsample of non-professional self-employed, which we consider to be the group that would be more likely to participate because in financial need.

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## Data statement

The micro-level data used in this study are not publicly available due to confidentiality restrictions. They consist of individual-level records from a matched dataset combining ISTAT's EU-SILC survey and INPS administrative archives, and contain personal information protected under the EU General Data Protection Regulation (GDPR, Regulation (EU) 2016/679). None of the authors is affiliated with ISTAT or INPS, and therefore cannot in any event grant access to these data to third parties".

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## Appendix

**Table A1– Sensitivity analysis: Non-professional self-employed**

Variables	Probit: marginal effects	Panel Random effects	Panel Fixed effects
Age	-.0129	-.1011***	-.1090***
Age <sup>2</sup>	-.0000	.0006***	.0007***
Male	.1513***	.1562***	
Partner in work	.1322***	.1254***	.0890***
<i>Education</i>			
Secondary school	.0061	.0095	
University degree	.0210	.0124	
<i>Self-reported health status</i>			
Good	-.0131	-.0164*	-.0158**
Fair	-.0450***	-.0246***	-.0192**
Bad	-.0961***	-.0300***	-.0198**
Very bad	-.1725***	-.0304***	-.0149
<i>Household disposable income net of pensioner's income</i>			
2 <sup>nd</sup> decile	-.0099	-.0021	-.0003
3 <sup>rd</sup> decile	.0081	.0060	.0071
4 <sup>th</sup> decile	.0011	-.0007	-.0004
5 <sup>th</sup> decile	-.0018	-.0058	-.0069
6 <sup>th</sup> decile	.0024	-.0058	-.0093
7 <sup>th</sup> decile	.0293*	.0085	.0015
8 <sup>th</sup> decile	.0325**	.0062	-.0042
9 <sup>th</sup> decile	.0260	-.0016	-.0138
10 <sup>th</sup> decile	.0439**	.0040	-.0135
Number of household members	.0045	.0033	-.0016
<i>Population density</i>			
Medium	.0282***	.0134	-.0063
Low	.0320***	.0124	-.0135
<i>Housing tenure</i>			
Tenure status: owner	.0029	.0171	.0201
Tenure status: other	-.0182	.0104	.0153
<i>Marital status</i>			
Married	-.0315**	-.0246*	-.0290
Divorced/Separated	.0305	-.0061	-.0263
Widow	-.0043	-.0014	-.0142
<i>Macro-area</i>			
Centre	-.0033	-.0040	.0117
South	-.0643***	-.0678***	
<i>Time</i>			
2005	.0081	.0061	.0031
2006	.0173*	.0104*	.0038
2007	.0204**	.0145**	.0051
2008	.0118	.0221***	.0104*
2009	.0303***	.0304***	.0153**
2010	.0332***	.0311***	.0122*
2011	.0399***	.0386***	.0156**
2012	.0327***	.0361***	.0096
2013	.0209*	.0316***	.0019
2014	.0284**	.0387***	.0053
2015	.0414***	.0450***	.0091
2016	.0458**	.0433***	.0029

2017	.0455***	.0433***	
Constant		4.2344***	4.5796
Obs.	26,849	23,820	23,820

*Note:* \* p<0.1, \*\* p<0.05, \*\*\* p<0.01. The dependent variable is participation in the labour market according to INPS administrative data, as in the baseline specification in the first column of Table 8. Income deciles are defined within the subgroup of non-professional self-employed and year (and within the panel sample in columns 2 and 3).  
*Source:* Authors' elaborations based on merged INPS and SILC data.