

FACES OF JOBLESSNESS IN ITALY: ANATOMY OF EMPLOYMENT BARRIERS

James Browne and Daniele Pacifico



Faces of Joblessness in Italy

Anatomy of Employment Barriers

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1. INTRODUCTION

This Profile Analysis Note (PAN) for Italy assesses the characteristics and employment barriers of working-age individuals with no or weak labour-market attachment. It is one of six such country notes in a joint EC-OECD project covering **Estonia, Ireland, Italy, Lithuania, Portugal and Spain**. The objective of this project is to provide a novel perspective on employment difficulties, and to aid in the identification of policy approaches to overcome them. The project website at <http://www.oecd.org/social/faces-of-joblessness.htm> provides further information.

Each PAN develops profiles of key employment barriers and quantifies their incidence and intensity among jobless individuals and among those who work or earn very little or intermittently. The underlying conceptual framework and statistical approach is described in an associated methodological background paper (Fernandez et al., 2016; Immervoll and Isik-Dikmelik, 2016) and is consistent with that employed in a related EC-World Bank activity covering six further EU countries. The empirical results from each PAN will be used to inform a dialogue on policy approaches and options that could address the most prevalent employment barriers in selected population groups and strengthen their labour-market attachment. This dialogue will take place in a second part of the EC-OECD project. Its results and an associated policy inventory will be presented in a series of six Country Policy Papers (CPP).

A key motivation behind this project is the finding from the literature on activation and employment-support policies (AESPs), and on social protection systems more generally, that careful targeting and tailoring to individual circumstances are crucial factors for policy success.¹ However, policy discussions do not necessarily reflect this. They often refer to broader labour-market groups such as “young people”, “older workers”, “people with disabilities” or “lone parents”. Similarities of employment barriers among members of such broader groups are implicitly assumed but not well documented (for instance, being “young” is not an employment barrier). As a result, policy interventions targeted on the basis of characteristics such as age, health status or family situation alone may be ill-adapted to the needs of jobless individuals and those with precarious employment patterns. An in-depth inventory of people’s employment barriers, and an identification of groups who share similar combinations of labour-market obstacles, can contribute to a better match between individual needs and available support, and make associated policy interventions more effective and less costly.

Countries frequently seek to account for individual circumstances and labour-market difficulties by means of powerful statistical tools that “profile” individual benefit claimants using administrative data. Such tools are useful for tailoring the employment programmes that each registered individual is offered. These tools often rely on administrative data, which have distinct advantages, but tend to cover only a subset of the out-of-work population, such as the registered unemployed. As a result, the profiling tools built around these data typically cannot be used to provide a broader perspective on the employment barriers facing the entire population of those with no or weak labour market attachment. This note complements existing profiling instruments by adopting more of a “birds-eye” approach that considers by considering the employment barriers of *all those with no or weak labour market attachment*. This sizeable and heterogeneous group constitutes the potential client group for AESPs. Understanding their employment barriers is not only important for linking up services provided by different institutions, but it is also essential for identifying groups who would benefit from employment-related programmes or incentives, and who are not currently clients of any of the institutions providing such measures.

A comprehensive assessment of potential employment barriers requires detailed information on people’s skills, work history, health status, household circumstances and incomes. The European Union

1. See for example OECD (2013a, 2013b, 2014a, 2015a); Immervoll and Scarpetta (2012); Arias et al. (2014); World Bank (2013); European Commission (EC) (2015); Eurofound (2012).

Survey on Income and Living Conditions (EU-SILC) contains rich information for identifying and assessing potential barriers to employment and is the primary source of data for this note. EU-SILC offers cross-country comparability, an extended *reference period* over which one can assess the respondents' main activity status,² and detailed information on individual and family circumstances including people's work-related skills end education, work history, health status, income sources, tax liabilities and benefit amounts. However, there is a relatively long time-lag between data collection and availability (EU-SILC 2014 was made available in February 2016). EU-SILC also contains less detailed information on labour-force status than standard labour-force surveys.

This note focuses on the 40% of the *working age population*³ in Italy who, according to SILC data for 2014, can be considered to face potential labour-market difficulties. This group is referred to as the "target population". Of this 40%, 32% did not work *at all* throughout the reference period,⁴ while a further 7% had "weak labour market attachment" with either unstable jobs, limited working hours or zero or near-zero earnings. For the "target population" as a whole, particularly common potential employment barriers include no *recent* work experience (81% of the group), low professional skills (56%), low education (53%) and limited *total past* work experience (38%). Health limitations, care responsibilities and high levels of non-labour income are important for some sub-groups, but less prevalent overall.

The statistical clustering analysis identifies 13 distinct groups with similar employment-barrier profiles. Focusing on their characteristics, they may be summarised as follows:

1. "Labour-market inactive women with low education and limited work experience" (16% of those with no or weak labour market attachment)
2. "Labour-market inactive women with low education and without any past work experience" (12%)
3. "Discouraged younger adults with low work experience" (10%)
4. "Underemployed prime-age women" (9%)
5. "Long-term unemployed men with low professional skills and low education" (8%)
6. "Discouraged youth without any past work experience facing scarce job opportunities" (7%)
7. "Older men with low education and high earnings replacement benefits" (7%)
8. "Unemployed prime-age women with limited work experience" (7%)
9. "Labour-market inactive mothers with care responsibilities and limited work experience" (7%)
10. "Retirees with weak financial work incentives" (6%)
11. "Labour-market inactive mothers with care responsibilities and without any past work experience" (6%)
12. "Older individuals with health limitations and limited work experience" (3%)
13. "Individuals with disabilities and without any past work experience" (2%)

These group labels indicate that commonly used proxy groupings, such as "women", "disabled", or "youth" would provide little guidance for concrete policy interventions as they include **distinct sub-groups with very different employment-barrier profiles**. For instance, several distinct combinations of employment barriers are common for women: low education with limited work experience (Group 1), low

-
2. EU-SILC data provide information on individuals' labour-market status at different points in time during the reference year (each of the twelve months) and at the time of the interview. This note uses all 13 data points to characterise people's employment status.
 3. Ages 18 to 64, excluding individuals in full-time education or in compulsory military service.
 4. This compares well with results from the EU Labour Force Survey, which show 35.7% as the proportion of working-age people in Italy who were not in paid work on average during 2013 (the reference year for the 2014 SILC). Some of them will have been out of work for only part of the year, so the LFS share is expected to be higher.

education and skills without any past (paid) work experience (Group 2), limited work experience and care responsibilities (Group 8), low education, low skills, care responsibilities without any past work experience (Group 11), and low education, low skills, health limitations and limited work experience (Group 12). As shown in Section 4, these groups also differ markedly with respect to their poverty risks, material deprivation levels and other family or individual circumstances.

Most individuals in the target population face **more than one potential employment barrier simultaneously**. Three in five face *at least two* such barriers simultaneously, and about one half face *three or more*. For instance, as the label indicates, most of the “*Discouraged youth without any past work experience facing scarce job opportunities*” (Group 6) face low labour demand in their labour-market segment and also employability problems due to no previous work experience. A majority of “*Older individuals with health limitations and limited work experience*” (Group 12) have health limitations, low education and limited work experience. As a result, addressing one type of employment obstacle may not be enough to boost their employment levels significantly. From a policy perspective, the results point to a need to carefully sequence different activation and employment support measures, and to co-ordinate them across policy domains and institutions.

The rest of this note proceeds as follows. Section 2 provides some background information on the evolution of social and labour market conditions in Italy and how this compares with other EU countries. Section 3 uses the most recent EU-SILC data to provide quantitative indicators of the intensity and incidence of different types of employment barriers. Section 4 applies a statistical clustering technique to organise the population of individuals with no or weak labour-market attachment into groups with homogeneous combinations of employment barriers. It also presents key demographic and socio-economic characteristics that are relevant for deciding policy priorities and approaches for each group. A short concluding section highlights selected possible directions for extending the approach further.

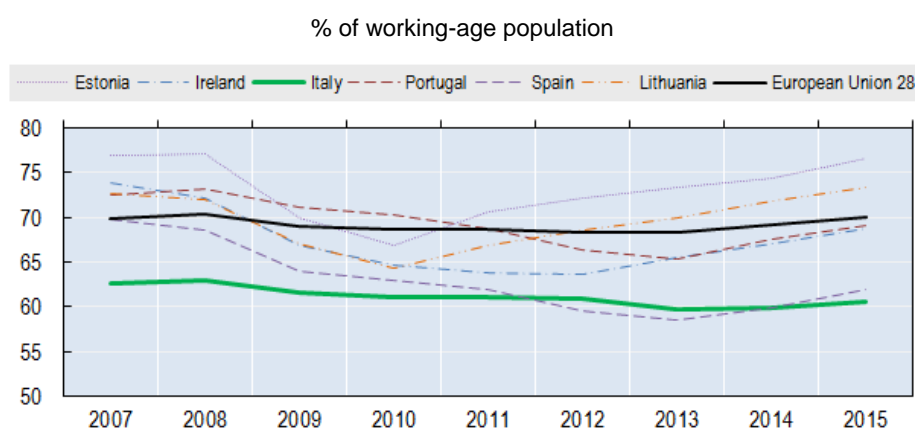
2. LABOUR MARKET AND SOCIAL CONTEXT

Trends in employment, unemployment and labour-market inactivity

As in all six countries covered in this project, the financial and economic crisis has significantly impacted labour markets in Italy, in turn causing increased poverty and material deprivation. The employment rate in Italy was already very low compared to other EU countries before the onset of the crisis, and fell further between 2008 and 2013. However, the *change* in employment rates was smaller than in the other five countries studied in this project.

The employment rate in Italy fell over the crisis, by 2 ppts between 2008 and 2013, the smallest fall among the six countries studied (Figure 2.1). Since then there has been a slight recovery: the employment rate increased by 0.8 ppts between 2013 and 2015, but this recovery was also the slowest of the six countries studied. Over the period as a whole, the gap in the employment rate relative to the EU average increased from 7 ppts to 9 ppts.

Figure 2.1. Employment rates: slow recovery from the crisis



Note: The EU average is weighted.

Source: Eurostat Labour Force Statistics.

A key factor behind low employment rates in Italy is the low number of women in paid work. Only 50.6% of Italian women aged 20 to 64 were employed in 2015, the lowest level in the EU with the exception of Greece, and 14 ppts below the EU average. This percentage has changed little since 2007. The employment rate of Italian men is 5 ppts below the EU average, and this gap has increased as the male employment rate fell in recent years. The gender gap in employment rates remains among the largest in the EU. One reason is that a large percentage of Italian women are involved in unpaid work caring for children or elderly relatives. Policy-related barriers that have been emphasised in this context are a lack of childcare facilities in Italy – only 24% of children aged under 3 are enrolled in formal childcare – low levels of investment in elderly care services, and high effective tax rates faced by second earners (Colonna and Marcassa, 2013). Recent policy reforms, in line with recommendations from the OECD (2015b) have sought to strengthen work incentives of women by introducing tax credits for low- and middle-income families and by modifying tax allowances for dependent spouses. But the limited availability of affordable and good-quality child and elderly care remain key policy challenges in this context.

Even as the employment rate in Italy has remained fairly constant in recent years, the economic activity rate has increased. This is entirely driven by an increase in labour-force participation among women and older workers: the proportion of those aged 55-64 who are economically active increased from 35% in 1998 to 51% in 2015. Reasons behind this include higher levels of education and participation among younger cohorts of women, as well as pension reforms that have discouraged early retirement.

Recent reforms have also reduced the high implicit tax rates that previously existed on earnings as pension accruals are now all under the notional defined contribution system which started being introduced in 1996.

The unemployment rate peaked at 12.7% in 2014 before falling in 2015 to 11.9%. One reason behind this is that unit labour costs rose more quickly in Italy than in other Eurozone countries in the 2000s as wages increased more quickly than productivity (which has been stagnant since the mid-1990s). The duality of the Italian labour market, with around half of workers subject to very stringent employment protection legislation while a minority have precarious or less protected jobs, has held back productivity growth and pushed up inequality at the same time. Recent policy initiatives have taken determined steps towards tackling duality and strengthening job creation (Sestito and Viviano, 2016).

Persistently high unemployment in Italy has also led to rising long-term and very long-term unemployment. More than half of the unemployed have been unable to find a job for at least a year, and more than a third for at least two years. Many of those who are unemployed for long periods become discouraged jobseekers, drop out of the labour force, and become economically inactive: in 2014, around 40% of those who were long-term unemployed gave up looking for a job. Active labour market policies (ALMPs) aim to help the long-term unemployed return to work, but spending is below the EU average and concentrated on poorly-targeted training programmes (OECD, 2015b). Moreover, the capacity of public employment services (PES) is restricted resulting in poor overall results: between 2003 and 2011, only 4% of jobseekers found employment through the PES. Recent reforms to increase levels of conditionality imposed on benefit claimants will require substantial expansions of PES capacity, and a significant increase in staff-to-client ratios, to have the desired effects (European Commission, 2016).

Weak labour markets have hit youth especially hard. Youth unemployment in Italy has risen substantially in recent years (from 20% in 2007 to 40% in 2015). At 21%, and the proportion of young people aged 15 to 24 who are not in education, employment or training (NEET) is the highest in the EU. This is linked to low levels of education and skills and a high dropout rate from secondary education. OECD (2015b) recommended measures to reach out to at-risk groups in order to reduce the dropout rate. The Italian Government has started to implement the EU Youth Guarantee, but until recently, only one third of registered young people have received an offer of training or employment through the programme (European Commission, 2016).

Skill levels are relatively low at older ages too. OECD (2013c) showed that Italy had the lowest average literacy score of the 23 countries studied and the second-lowest numeracy score. The combination of low skill levels and low returns to education suggests that the skills taught in the Italian education system are misaligned with the needs of the economy (OECD, 2015b).

Incidence of economic hardship

Compared with other countries, labour-market difficulties in Italy are more strongly associated with economic hardship. For jobseekers entitled to unemployment benefits, benefit generosity is not very different from other countries. But benefit coverage in Italy is relatively low. The duration of unemployment insurance is relatively short, and the large number of workers on temporary employment contracts are not covered at all. Moreover, there is no unemployment assistance programme and no nationally applicable general social assistance scheme in Italy. The social security system overall is thus very poorly targeted on those with the lowest incomes (OECD, 2014a); spending on pensions makes up a large fraction of the total.

With income support difficult to access, the proportion of the working age population who are at risk of poverty is above the EU average. Rates of severe material deprivation are also high among working-age adults. As a result, the proportion of working-age adults who are at risk of poverty or social exclusion (29% in 2014, see Table 2.1) is significantly above the EU average (24%). Economic hardship is particularly pronounced among households with children, as family benefits are fairly low and affordable childcare is in short supply. However, indicators of economic hardship also increased for groups that were

not at high risk before the crisis, such as older jobseekers with poor employment prospects (INPS, 2015). Perhaps surprisingly in view of Italy’s low employment rates, the proportion of people living in households with low work intensity is not significantly above the EU average. There are fewer jobless households in Italy than in other crisis-hit countries, as many of those who are not in paid work live in a household with family members who are able to maintain some degree of economic activity.

Table 2.1. Percentage of people aged 16-64 at risk of poverty or social exclusion, 2014

	<i>Italy</i>	<i>Estonia</i>	<i>Ireland</i>	<i>Lithuania</i>	<i>Portugal</i>	<i>Spain</i>	<i>EU28</i>
People at risk of poverty or social exclusion	29	25	29	26	28	32	25
People at risk of poverty							
All	20	20	17	18	19	23	17
Not working	31	36	31	35	32	36	31
Working	11	12	6	8	11	13	10
full-time	10	11	3	7	9	10	8
part-time	17	20	11	24	31	23	16
Households without children	16	25	15	18	16	16	15
Households with children	24	18	16	20	23	28	19
People living in households with severe material deprivation ⁽¹⁾							
All	12	6	9	12	10	8	9
Households without children	10	7	6	16	10	6	8
Households with children	13	5	10	12	11	9	10
People living in households with very low work intensity ⁽²⁾	13	8	21	9	13	18	12

1. Individuals aged 18-64.

2. Individuals aged 18-59.

Source: Eurostat (EU-SILC 2014).

Target groups for activation and employment-support policies

Individuals with labour market difficulties frequently move between non-employment and different states of “precarious” employment. As a result, limiting attention to “snapshots” of non-employed (or underemployed) individuals at a specific point in time, such as those based on labour force surveys, may not capture the true extent of labour-market difficulties or the need for policy intervention. To cover the potential scope of AESPs, the **target population** of the analysis in this note therefore includes working-age individuals who are “*persistently*” *out of work* (either unemployed or labour-market inactive for more than 12 consecutive months) as well as individuals whose labour-market attachment is “weak”.⁵ “Weak” labour-market attachment includes those with *unstable jobs* (working only sporadically), *restricted working hours*, or *very low earnings* (due to, for example, working informally or in very low productivity self-employment). Box 2.1 defines the sub-groups of this population and explains how they are identified using the EU-SILC data. The target population is a sub-set of the *reference* population of working-age adults relevant for AESPs. The **reference population**, in turn, is defined as all working-age adults except for full-time students and those in compulsory military service as these groups are typically outside the scope of AESPs. For simplicity, the rest of this note also refers to this reference group as the “working-age population”.

5. The paper does not attempt to distinguish between voluntary and involuntary joblessness or reduced work intensity. Individuals can of course choose voluntarily to be out of work, in part-time or part-year employment. Some surveys ask respondents whether or how much they “want to work”. However, those saying they do not want to work, or prefer to work part-time or part-year employment, may do so as a result of employment barriers they face, such as care obligations or weak financial incentives, which policy might seek to address. Moreover, if extended voluntary labour-market inactivity or underemployment creates or exacerbate certain types of employment barriers, it may subsequently give rise to involuntary labour-market detachment or partial employment in later periods.

Clearly, not everybody experiencing potential labour market difficulties may be an intended target for AESPs.⁶ The *broad* definition of labour-market difficulties adopted in this note is not intended to be *prescriptive* about the appropriate scope of AESPs; instead, it seeks to inform policy decisions by documenting employment barriers and circumstances of individuals with no or weak labour market attachment. This *descriptive* approach takes no position on whether policy intervention is justified for specific groups. Instead, the resulting profiles of employment barriers are intended to facilitate discussions of the strengths and limitations of different policy interventions for concrete groups of individuals. They can also be used to help inform decisions on whether to channel additional policy efforts towards specific priority groups who may be outside the scope of existing AESPs.

Box 2.1. Individuals with potential labour market difficulties (target population)

The target population in this note includes those who are persistently out-of-work, as well as those with weak labour-market attachment.

The **persistently out-of-work** population (*long-term unemployed* or *inactive*) includes individuals reporting no employment activity throughout the *reference period*. The reference period corresponds to 12 consecutive monthly observations in the *income reference year* (January-December of year T-1) plus one additional observation at the *moment of the interview* (in year T).

The group with **weak labour market attachment** refers to individuals reporting employment activity during the *reference period* matching any of the following three situations:

- i) **Unstable jobs:** individuals working only a limited number of months throughout the reference period. The threshold is equivalent to Eurostat's low-work-intensity measure: Above zero but no more than 45% of potential working time in the income reference year. To reconcile information reported for the income reference period and at the moment of the interview the following individuals are also considered in this group: 1) Workers who report no work activity during the income reference period but who are working at the moment of the interview and, 2) workers with between 45% and 50% of work activity during the income reference period who do not report any work activity in either the last month of the income reference period or at the moment of the interview.
- ii) **Restricted hours:** workers who spent most or all of the reference period working *20 hours or less* a week.¹ However, individuals working 20 hours or less who are not likely to have additional work capacity, e.g. due to ongoing education or training, are excluded.
- iii) **Near-zero earnings:** individuals reporting some work activity during the income reference period but negative, zero or *near-zero* monthly earnings.² In addition to possible classification error, situations included in this group could signal potential labour market difficulties, such as underpayment and/or informal activities.

1. The 20-hours threshold is approximately in-line with the 45% "part-year" threshold that identifies the group with unstable jobs. For a 40-hours working week in a full-time job, 45% of full-time would correspond to 18 hours a week. However, in SILC, the distribution of working hours in the main job shows a high degree of bunching at 10, 15, 20 and 25 hours a week. As the closest multiple of 5, a value of 20 hours was therefore chosen.
2. The near-zero earnings threshold is set in Italy at EUR 123/month. This value corresponds to the 1st percentile of the SILC earnings distribution.

SILC data for 2008 to 2014 show that the proportion of adults who were *persistently out of work* remained broadly constant throughout this six-year period, at around one third of all working-age individuals (Figure 2.2, since the reference period in SILC data is the year prior to the interview, these data refer to the period 2007 to 2013). However, the split between unemployment and inactivity changed, with the proportion of the economically inactive falling and the share who were unemployed increasing. This is consistent with the pattern based on labour-force surveys of fairly static employment rates, rising unemployment and lower rates of economic inactivity, as discussed above.

6. It is worth noting that, with a definition of working-age as 18-64, some individuals whom policy makers may wish to include in the scope of AESPs are nevertheless not included in the target group in this note. Although the 18-64 age cut-offs are common in empirical work, they are becoming less suitable as populations age, especially in countries that are actively seeking to increase retirement ages beyond 65.

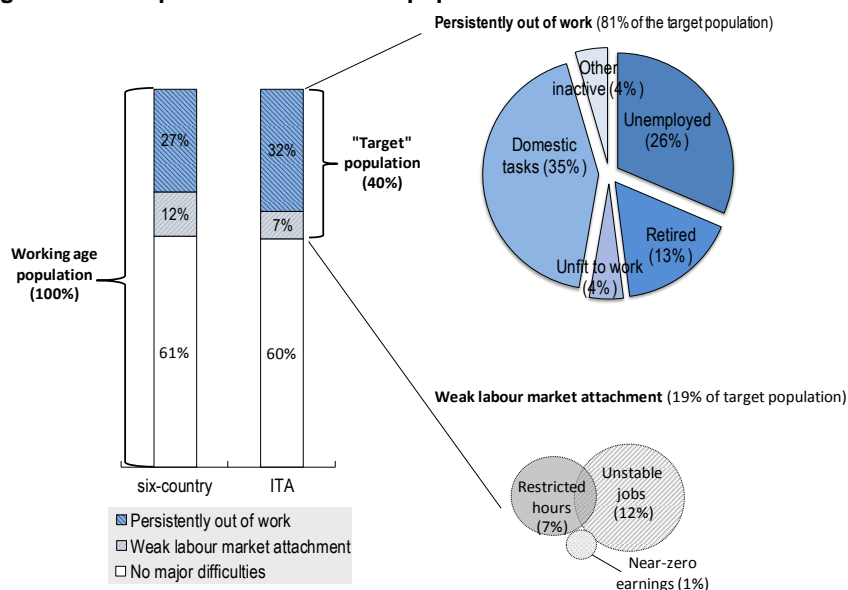
Figure 2.3 shows the composition of the target population in SILC 2014 in more detail. Of the 81% who were out of work throughout the reference period, the most common status was undertaking domestic tasks (35% of the target population) and the next most common was being unemployed (26%). 13% of the target population who did no paid work during the reference period reported that they were retired, and 4% that they were unfit to work. 19% of the target population did hold some paid employment during the reference period, but belong to the “weak labour-market attachment” category. The majority of them spent part of the year out of work (unstable jobs) and almost all the rest worked less than 20 hours a week throughout the year. Only 1% of the target population report working throughout the year but having very little (“near-zero”) earnings.⁷

Figure 2.2. Population groups experiencing potential labour market difficulties



Source: Calculations based on EU-SILC 2008-2014. See Box 2.1 for the definitions of the three groups.

Figure 2.3. Composition of the Italian population with labour market difficulties



Note: The country average is unweighted.

Source: Calculations based on EU-SILC 2014. See Box 2.1 for the definitions of the three groups.

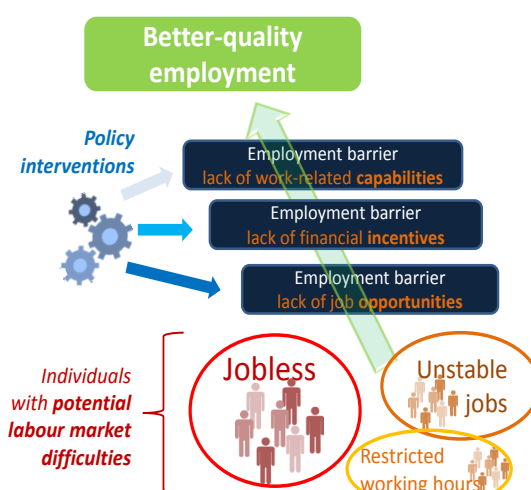
7. Despite the employment rate in Italy is lower than in the other six countries (Figure 2.1) the fraction of the working age population facing potential labour market difficulties is broadly in line with the six-country average (40 per cent). Figure 2.3 show that this depends on the comparatively low fraction of the working age population with weak labour market attachment. Results available upon request show that this is driven by the comparatively low fraction of individuals who worked 20 hours or less throughout the year (the group with “restricted working hours”, see Box 1). Although part-time employment is frequent in Italy (19% of employees worked less than 30 hours per week whereas the EU-28 average was 17% in 2015 – Eurostat), only 33% of part-timers worked less than 20 hours, whereas the 6-country average was 54%.

3. EMPLOYMENT BARRIERS IN ITALY

Working age individuals with no or weak labour-market attachment may face a number of employment barriers that prevent them from fully engaging in employment activities. A thorough understanding of these barriers is a pre-requisite for designing and implementing policy interventions in a way that is well-targeted and suitably adapted to the circumstances of different policy clients. Following Immervoll and Scarpetta (2012), this note examines three types of employment barrier, namely:

- **Insufficient work-related capabilities**, e.g. a lack of skills, work experience, care responsibilities and health-related limitations;
- **Lack of financial work incentive to look for a “good” job**, e.g., because of low potential pay, relatively generous out-of-work benefits, or access to high levels of income independent of their own work effort (such as capital income or earnings of other family members);
- **Scarce job opportunities**, e.g., a shortage of vacancies in the relevant labour-market segment due to shocks or cyclical factors, or because of skills mismatch, discrimination, dual labour markets or other frictions in the labour market.

Figure 3.1. Employment barriers: conceptual framework



Source: Fernandez et al. (2016).

The employment barriers outlined above cannot all be measured directly. To operationalise the concepts, this note implements a set of workable indicators under each of the three main categories. Fernandez et al. (2016) provides a fuller discussion of the indicators and their rationale, including descriptive statistics for selected countries, as well as indications of other barriers that may be relevant but are difficult or impossible to measure with available data. The indicators used in this note are as follows:

- **Capability, item 1. “Low” education:** if an individual has a lower-secondary degree or less (ISCED-11 standards).
- **Capability, item 2. “Low” professional skills:** if an individual’s occupation in their current or most recent job is in the *bottom two* categories of the ISCO-08 classification system (“Elementary Occupations” or “Plant and machine operators, and assemblers”). If an individual has no work experience at all, they are also included in the “low professional skills” group.
- **Capability, item 3.** Two measures of work experience:

- **Capability, item 3. Health limitations:** If an individual reports some or severe long-standing physical or mental limitations in daily activities.
- **Capability, item 4. Care responsibilities:** if an individual has a (minor or adult) family member who requires care⁸ and is either *the only* potential care giver in the household, or the only person in the household who is economically inactive or working part-time *because of care responsibilities*.
- **Capability, item 5. No past work experience at all:** if an individual has never made any paid work.
- **Capability, item 6. No recent work experience:** if an individual did no paid work during the reference period.
- **Capability, item 7. “Low” relative total work experience:** the indicator takes a value of 1 for those who have *no past work experience at all*, a value of 2 for those who have *some* work experience but have worked *less than 60%* of the time since they left full-time education, and a value of 3 otherwise.
- **Incentives, item 1. “High” non-labour income:** if the household’s income other than that relating to the work efforts of the individual in question,⁹ is more than 1.6 times the median value among the reference population (EUR 17 098/year, adjusted for household size).
- **Incentives, item 2. “High” earnings-replacement benefits:** if an individual’s earnings-replacement benefits received during the reference year exceed 60% of their estimated potential earnings in work.¹⁰
- **Opportunity (one item only). “Scarce” job opportunities:** if an individual has a “high” risk of not finding a job despite active job-search during at least 7 months, and willingness to take up employment (as stated at the moment of the SILC interview). The risk is estimated in a regression with region, age group, gender, level of professional skills and education as independent variables (see Fernandez et al., 2016 for more details). Individuals with an estimated risk of more than 1.6 times the median value in the working age population are considered to face scarce job opportunities.

Table 3.1 shows the share of individuals in the *target* and the broader *working-age* populations facing each employment barrier. As expected, and as required for the employment-barrier indicators to be plausible, the incidence of each barrier is significantly higher in the group with potential labour-market difficulties (i.e., the target population). In most cases, barriers are also more prevalent among those who were out of work throughout the entire reference period than for those with weak labour-market attachment. Consistent with the discussion of skills deficiencies in Section 2, common barriers include low education and low professional skills. Each of these two barriers is faced by at least half of the target population. More than two to five have also a low proportion of working-age life spent in paid work. A special case is the “no recent work experience” barrier, which not only acts as a potential employment obstacle but also is a direct result of the way the target population is defined: by definition, those who were persistently out of work did not work at all during the reference period (the past year and at the time of the interview). As a result, 100% of this group are shown as facing “no recent work activity” as a potential

-
8. Family members assumed to require care are children under the age of 12 receiving less than 30 hours of non-parental childcare a week and adults reporting severe limitations in daily activities due to their health and being economically inactive throughout the reference period (and in the case of those of working age, that permanent disability is the reason for their inactivity).
 9. This includes earnings, individual-level earnings replacement benefits, and the individual’s share of household-level earnings replacement benefits.
 10. Potential earnings are estimated in SILC with a regression model corrected for sample selection. See Fernandez et al. (2016) for details.

barrier. A “recent work experience” indicators that avoids full overlap with group definitions (such as one based on any work experience in the past *two* years) would clearly be preferable but is not feasible given the SILC sample we are working with. Despite this limitation, the indicator still signals a potential barrier that policy may need to address. It is also useful as a statistical instrument for distinguishing between the jobless (none have recent work experience) and “low-work intensity” (all have recent work experience) groups.

The other employment barriers, in particular “care responsibilities”, “no past work experience at all” and “health limitations”, are somewhat less prevalent overall, but they may still be very important for some sub-groups. It is also worth noting that less than 10% of the target population receive “high” levels of earnings replacement benefits. As a result of low benefit coverage and the unavailability of assistance benefits, work incentives from that channel do not affect large numbers of jobseekers. However, other, more generous “inactive” benefits, such as those available for disabled or early retirees, might nonetheless limit the financial attractiveness of employment for some groups.

Limited relative work experience and scarce job opportunities are somewhat prevalent among those with some (“weak”) labour market attachment. While for the former indicator the difference is relatively small (3 ppts) for the latter the difference amounts to 7 ppts. This result arises in part because many individuals who lost their job *during* the reference period remained unemployed long enough to be classified as “lacking job opportunities” based on the indicator outlined in paragraph 24. This result does happen also in other countries studied, especially in Spain, but no so widely as in Italy. In the other countries, individuals with some recent work activity who lost their job during the reference period have in general a much higher probability to find a job than those with a longer unemployment spell. This means that only a few of them are typically included in the group with “scarce job opportunities”.

Table 3.1. Employment-barrier indicators in Italy (SILC 2014)

% of population facing different types of barrier

	Working age population	"Target" population		
		All	Persistently out of work	Weak labour market attachment
Insufficient work-related capabilities				
"low" education	38	53	56	41
"Low" professional skills	42	56	60	40
No past work experience	10	25	30	0
"Low" relative work experience	27	38	38	41
No recent work experience	7	81	100	0
Health limitations	18	24	26	18
Care responsibilities	6	16	16	14
Lack of financial work incentives				
"High" non-labour income	28	32	33	30
"High" earnings replacements	6	9	10	5
Scarce job opportunities				
Scarce job opportunities	12	31	29	36

Note: For definitions and thresholds see paragraph 24.

Source: Calculations based on EU-SILC 2014.

In practice, people’s individual and family circumstances are complex and often lead to situations where they face multiple barriers to employment. In addition, employment barriers may multiply or intensify when labour-market detachment, unsuccessful job search, or marginal/unstable employment continues over longer periods of time (e.g., because of depreciating skills, and erosion of potential wages, or declining motivation). Figure 3.2 shows the number of (simultaneous) barriers faced by individuals in the target population. Nearly one third face two simultaneous barriers, just under a quarter face three and 10% face four or more barriers. More than half of the target group are characterised by three or more simultaneous barriers. On the other end of the spectrum, 11% face no major employment barriers. For this group, the employment-barrier indicator is either slightly below the respective thresholds used in this note,

or their limited labour-market attachment is indeed unrelated to the barriers discussed here: they may simply have a strong preference for leisure, or they experience other barriers that reduce the likelihood of employment but were left out of the current analysis. The next section uses a statistical clustering technique to examine which combinations of barriers are most common and to identify key characteristics (“faces”) of the groups facing them.

Figure 3.2. Number of simultaneous barriers

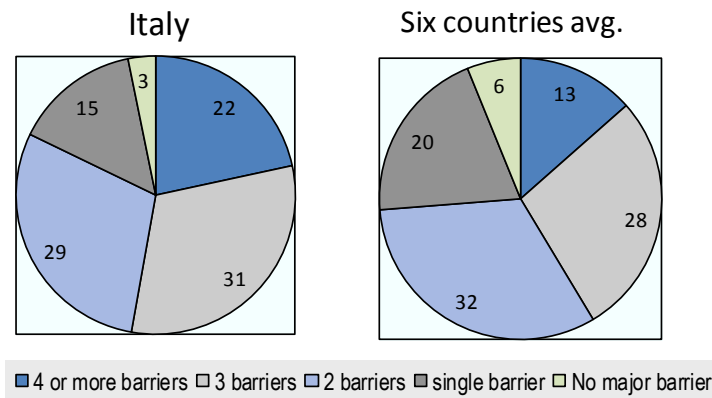


Figure 1.

Note: The country average is unweighted.

Source: Calculations based on EU-SILC 2014.

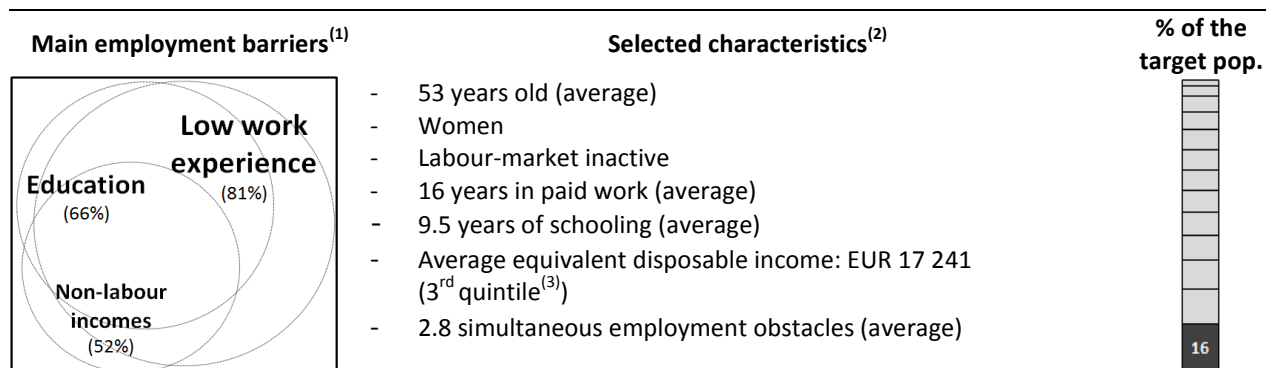
4. FACES OF JOBLESSNESS IN ITALY

This section applies the method described in Fernandez et al. (2016) to *segment* the target population into groups of individuals with *similar combinations* of employment barriers. Using the 2014 SILC data for Italy, the segmentation process leads to the identification of **13 groups** of individuals with no or weak labour market attachment (the “target population”).¹¹

The following paragraphs describe each group in detail. At the end of each paragraph a box reports a Venn diagram showing extent and degree of overlap of the main barriers characterising the group, as well as a list of selected individual and household characteristics with a “high” probability of occurrence within the group. Together, this information can help attach suitable labels (“*faces*”) to group members, although the labels are necessarily arbitrary to some extent and cannot substitute for careful examination of the comprehensive list of employment barriers and socio-economic characteristics, as reported in Annex Tables A.1 and A.2.

Group 1 (16% of the target population): “Labour-market inactive women with low education and limited work experience”. This group consists of women (99%) in their fifties (average age 53), who have been labour-market inactive throughout the reference period (92%). All have work experience (on average for 16 years) but for most of them (81%) this is “low” relative to their potential experience given their age and education level. Another common employment barrier characterising this group is low education (66%) which is also often associated with low professional skills (46%). Many in this group share a household with one or more working adults (65%) and thus can draw on significant income that does not depend on their own work effort (52%). On average, the group faces 2.8 simultaneous employment barriers, with the most common being low education and skills, low work experience and weak work incentives (see Box 4.1).

Box 4.1. Group 1: “Labour-market inactive women with low education and limited work experience”



1. Surface areas of shapes in the diagram are proportional to the number of group members facing the related barrier (“Proportional Venn Diagrams”). The outer square represents the group size (100%). The diagram shows the three most prevalent barriers in the group and is based on the indicators discussed in Section 3. Exceptions are the “recent work experience” and the “low” skills indicators. Although recent work experience is included in the numerical results (see Annex Table A.1), it is not shown in the diagrams as its high prevalence (due to the strong two-way causal link with the other barriers) would dominate all other barriers in the graphical representation in all but one group. Similarly, considering the significant overlap between “low” skills and “low” education only the more relevant of these two barriers is shown in the diagrams.

2. Characteristics that distinguish this group from other groups, i.e., categories that have a high probability of occurring in the group. Table A.2 reports individual and household characteristics in more detail.

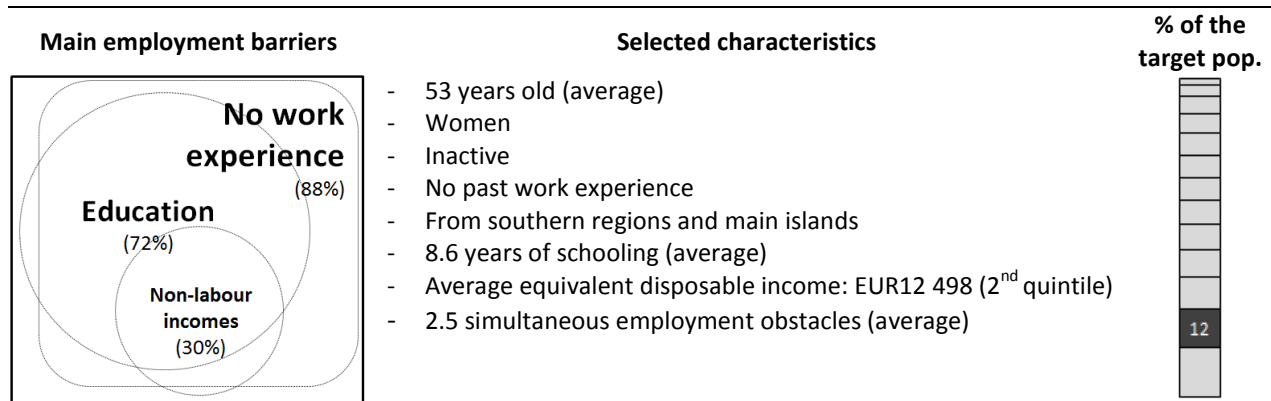
3. Income quintiles are calculated for the entire national population.

Source: Calculations based on EU-SILC 2014, see Annex Tables A.1 and A.2 for full results.

11. Annex A outlines the segmentation method and the process that lead to the identification of the 13 groups. Fernandez et al. (2016) describes in detail the econometric model and the related methodological framework.

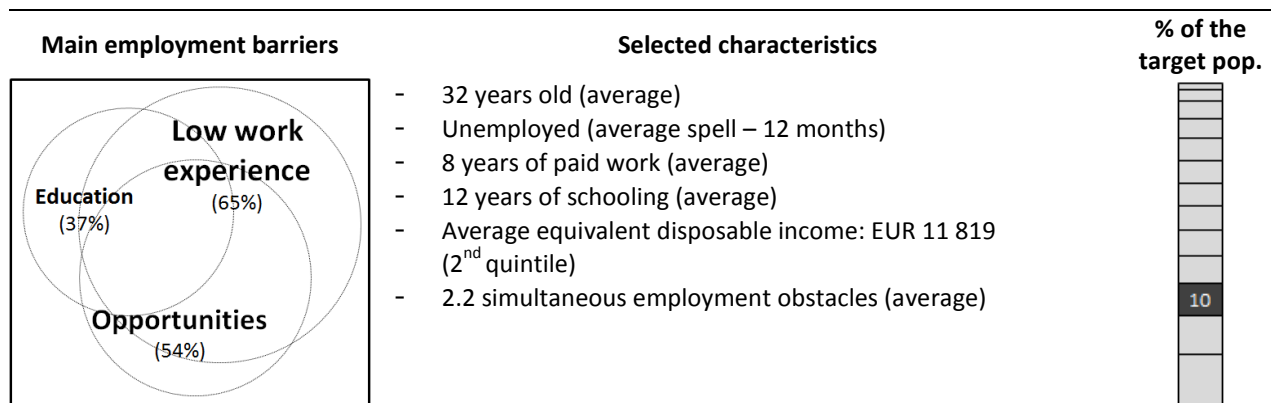
Group 2 (12% of the target population): “Labour-market inactive women with low education and without any past work experience”. Similar to Group 1, the majority of this group are women in their fifties who were labour-market inactive throughout the reference period. However, this group is different in that these women have no past work experience, are largely from southern regions (73% vs 34%), and live in households with a much lower disposable income (EUR 12 498 vs EUR 17 241). The absence of any past experience in paid jobs is compounded by the group having the second lowest average level of education with a substantial proportion having only completed primary or lower-secondary education (8.6 years of education on average).

Box 4.2. Group 2: “Labour-market inactive women with low education and without any past work experience”



Group 3 (10% of the target population): “Discouraged younger adults with limited work experience”. This group is relatively young (average age 32 years old) and has a mix of both of men (62%) and women (38%). 91% were unemployed during most of the reference period and although 73% declared to be still unemployed at the time of the interview, only 36% were actively seeking and ready to take up employment. This suggests that these individuals have become discouraged as a consequence of the prolonged unemployment spell.¹² About 29% received unemployment benefits during the income reference period (EUR 3 703/year on average) and the average unemployment spell was 12 months. About 50% have an upper secondary degree while 37% have a lower secondary degree or less. All group members have some work experience (on average for 8 years) but for 65% of this group this is low relative to their potential experience. Their previous jobs have been at clerk and sales skill level (51%) or higher (21%).

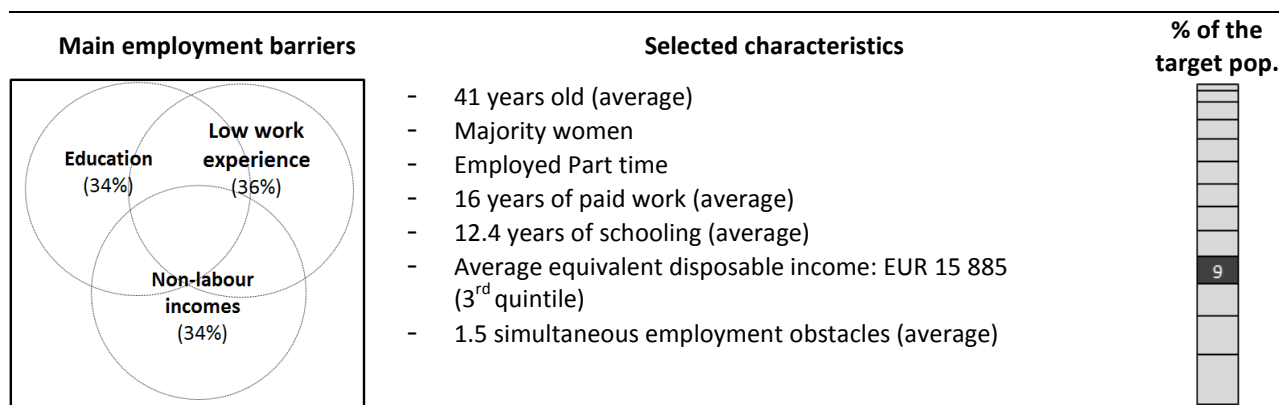
Box 4.3. Group 3: “Discouraged younger adults with limited work experience”



12. Results not shown here indicate that in this group a higher unemployment spell is associated with a higher probability of giving up active job searching.

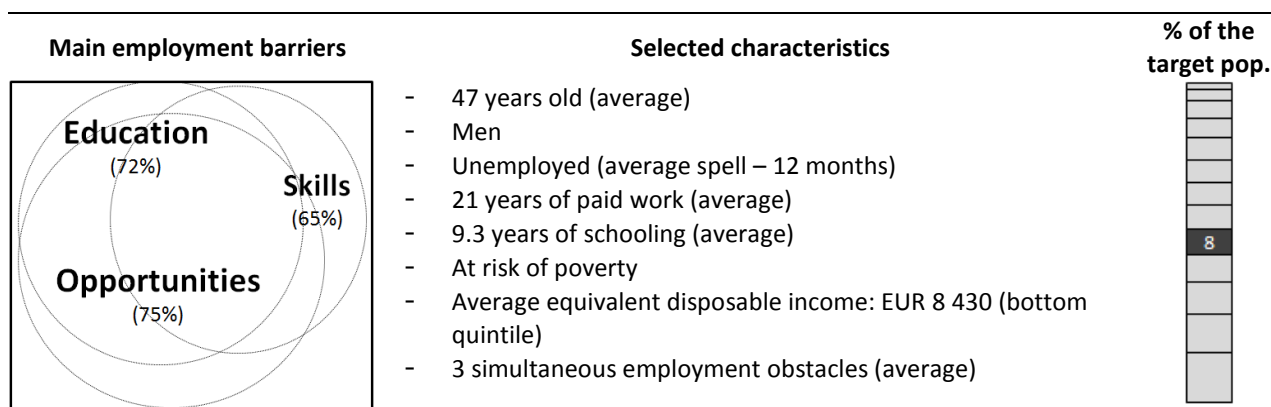
Group 4 (9% of the target population): “Underemployed prime-age women”. This group consists mostly of women (72%) in their prime working age (average age 41) and with a recent employment record (78%). Although this group has weak labour market attachment, most individuals did some paid work during the reference period: 28% had unstable job patterns while 50% worked less than 20 hours a week for most of the reference period. Of those who worked with restricted hours 55% could not find better employment opportunities or increase working hours (27% of group members), while another 22% had care responsibilities (11% of group members). Individuals in this group typically worked at clerk and sales skill level (49%) or higher (25%) and have one of the highest education levels of all groups. This group has on average 1.5 simultaneous employment obstacles, the lowest of all 13 groups (Figure 4.1). This means that the employment barriers each affect employment possibilities rather independently. The main three barriers characterising this group are low work experience relative to potential experience (36%), high levels of household income that do not directly depend on their own work effort (34%), and low education (34%).

Box 4.4. Group 4: “Underemployed prime-age women”



Group 5 (8% of the target population): “Long-term unemployed men with low professional skills and low education”. The majority of this group are prime age (47 years on average) men (90%) with significant past work experience, who had been actively looking for work throughout the reference period. Therefore the most common barrier to employment they face is scarce job opportunities (75%), which in most cases is associated with low levels of education (72%) and low professional skills (65% previously worked at the craft and machine operator skill level or lower). 38% received unemployment benefits (EUR 6 093/year, on average) and 33% family benefits (EUR 1 202/year). Individuals in this group have the highest risk of poverty of all groups (63% are in the bottom income quintile) and are often from southern or central regions (68%).

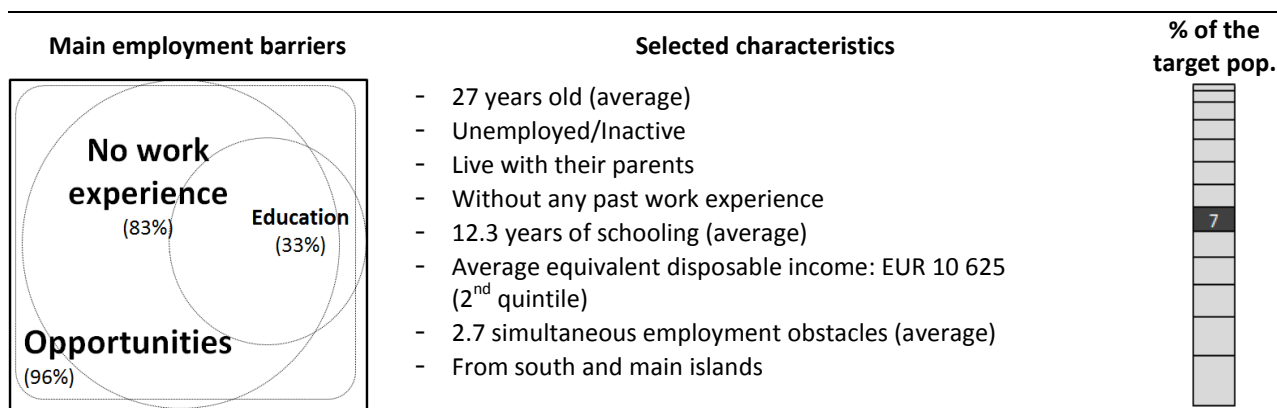
Box 4.5. Group 5: “Long-term unemployed men with low professional skills and low education”



Group 6 (7% of the target population): “Discouraged youth without any past work experience facing scarce job opportunities”. Individuals in this group are young (average age 27), well educated

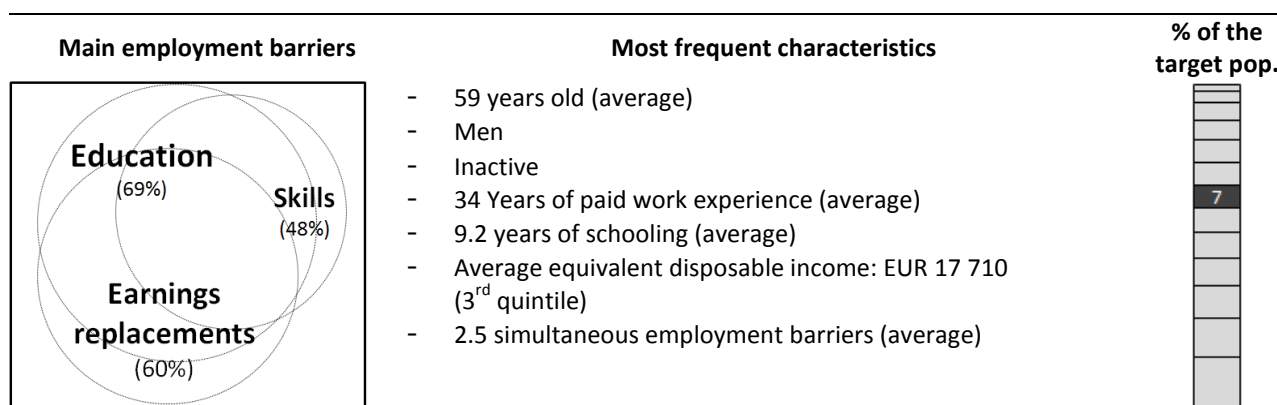
(12.3 years of education on average) and without any past paid work experience (83%). Almost all (97%) had been seeking a job for most of the reference period, but only 54% were still unemployed at the time of interview. The other 45% became discouraged and economically inactive by the time of the interview while only 1% found a job during this period. This means that lack of job opportunities is a major barrier for individuals in this group and helps to explain why so many became discouraged. The majority of group members are from the southern regions, Sicily and Sardinia (66%). 70% live with their parents.

Box 4.6. Group 6: “Discouraged youth without any past work experience facing scarce job opportunities”



Group 7 (7% of the target population): “Older men with low education and high earnings replacement benefits”. The majority in this group are older (average age 59) men (78%) who are economically inactive (93%). The most common employment barrier they face is low education (69%) with the group having the third lowest average education level of all the groups (9.2 years of schooling). Although all members of the group have a long employment record (34 years on average) their previous jobs have been in low-skill occupations (50% at craft and machine operator skill level or lower) which is also likely to reduce their (re-) employability. During the reference period 70% reported to be retired and 7% reported a permanent disability as the main reason for their economic inactivity. 64% received old age benefits (EUR 22 499/year, on average), 29% sickness and disability benefits (EUR 13 400/year, on average), and 12% unemployment benefits (EUR 10 972/year, on average). For 60% of this group, these benefits were high relative to their potential earnings in work, which could weaken their financial incentives to seek or take up employment.

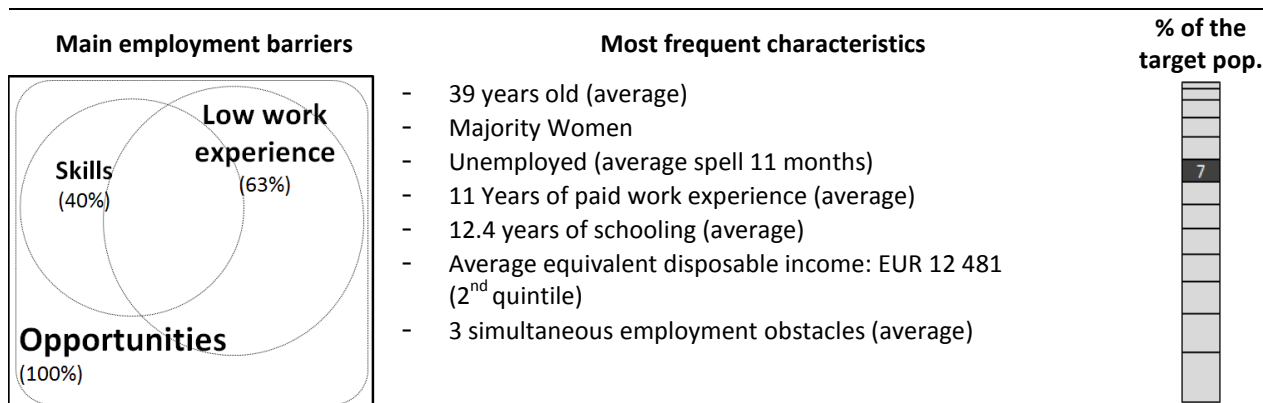
Box 4.7. Group 7: “Older men with low education and high earnings replacement benefits”



Group 8 (7% of the target population): “Unemployed prime-age women with limited work experience”. The majority of this group are women (72%) of prime age (average age 39) with some past work experience (100%). All reported to be unemployed during most of the reference period and 71% were still actively seeking and ready to take up employment at the time of the interview (the highest share of all groups). 42% had unstable job patterns during the reference period and 40% received unemployment benefits (EUR 3 787/year on average). The average unemployment spell was 11 months. Although the

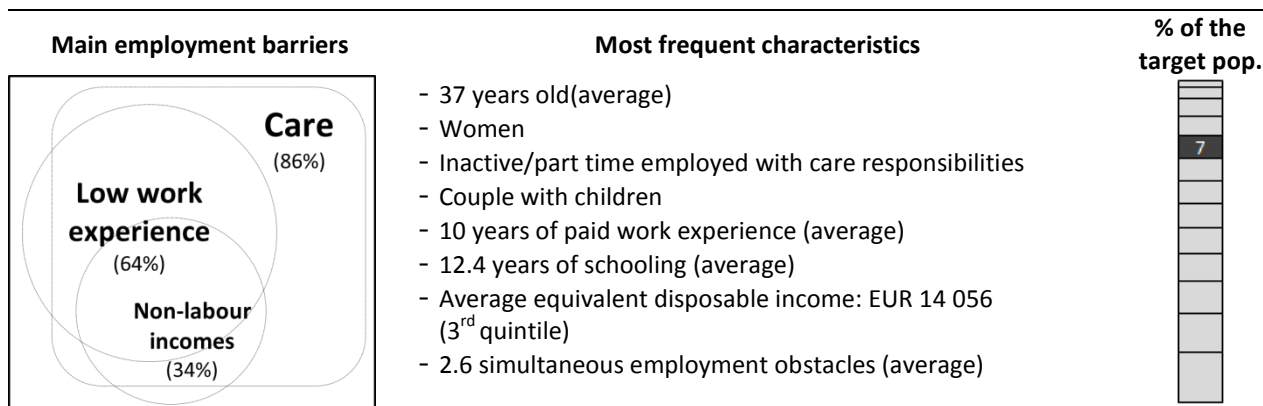
average education level is high compared to other groups (67% achieved a secondary degree or higher with an average of 12.4 years of formal education), the average level of professional skills is low: the previous occupation was at lower skills level for 40% of group members (elementary, craft and machine operators). Most members of this group also have low work experience relative to their potential experience (63%) and this can further reduce their opportunity to find employment.

Box 4.8. Group 8: “Unemployed prime-age women with limited work experience”



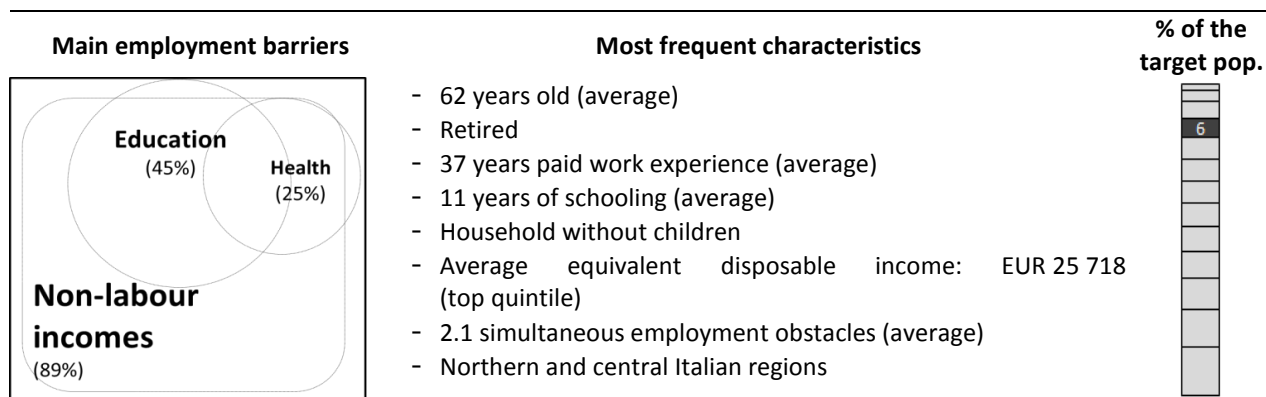
Group 9 (7% of the target population): “Labour-market inactive mothers with care responsibilities and limited work experience”. Individuals in this group are prime age (average age 37) women living in families with a partner who is in paid work (87%) and their young children (100%). These persons have on average two young children with the youngest being five years old. Most (86%) have care responsibilities and 59% receive family benefits (EUR 2 114/year, on average) while 34% can draw on significant incomes that are not related to their own effort. All these individuals have past work experience, the majority at clerk and sales skill level (54%) or higher (20%), but for 64% of them this is low relative to their age and education level.

Box 4.9. Group 9: “Labour-market inactive mothers with care responsibilities and limited work experience”



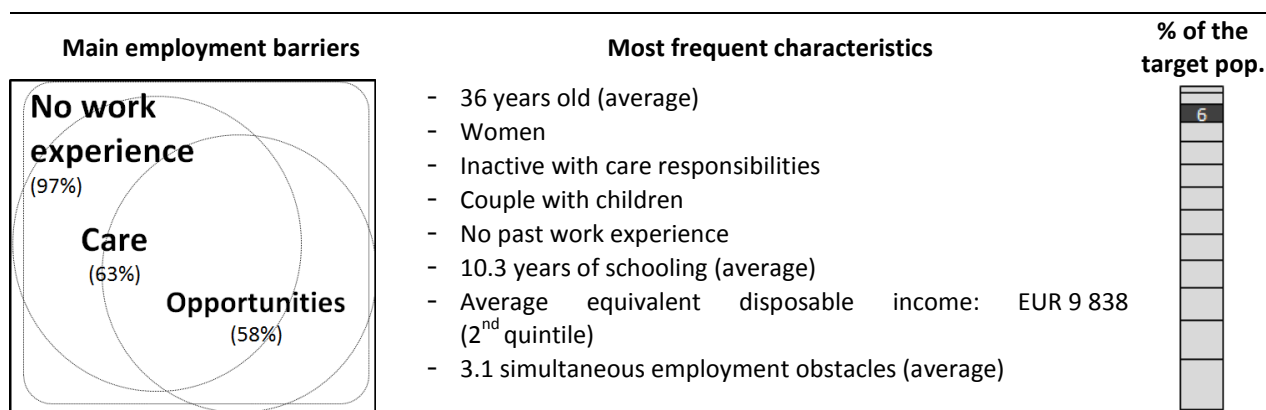
Group 10 (6% of the target population): “Retirees with weak financial work incentives”. This group is made of older individuals (average age 62) who are largely retired (82%) with an average of 37 years of paid work experience. This group has the highest equivalent disposable income (EUR 25 718/year on average) and 89% can draw on significant income sources that are independent to their own work effort, which in most cases are old-age benefits (83%, EUR 25 609/year on average). 11% also receive sickness and disability benefits (EUR 11 377/year on average). Compared to the other groups, individuals are less likely to face multiple simultaneous employment barriers (see Figure 4.1). The major overlaps are between low education (45%) and weak financial work incentives. Individuals in this group live in general in northern and central regions (73%).

Box 4.10. Group 10: “Retirees with weak work incentives”



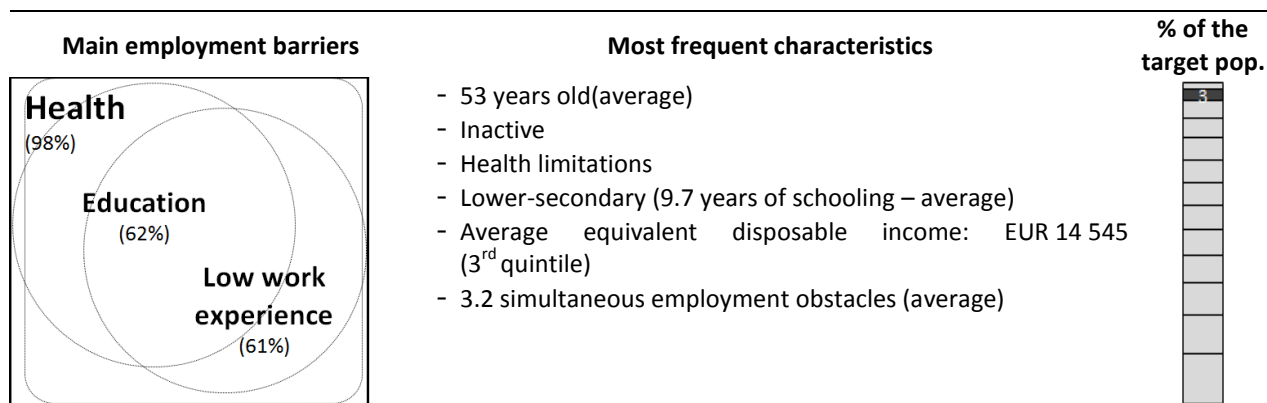
Group 11 (6% of the target population): “Labour-market inactive mothers with care responsibilities and without any past work experience”. This group is made of prime age women (average age 36) with children (87%) living in families with another working household member (81%). On average, women in this group are inactive (99%) and have 2 young children (the youngest is five years old). 57% receive family benefits (EUR 2 250/year, on average). 97% of these women have no past paid work experience and none of them were actively seeking a job at the time of the interview. The lack of previous work experience is often combined with care responsibilities (63%) and low education (55%). The combination of low education and no previous work experience also help to explain why many group members (58%) would also face scarce job opportunities if they were to seek employment, and this can further reduce their willingness to participate in the labour market. The overall number of simultaneous barriers is the second highest of the 13 groups (3.1), with 74% facing at least three simultaneous employment obstacles (Figure 4.1). The group has the second lowest equivalent disposable income (EUR 9 838/year, on average) and 47% are at risk of poverty and social exclusion. 62% of the group live in the southern regions, Sicily and Sardinia.

Box 4.11. Group 11: “Labour-market inactive mothers with care responsibilities and without any past work experience”



Group 12 (3% of the target population): “Older Individuals with health limitations and limited work experience”. These individuals are older (average age 55) and 98% report a long-standing physical or mental limitation, of which 40% have *severe* limitations. 49% receive sickness and disability benefits (EUR 10 037/year, on average) and 21% receive old-age pensions (EUR 17 216/year, on average). Partly due to their health individuals in this group are currently largely labour-market inactive (88%) but all have some previous work experience. However with only 20 years of paid work on average, this is in many cases (61%) low relative to their age and educational attainment. Past employment was mostly at the level of craft and machine operators (32%) or elementary occupations (23%), possibly lowering their chances of re-employment. The low levels of education in this group also create a barrier to re-employment with 62% having attained lower secondary or below.

Box 4.12. Group 12: “Older individuals with health limitations and limited work experience”



Group 13 (2% of the target population): “Individuals with disabilities and without any past work experience”. Individuals in this group are almost all inactive (98%) with no past work experience (100%) and very low education (34% with just primary education and 58% with lower secondary). 69% report a permanent disability as the main reason for being out of work. Therefore, a common barrier to employment is a long-standing physical or mental limitation (82%) with 54% suffering from *severe* health issues. 79% receive sickness and disability benefits (EUR 3 461/year, on average) and for 45% of this group, these benefits are high relative to their potential earnings in work, which could weaken their financial incentives to seek employment. They face the most number of simultaneous barriers of any group (see Figure 4.1) and the majority (74%) of these individuals live in the South, Sicily and Sardinia.

Box 4.13. Group 13: “Individuals with disabilities and without any past work experience”

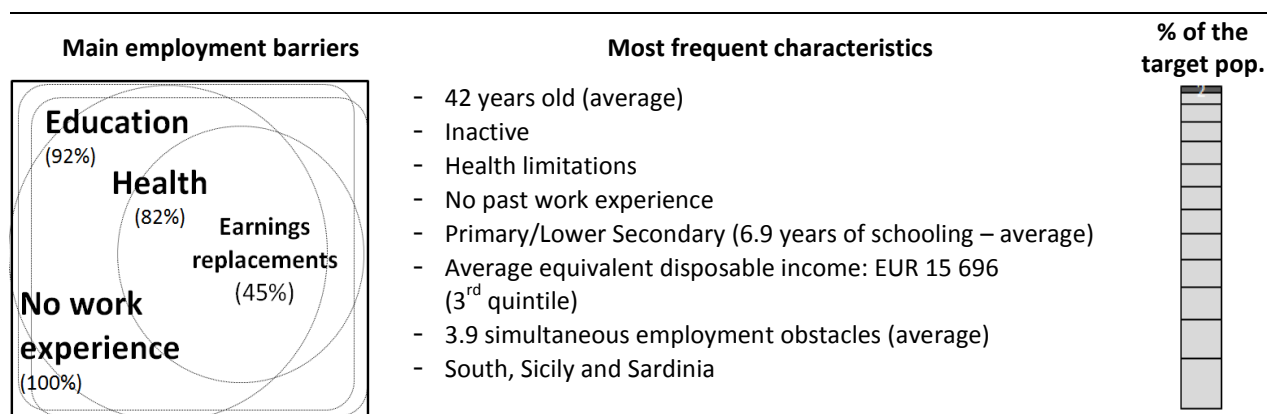
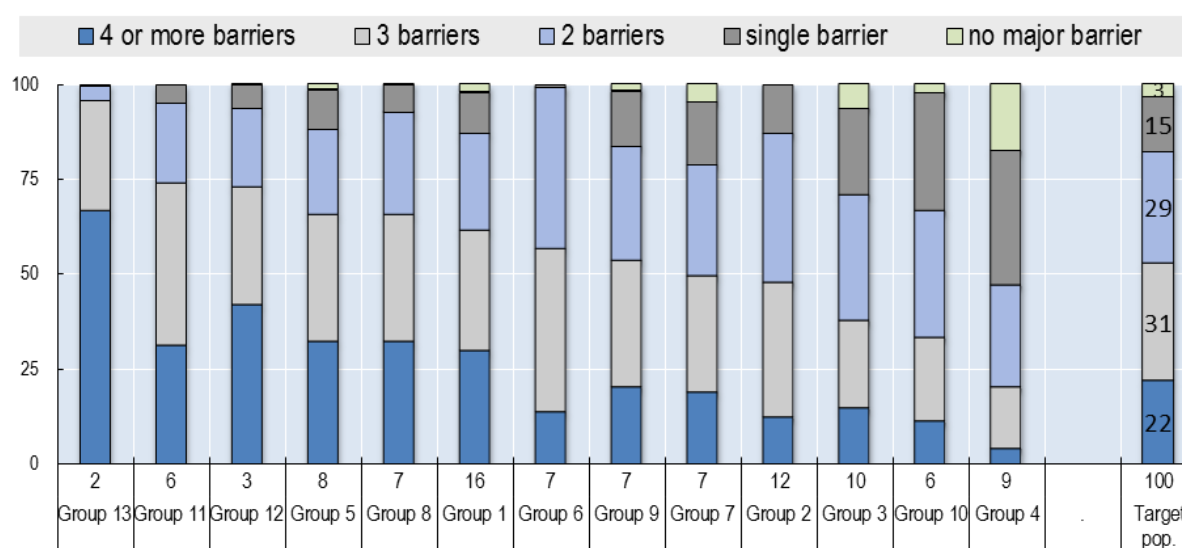


Figure 4.1. Share of individuals facing multiple employment barriers

In descending order of shares facing at least three barriers



Note: Group sizes are reported on the horizontal axis. See also Table 3 and Annex Tables A1, A2. **Group 1:** “Labour-market inactive women with low education and limited work experience”; **Group 2:** “Labour-market inactive women with low education and without any past work experience”; **Group 3:** “Discouraged younger adults with limited work experience”; **Group 4:** “Underemployed prime-age women”; **Group 5:** “Long-term unemployed men with low professional skills and low education”, **Group 6:** “Discouraged youth without any past work experience facing scarce job opportunities”; **Group 7:** “Older men with low education and high earnings replacement benefits”; **Group 8:** “Unemployed prime-age women with limited work experience”; **Group 9:** “Labour-market inactive mothers with care responsibilities and limited work experience”; **Group 10:** “Retirees with weak work incentives”; **Group 11:** “Labour-market inactive mothers with care responsibilities and without any past work experience”; **Group 12:** “Older individuals with health limitations and limited work experience”; **Group 13:** “Individuals with disabilities and without any past work experience”.

Source: Calculations based on EU-SILC 2014.

5. CONCLUSIONS

This note has used a novel method for identifying, analysing and visualising the most common employment barrier profiles characterising the Italian population with potential labour market difficulties. The underlying premise is that out-of-work individuals (unemployed and inactive) and workers with weak labour market attachment face a number of possible employment obstacles, and each of them may call for different policy responses. The success of activation and employment-support policies (AESPs), and of social protection measures more generally, is expected to hinge on effective strategies to target and tailor policy interventions to these barriers and to individual circumstances.

The segmentation method used in this note has uncovered patterns that can provide concrete guidance for policy design and targeting strategies in Italy. Results show that “short-hand” groupings that are often referred to in the policy debate, such as “youth”, “women”, “unemployed”, are far from homogeneous, and may distract attention from the specific employment obstacles that policies seek to address. Indeed, some of these categories include several distinct sub-groups with very different combinations of employment barriers.

For example, the statistical clustering has identified two quite different groups of women with children that are likely to respond to policies in different ways. One group is characterised by having few barriers to employment other than the need to care for children. It is likely that this group would be relatively responsive to policies that attempted to encourage them into paid work by offering stronger financial incentives such as in-work support or more childcare provision. The second group faces more severe barriers to employment, having never been in paid work at all and with lower levels of education. For this group a longer-term approach to addressing employment barriers including active labour market policies to tackle skills deficits may be necessary.

The statistical clustering has also identified four distinct sub-groups of unemployed individuals. There is one group of early prime age adults with average skills levels, relatively-low work experience who are at risk of becoming discouraged from the labour market. The second sub-group is slightly older than the first; they have lower skills levels but a much longer employment record relative to age and education. The third group consists of young people with no employment history who are giving up their job search and becoming economically inactive. The fourth group shows a much higher motivation to look for and take up employment, but a lack of work experience and professional skills. In view of these different characteristics, a uniform approach for fighting unemployment would likely be inappropriate.

Similarly, results point to two different groups of older people facing potential employment difficulties. One group is skilled with lengthy albeit not recent work experience, whereas the other is slightly younger with a long tenure in lower-skilled jobs. Both groups are likely to face low financial work incentives, though of different type: individuals in the first group live in higher-income households and can draw on significant income independently of their work effort while those in the second group receives more earnings replacement benefits. Again, these differences suggest scope for employing quite different policy approaches for different groups of older working-age people.

Although the clustering results do not in themselves say which groups should be the focus for AESPs, they may highlight priority groups for policy interventions. For instance, very high poverty risks, a large number of young people or a strong over-representation of women in some groups may signal a need to review whether existing targeting strategies meet governments’ social cohesion objectives. A high poverty risk combined with weak work incentives may call for caution in applying benefit sanctions (such as for

some individuals in Group 2). By contrast, groups with relatively high incomes and financial disincentives caused by high levels of income replacement benefits (such as Group 7) may indicate scope for targeted benefit reductions or for tightening benefit eligibility conditions.

Likewise, information on the intensity and number of barriers faced by individuals can inform difficult policy decisions involving trade-offs between helping those in greatest need and targeting those who are likely to be the most responsive to policy interventions. For example, it is debatable whether resources should be channelled primarily to those with severe or multiple barriers who are, in some sense, furthest from obtaining or holding a stable job or to groups with moderate employment difficulties, for whom policy interventions may have a greater probability of success.

A forthcoming Country Policy Paper to be produced as part of this project will take stock of existing policy measures for some of the groups identified here. Based on that policy inventory, it will seek to analyse whether they are well-aligned with the employment barriers identified in this paper.

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ANNEX A LATENT CLASS RESULTS

Using the 2014 SILC data for Italy, the segmentation algorithm outlined in Annex B leads to a model with **13 groups**. Table A.1 shows the estimated parameters, i.e. the *share* of individuals facing the employment barriers in each latent group and the related *group size* in the target population (first row). Groups are ordered by size; colour shadings are used to highlight barriers with higher (dark blue) and lower (light blue) frequencies in each group.

Table A.1. Latent class estimates
Percentage of individuals with selected characteristics, by group

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Group 13	Target Pop
Group Size (Target population=100)	16	12	10	9	8	7	7	7	7	6	6	3	2	100
"Low" education	66	72	37	34	72	33	69	33	33	45	55	62	92	53
"Low" professional skills	46	100	25	25	65	100	48	40	25	33	100	53	100	56
No past work experience	0	88	0	0	1	83	0	0	0	0	97	0	100	25
Positive but "low" relative work experience	81	5	65	36	38	7	13	63	64	3	2	61	0	38
No recent work activity	95	91	74	22	73	98	93	58	80	96	100	96	100	81
Health limitations	29	27	9	17	28	5	38	19	10	25	8	98	82	24
Care responsibilities	10	8	8	7	6	3	3	16	86	4	63	1	0	16
"High" non-labour income	52	30	26	34	4	24	14	27	34	89	19	26	28	32
"High" earnings replacements	4	5	2	1	6	2	60	4	2	12	1	22	45	9
Scarce job opportunities	0	0	54	1	75	96	0	100	8	0	58	0	44	31

Note: Section 2 describes the indicators and applicable thresholds. Group sizes refer to the target population as defined in Section 1. Colour shadings identify categories with high (dark blue) and lower (light blue) frequencies. Complementary categories (e.g. "high" professional skills) are omitted. Additional information on model selection and model specification is provided in Annex B.

Source: Authors' calculations based on EU-SILC 2014.

Table A.2. Characterisation of the latent groups

Percentage of individuals with selected characteristics and average values, by group

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Group 13	Target Pop
Number of individuals (%)	16	12	10	9	8	7	7	7	7	6	6	3	2	100
Number of individuals (frequency)	2130	1619	1389	1171	1131	991	990	963	955	806	805	455	260	13666
Unstable jobs (%)	2	4	26	28	27	5	3	42	9	2	0	2	0	12
Restricted working hours (%)	3	7	0	50	0	0	4	0	13	2	0	2	0	7
Reason for restricted hours (%)														
No better job opportunities	..	..	..	56	..	..	..	..	..	..	..	..	..	52
Housework or care responsibilities	..	..	..	22	..	..	..	..	..	..	..	..	..	25
Other reasons	..	..	..	22	..	..	..	..	..	..	..	..	..	23
Workers with zero or near-zero earnings (%)	0	0	0	10	0	0	1	0	0	0	0	1	0	1
Women* (%)	99	99	38	72	10	47	22	72	100	37	100	56	36	66
Age groups* (%)														
Youth (18-29)	0	0	57	20	0	75	0	15	17	0	21	2	26	17
Prime age (30-54)	55	59	41	68	73	25	15	81	83	0	79	49	58	54
Old-age (55-64)	44	41	1	11	26	0	85	5	0	100	0	49	16	29
Average age	53	53	32	41	47	27	59	39	37	62	36	53	42	45
Main activity during the reference period (%)														
Employed FT	0	0	0	5	0	0	0	0	0	0	0	0	0	1
Employed PT	3	7	0	46	0	0	3	0	11	1	0	2	0	6
Self-employed FT	0	0	0	3	0	0	1	0	0	0	0	0	0	0
Self-employed PT	1	0	0	10	0	0	1	0	2	1	0	1	0	1
Unemployed	4	1	91	0	100	97	0	100	8	1	1	8	6	33
Retired	16	1	0	4	0	0	70	0	0	82	0	24	0	14
Unfit to work/disable	2	3	0	1	0	1	7	0	0	1	0	29	69	4
Housework	68	86	3	16	0	1	8	0	72	9	96	26	18	36
Other inactive	6	2	5	14	0	1	10	0	6	5	2	9	8	5
Activity at the time of interview (%)														
Employed	4	8	16	71	12	1	6	19	18	3	0	4	0	14
Unemployed	4	0	73	3	86	54	1	79	8	1	1	8	2	26
Inactive	92	91	10	26	2	45	93	3	74	96	99	88	98	60
Average length of unemployment spell^{††}	..	..	12	..	12	12	..	11	..	..	..	..	..	12.0
Actively seeking employment (% of out of work)	..	..	36	..	72	64	..	88	..	..	..	..	..	26
Primary	20	28	5	5	15	3	24	5	3	16	9	23	34	14
Lower secondary	45	44	32	29	57	30	45	28	30	29	46	38	58	39
Upper secondary (ISCED) - %	28	25	50	47	22	52	24	50	52	40	40	31	7	37
Tertiary	6	2	14	18	6	15	6	17	15	15	5	7	1	10
Average years of education	9.5	8.6	12	12	9	12	9	12	12	11	10	10	6.9	10.6

Table A.2. Characterisation of the latent groups (cont.)

Percentage of individuals with selected characteristics and average values, by group

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Group 13	Target Pop
<i>Number of individuals (%)</i>	16	12	10	9	8	7	7	7	7	6	6	3	2	100
<i>No work-related skills</i>	0	88	0	0	1	83	0	0	0	0	97	0	100	25
<i>Elementar occupations</i>	21	8	12	13	21	8	11	23	14	7	2	23	0	14
<i>Work-related skills (ISCO) - Craft and machine operators</i>	26	4	15	13	45	9	40	17	13	26	1	32	0	19
<i>skills (ISCO) - Clerk and sales</i>	37	0	51	49	22	0	28	40	54	28	0	30	0	28
<i>% Technicians et al.</i>	8	0	12	12	6	0	13	8	12	17	0	9	0	8
<i>Professionals</i>	5	0	6	10	2	0	7	10	6	14	0	5	0	5
<i>Managers</i>	2	0	3	3	2	0	2	1	2	7	0	2	0	2
<i>Average years of paid work experience †</i>	16	..	8	16	21	..	34	11	10	37	..	20	..	18
<i>Severe health limitations (%)</i>	6	7	3	4	6	1	13	4	1	5	1	40	54	7
<i>Migrant (%)</i>	10	11	12	16	17	11	4	20	20	3	30	10	9	13
<i>Average equivalent disposable income (€/year)</i>	17241	12498	11819	15885	8430	10625	17710	12481	14056	25718	9838	14545	15696	14223
<i>Position in the income distribution (%)</i>														
<i>Bottom quintile</i>	21	38	43	27	63	49	17	41	30	4	48	31	28	34
<i>Second quintile</i>	22	27	24	20	22	25	23	23	30	6	34	25	13	23
<i>Third quintile</i>	22	17	15	21	7	13	22	15	20	18	13	18	25	17
<i>Fourth quintile</i>	19	10	10	18	5	8	18	13	11	28	4	16	21	14
<i>Top quintile</i>	16	8	7	15	2	5	19	8	9	44	2	11	13	12
<i>AROPE - Eurostat methodology (%)</i>	21	37	43	26	62	48	16	40	29	3	47	30	27	33
<i>Material deprivation - No material deprivation</i>	77	64	55	73	40	53	78	56	70	91	55	63	59	65
<i>deprivation - Deprived</i>	12	17	18	13	21	20	13	20	13	6	21	17	16	16
<i>Eurostat (%) Severe</i>	12	19	27	15	38	27	9	24	16	4	24	21	25	19
<i>Sickness and disability recipients (%), they receive, on average †</i>	12	17	3	5	9	4	29	4	1	11	3	49	79	12
<i>Unemployment benefits recipients (%), they receive, on average †</i>	8116	7325	..	..	..	..	13400	..	..	..	..	10037	10899	9170
<i>Social Assistance recipients (%), they receive, on average †</i>	7	3	29	20	38	5	12	40	16	4	1	10	0	15
<i>Housing Benefits recipients (%), they receive, on average †</i>	4314	..	3703	3474	6093	..	..	3787	3808	..	..	..	..	4854
<i>Family-related benefits recipients (%), they receive, on average †</i>	0	1	2	1	3	2	1	2	2	0	1	1	3	1
<i>Old-age Benefits recipients (%), they receive, on average †</i>	..	..	..	..	..	..	..	..	..	..	..	..	..	2858
<i>Family-related benefits recipients (%), they receive, on average †</i>	1	1	3	2	6	2	1	3	3	1	4	2	4	2
<i>Old-age Benefits recipients (%), they receive, on average †</i>	..	..	..	..	..	..	..	..	..	..	..	..	..	767
<i>Family-related benefits recipients (%), they receive, on average †</i>	29	33	30	34	33	30	24	34	59	12	57	25	39	33
<i>Old-age Benefits recipients (%), they receive, on average †</i>	993	988	1249	1424	1202	1051	827	1298	2114	..	2250	..	..	1364
<i>Old-age Benefits recipients (%), they receive, on average †</i>	17	1	0	5	1	0	64	0	0	83	0	21	0	14
<i>Household type (%)</i>	12014	..	..	..	..	..	22499	..	..	25609	..	..	..	20836
<i>Single</i>	6	5	7	10	14	3	20	10	0	11	0	17	9	8
<i>Couple without children</i>	29	25	13	18	19	9	29	17	0	40	3	30	21	20
<i>Couple with children</i>	22	18	20	36	28	17	12	26	87	5	73	15	6	28
<i>2+ adults without children</i>	32	33	36	22	23	41	30	29	0	38	4	30	46	28
<i>2+ adults with children</i>	10	17	22	11	14	29	8	12	9	5	19	7	15	14
<i>Lone parents</i>	1	1	3	4	1	1	1	4	5	1	2	2	3	2
<i>Have children aged under 6 (%)</i>	6	3	12	19	18	7	3	14	62	2	46	5	4	55
<i>Have children aged under 12* (%)</i>	12	8	23	35	30	15	7	26	100	3	87	10	5	27
<i>Average number of children aged under 6 †</i>	1.2	..	1.2	1.2	1.3	1.2	..	1.2	1.3	..	1.3	..	..	1.3
<i>Average number of children aged under 12 †</i>	1.5	..	1.4	1.5	1.5	1.2	..	1.4	1.6	..	1.6	..	..	1.5
<i>Age of the youngest child †</i>	6	..	5	5	5	6	..	5	5	..	5	..	..	5
<i>Live in rural area* (%)</i>	16	17	19	16	18	18	17	15	16	16	18	21	16	17
<i>Area of residence - Northern Italy</i>	50	17	28	52	32	19	31	35	37	50	22	50	12	29
<i>Central</i>	15	11	16	16	15	15	36	20	15	23	17	14	14	16
<i>NUTS 1 (%) South and main islands</i>	34	73	55	31	53	66	33	45	48	27	62	37	74	54
<i>Household with other working household members (%)</i>	65	59	61	66	35	64	36	54	87	50	81	42	45	59
<i>Average number of simultaneous barriers</i>	2.8	2.5	2	2	3	3	2	3	3	2	3	3	3.9	2.6

Notes: Colour shadings identify categories with high (darker) frequencies. The average number of simultaneous barriers per individual is computed for the core indicators in table A1.1 with the exception of recent work experience. Income quintiles refer to the entire population. Poverty risks and material deprivation are calculated with the Eurostat methodology.

* The variable enters as an additional indicator in the latent class model. See Annex B for details.

† Average across observations with strictly positive values. Averages based on less than 30 observations are omitted.

†† Individual unemployment durations refer to the reference period (13 monthly observations, i.e. 12 consecutive monthly observations and the moment of the survey interview). The average unemployment duration is calculated across individual records with strictly positive values and is top-coded at 12 months.

Source: Authors' calculations based on EU-SILC 2014.

Table A1.3. Characterization of the latent groups

Coefficient of variations, by group

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Group 13	Target Pop
<i>Age</i>	17	14	33	28	21	30	9	25	19	3	21	17	31	30
<i>Length of unemployment spell</i>	..	..	13	..	16	8	..	19	..	..	..	..	..	15
<i>Years of education</i>	43	42	34	36	42	33	44	35	34	42	36	44	44	41
<i>Years of paid work experience</i>	63	..	100	65	52	..	26	75	62	16	..	57	..	71
<i>Equivalent disposable income</i>	76	64	77	76	82	72	64	70	79	58	57	68	57	78
<i>Sickness and disability</i>	86	84	..	..	..	..	84	..	..	..	..	88	59	94
<i>Unemployment benefit</i>	146	..	206	156	124	..	..	..	..	..	..	..	..	156
<i>Benefits</i>	..	..	..	..	..	..	..	..	..	..	..	..	..	146
<i>Social Assistance</i>	..	..	..	..	..	..	..	..	..	..	..	..	..	130
<i>Housing Benefits</i>	..	..	..	..	..	..	..	..	..	..	..	..	..	169
<i>Family-related benefits</i>	151	162	148	138	160	132	134	192	179	..	142	..	..	169
<i>Old-age Benefits</i>	83	..	..	..	..	..	51	..	..	58	..	..	..	67
<i>Number of children aged under 6</i>	40	..	39	39	38	35	..	38	39	..	43	..	..	40
<i>Number of children aged under 12</i>	45	..	43	42	43	38	..	41	44	..	45	..	..	44
<i>Age of the youngest child</i>	59	..	71	71	74	68	..	70	84	..	66	..	..	72
<i>Number of simultaneous barriers</i>	42	36	54	70	39	27	48	37	42	51	31	35	24	45

Notes: the coefficients of variations are calculated only for the set of *continuous* variables shown in table A1.2. See Notes of table A1.2 for details.

ANNEX B LATENT CLASS ANALYSIS AND MODEL SELECTION

The segmentation method used in this note is *Latent Class Analysis* (LCA). This method exploits the interrelations of an array of indicators through a fully-specified (i.e. parametric) statistical model for organising the target population into homogeneous groups. In the present framework, the indicators represent employment barriers and the statistical algorithm therefore identifies population sub-groups sharing similar barriers to employment, e.g. “low skills *and* scarce job opportunities” for Group 1; “low work experience *and* low financial work incentives” for Group 2, etc.

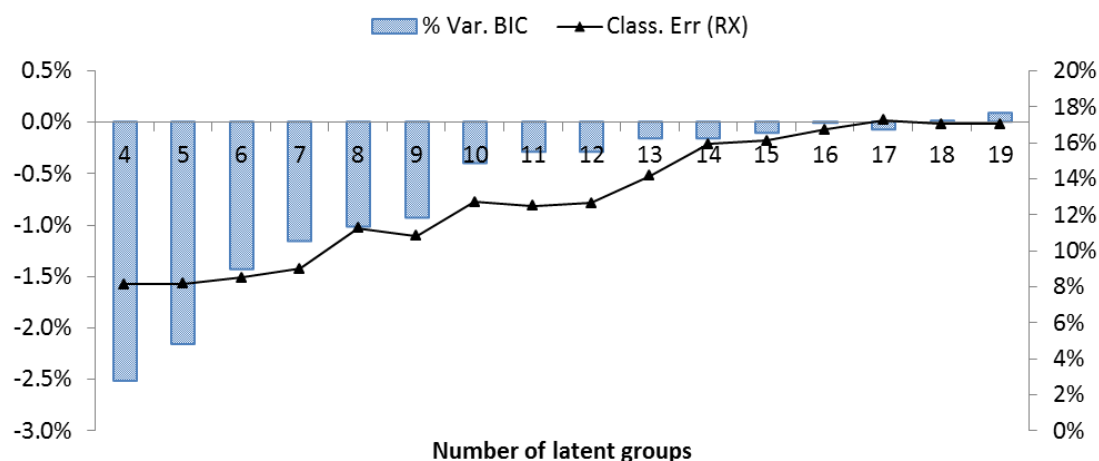
LCA has three main advantages relative to other common segmentation (or “clustering”) methods: 1) Formal statistical tests guide the selection of the optimal number of groups and other model’s features; 2) LCA does not allocate individuals into specific groups in a deterministic way but, instead, provides *probabilities* of group membership, thus reducing possible classification errors in any post-estimation analysis; 3) LCA deals easily with common data-related issues such as missing data and complex survey designs.

Latent Class Analysis does not automatically provide an estimate of the *optimal* number of latent classes. Instead, models with different number of classes are estimated sequentially and the optimal model is chosen based on a series of statistical criteria. To summarise, the model selection process starts with the definition of a *standard* latent-class model that is repeatedly estimated for an *increasing number of latent classes* (Step 1).¹³ The choice of the *optimal* number of classes is primarily based on goodness-of-fit and error-classification statistics (Step 2, see also Figure B.1), and then on the analysis of potential misspecification issues (Step 3). Fernandez et al. (2016) describes these steps in details and provides guidelines for practitioners interested in adapting the approach to specific analytical needs or data.

Figure B.1 summarises graphically Step 2 outlined above for the Italian SILC 2014; The blue bars show the percentage variations of the *Bayesian Information Criterion* (BIC, Schwartz 1978)¹⁴ for increasing numbers of latent groups, whereas the black line shows, for the same groups, the *classification error statistics* (Vermunt and Magdison, 2016).¹⁵ In general, a smaller value of the BIC indicates a more optimal balance between model fit and parsimony, whereas a smaller value of the classification error statistics means that individuals are well-classified into one (and only one) group. In Figure B.1 the BIC is minimised for a model with 18 classes and the classification error of 17% indicates that the model provides a good representation of the heterogeneity in the underlying data.

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13. A *standard* latent class model means that the likelihood function is derived under the so-called Local Independence Assumption (LIA). See Fernandez et al. (2016) for details.
 14. The BIC summarises into a single index the *trade-off* between the model’s ability to fit the data and the model’s parametrisation: a model with a higher number of latent classes always provide a better fitting of the underlying data but at the cost of complicating the model’s structure.
 15. The classification error shows how-well the model is able to *classify* individuals into specific groups. To understand the meaning of the classification error index it is important to keep in mind that LCA does not assign individuals to specific classes but, instead, estimates probabilities of class membership. One has therefore two options to analyses the results: allocate individuals into a given cluster based on the highest probability of class-membership (*modal* assignment) or *weighting* each person with the related class-membership probability in the analysis of each class (*proportional* assignment). The classification error statistics is based on the share of individuals that are miss-classified according to the modal assignment.

Figure B.1. Selection of the optimal number of latent classes



Post-estimation tests based on the *Bivariate Residuals* (Vermunt and Magdison, 2005) show for the 18-class model some residual *within-group* correlation between eight pairs of indicators. This indicates that the model violates to some extent the Local Independence Assumption (LIA).¹⁶ Increasing the number of latent classes always reduces the residual dependencies between indicators but this comes at the cost of a higher classification error. For instance, the 23-class model has no signs of local dependencies but the classification error is high at 25%.

Following Fernandez et al. (2016) and Vermunt and Magdison (2005) the residual dependencies between indicators is addressed with the so-called *direct effects*; these are ad-hoc terms that enter the specification of the likelihood function to model explicitly the *joint* probabilities of pairs of indicators conditional on group membership. The inclusion of direct effects eliminates any residual correlation between the relevant pair of indicators but it also requires repeating the model selection process, as the new baseline model with local dependencies may lead to a different optimal number of classes. For the new baseline model with direct effects the BIC points to the 13-class model, which is the favourite solution described in this note.¹⁷

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16. The LIA shapes the algebraic specification of the model and, in practice, requires the indicators to be *pairwise* independent *within* latent groups. Bivariate residuals are Pearson chi-squared tests comparing the *observed* associations between pairs of indicators with the *expected* association under the assumption of *local independence*; large differences between estimated and observed associations signal violations of the LIA.
 17. Age, gender and regional differences define relevant labour market segments that are worth including in the measurement model to account for differences between and within latent groups. Fernandez et al. (2016) discusses three possibilities for including additional variables in the model's specification. In SILC-2014 for Italy the favoured specification in terms of lower classification error, interpretation of the results and specification tests includes age and gender differences as "active" covariates. The inclusion of regional information in the latent class model for Italy generated several misspecification problems. This depends on the strong positive association between the area of residence and the employment barrier indicators, which stays significant even with a thin segmentation of the target population. For this reason the area of residence was excluded from the measurement model for Italy. Figure B.1 is based on a model that already includes information on age (three categories: 18-29, 30-54, 55-64) and gender.