Conceptualizing Low-Skillness: A New Approach[1]

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Conceptualizing Low-Skillness: A New Approach. This study reviews conceptual and empirical literature studying low-skilled and proposes more comprehensive and dynamic conceptualization of low-skillness. Our work is based on analysing the sources of being and of becoming low-skilled by reviewing structural processes underlying changes in labour markets and their varied impact on the individuals of different characteristics. We suggest a broader conceptualization of low-skillness which surpasses the dominant qualification-based approach and measurement of low-skillness by the attained level of education. In addition to the typically included low-educated, our typology includes categories of workers who might be formally well-educated, experienced and trained but have been drawn into low-skillness as an outcome of structural forces or institutional barriers. A broader conceptualization and measurement of low-skillness can better reveal the variety of its causes and in turn allow designing better suited policies for economic and social integration.
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1. Introduction

The integration of low-skilled workers into labour markets represents today one of the key policy challenges due to their higher risk of unemployment and social and economic exclusion. In view of existing labour shortages and projected aging of populations, integration of low-skilled into labour market is likely to gain on further importance. Several important processes happening today across advanced economies have diverse implications on the prospects of low-skilled workforce. Skill polarization towards high and low-skilled jobs on the one hand means increasing employment opportunities for low-skilled. It is however accompanied by a process of displacement of the low-skilled by more educated workers who are pushed out from the declining medium level jobs (Solga 2008; CEDEFOP 2012; Manning 2004; Autor and Dorn 2009). At the same time, the skill requirements are rising within all occupational categories

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and skill levels, while the complexity of tasks required even at the lower end of the skills distribution is increasing (Brunello and Schlotter 2010; Kureková et al. 2013; Autor, Levy and Murnane 2003).

This suggests that the nature of low-skillness is dramatically changing. Understanding the issue of low-skillness – a concept that in our definition covers low-skilled people as well as low-skilled jobs – is the key focus of this paper. Motivated by our initial persuasion that understanding of low-skillness to date has been fuzzy, we investigate low-skillness more systematically by studying critically the existing academic and policy works of conceptual and empirical nature with respect to European labour markets in particular. We seek to understand multifaceted nature of low-skillness and to grasp better who the 'modern' low-skilled are and how they might differ across countries characterized by different economic structures, production specializations, systems of institutions in education and welfare, histories of migration and economic prospects.

We find that most literature typically equates the achieved official qualifications with the level of skills and measures low-skillness through ISCED 0-2 educational attainment (lower secondary or second stage of primary education). On the demand side, low-skillness is typically proxied by ISCO88 9th occupational category (elementary occupations). In our view, the measurement by educational attainment alone sterilizes the concept of low-skillness and obscures it from the sources of low-skillness that are important for a better understanding of the heterogeneity of the low-skilled workers within and across the countries. Generally, research is over-simplified, detached from acknowledgement of structural processes and changes that might affect low-skillness, and characterized by homogenization of the low-skilled.

This motivates us to take a broader approach to conceptualizing low-skillness. We highlight the importance of macro-processes that have been driving the changes in labour demand and labour supply in the past decades and their differentiated nature on different types of workers. It enables us to identify mechanisms through which they impact labour market outcomes of workers employed in low-skilled jobs, found in unemployment or outside the labour market, in inactivity. In doing so, our understanding of low-skilled is concentrated on *de facto* utilization of skills rather than on equating it with the formally achieved qualification levels. We find our approach fairly innovative in that we connect who the low-skilled are, i.e. being low-skilled, with the sources of low-skillness, i.e. becoming low-skilled, and thus point out the heterogeneity of the low-skilled workers.

While the categories of low-skillness we propose are certainly not new to the literature, our contribution consists of the emphasis we put on the different

profile of low-skillness across the EU countries. We also highlight the importance of individual-level factors such as age, gender or nationality, which in complex ways interact with broader structural changes and impact the low-skillness profile in a particular labour market. This approach allows us emphasize, among other things, the differences among the educational systems among the EU countries as well as the different values attributed to the educational attainment across the EU labour markets. In sum, our contribution lies in pointing out deficiencies in research and potentially also policy-making on low-skillness, suggesting broader conceptualization and measurement and empirically prompting our approach to demonstrate the cross-country and within country variation in who the low-skilled are.

We address the concept of low-skillness both from the perspective of the low-skilled jobs and the low-skilled people and throughout this paper combine the two perspectives. The combination of the two and their analysis in conjunction with each other helps us understand low-skillness as a phenomenon instead of just people or occupations alone. We find that this approach extends the simplified conceptualization of the term usually found in the literature and it creates a more comprehensive definition worth considering in the empirical assessments of this labour force segment, but, most importantly for a more precise identification of the places where policy has to intervene.

Section 2 reviews how low-skillness is conceptualized in academic and policy works and summarizes the most common empirical approaches to measuring low-skillness. Section 3 reviews structural changes and shifts impacting on economy and employment of the low-skilled. We then proceed to our own research contribution. Section 4 relates the discussion to impacts on micro-level and enriches it by empirical examples which present low-skillness in comparative perspective across dimensions and across EU countries. In Section 5 we propose justification for a new approach to studying low-skillness leading to a categorization of low-skillness. Section 6 concludes.

2. State of the art: Conceptualization and measurement of low-skillness

The low-skilled are mostly defined based on available and standardized measures whereby educational level, occupations, wages and job stability have traditionally been used as instruments for defining low-skillness. In terms of education, the low-skilled are identified by ISCED0/1, that is those individuals whose schooling is below any level of secondary education (Lyly-Yrjänäinen 2008; McIntosh 2002). Maxwell (2006) defines low-skilled workers as having no more than high school education and no more than one year of work experience, effectively narrowing the definition to youth. Alternatively, Steedman & McIntosh (2001), based on an analysis of the International Adult

Literacy Survey (IALS) test data conclude that ISCED0/1/2[3] is a valid working definition (and measure) of the low skilled in the EU countries they considered. However, their findings hinge considerably on the assumption that literacy skills, as measured by the IALS test, are the only skills to be considered, disregarding the non-cognitive and social skills as well as entrepreneurial and communication skills, which are increasingly required by employers (Nelson 2010; Kureková et al. 2013).

When it comes to the occupational classification by ISCO, the identification of the low-skilled is more blurred. Manuals and research practices of international organizations, such as ILO or OECD, equate the last ISCO category, elementary occupations, with the low-skilled level (e.g. Hoffmann 1999). Other works, however, have applied a much broader approach to the measurement of the low-skilled. For example, Lyly-Yrjänäinen (2008) defines the low-skilled people as those with occupations classified in ISCO 5-9 and considers the 4th ISCO category as highly skilled. In a slightly different view, Dieckhoff (2008) looking at the effect of the vocational training on the labour market outcome in three EU countries, defines low-skilled workers as belonging to the occupational groups 81 to 93 in the ISCO88 classification. Finally, many economics papers, searching for various causalities, define the low-skilled in terms of wages using rather arbitrary thresholds at the bottom of the wage distribution or absolute levels of pay (Manning 2004; Autor and Dorn 2009). A relatively frequent measure of low-skilled jobs (rather than workers) links it to job quality and uses job tenure and job stability as proxies for the job skill level.

In our view, the above use of these measurements is characterized by several deficiencies which highlight the need for better conceptual grasping of low-skillness. Firstly, frequently there is confusion in the terminology used by various authors when designating the work force belonging to the lower tail of the skills distribution. For instance, terms like *low-skilled*, *low-wage* or *unskilled* are often used inter-changeably, especially in the economics literature (Goux & Maurin 2000; Manning 2004). Likewise, some of the EU policy documents mention the term *unskilled* together with that of *low-skilled*, without further specifications regarding the similarities and/or differences between these two categories (Council of the European Union 1999). In our opinion, the concept of low-skilled is broader than both that identified by *low-wage* and by *unskilled*. First, the *low-wage* definition and measure of low-skillness fails to capture the unemployed and other vulnerable categories which are not wage recipients. Second, the concept of *unskilled* is merely a subset of the low-skilled as it only captures those without any sort of skills and at most it only

[3] This category comprises people with lower secondary education and below.

incorporates the unskilled manual workers. Contrary to this notion, studying the task content of low-skilled jobs persuasively demonstrates that low-skilled jobs require a fair share of skills (Maxwell 2006).

Several studies already go in the direction of rethinking the concept of low-skilled by taking a broader look at the sources of low-skillness and considering various 'classes' of vulnerable people. In particular, Illeris (2006) points to the necessity of going beyond the traditional identification through the lenses of educational attainment (primary and/or lower secondary schooling) and to consider various classes of people who are at risk of being excluded from the labour market. He labels them *vulnerable adult*, and includes school drop-outs, who have not completed any education leading to formal qualifications, those with obsolete skills and the young adults who do not possess the social competencies for a lasting job. Similarly, Solga (2002) positions the understanding of the low-skilled into a wider context of educational expansion and engages with the problem of stigmatization of the less-educated people as a factor for their decreasing chances in the labour market. Nixon (2009) brings in the concept of job masculinity which prevents the low-skilled men to take-up training and to adapt their skills to the characteristics of the service economy. The gender perspective turns out to be fairly important especially for the older men who detach from the labour market rather than accepting entry level jobs. These studies, however, are typically concerned with a particular group (or two) of low-skilled workers and analytically comprehensive studies covering a range of low-skilled 'types' are less common. In addition, these studies come short of providing a systematic empirical application of the broader conceptualization they might implicitly or explicitly entail.

In sum, we find that the academic and policy discussion of low-skillness is rather over-simplified and characterized by homogenization of the low-skilled, especially in the empirical applications and large-N quantitative studies. In our view, especially the measurement by educational attainment sterilizes the concept of low-skillness and obscures it from the sources of low-skillness that are important for a better understanding of the heterogeneity of the low-skilled workers within countries and across the EU.

3. Structural processes and changes affecting low-skillness

A crucial approach to the investigation of the sources of low-skillness is through the changing demand for skills. Several different processes have been proposed in the literature, but in our paper we concentrate on three most extensively studied processes of partly interrelated nature: skill-biased technological change; educational expansion; and the growth of the service

sector.[4] These structural processes have been changing the character of labour demand in a non-neutral manner with respect to individuals' age, gender or ethnicity. Moreover, the degree to which they have affected individual countries in the EU has differed resulting in varied low-skillness profiles, which we document extensively elsewhere (Kureková, Haita, and Beblavý 2012). Focus on structural macro-processes and changes helps us consider low-skillness as both a status and a process, and demonstrate heterogeneity of impact these changes can invoke.

Skilled-biased technological change (SBTC) amounts to the fact that the average job is getting more demanding in terms of skills. The key factor underlying the skill-biased technological change is the introduction of computers and information technology (ICT) which has affected wages at different skill levels, employment outcomes and labour market in general (Handel 2003). Importantly, skill-biased technological change implies that the skill complexity has increased at all levels of the skill distribution, leading to higher or 'broader' (more types of skills) requirements on low-skilled workers as well. Maxwell (2006) studying the job tasks of low-skilled occupations in particular demonstrates that there is a great heterogeneity of required skills generally but also across different low-skilled sectoral segments and occupations. A wide range of these skills and their mix include what he calls "new basic skills" such as problem solving, communication and computer usage, which are required in different low-skilled occupations (Levy and Murnane 2004).

At individual level, the SBTC is, *ceteris paribus*, likely to impact the older workers more negatively than other categories. That is in particular true for older workers with knowledge and qualifications gained prior to the vast expansion of technology, but even more-so those who remain out of the labour market for protracted periods of time and therefore are not exposed to workplace learning that typically enables skills upgrading. A concomitant factor is the speed with which a given individual is exposed to technological change. In the EU, this is particularly relevant for workers in the new member states which underwent multiple transitions and where workforce had to adapt very fast to new technologies as well as to new organization of work.

Educational expansion contributes to changing demand for skills by fundamentally changing the educational composition of the workforce and the value of education in the societies. Educational expansion is interlinked with

[4] In view of the foreseen fossil-fuel shortage, the urge for the shift towards green (or clean) economy has also joined the discourse on changing demand for skills. Due to the fact that to date this literature remains relatively underdeveloped and its implications on the low-skilled workers are yet unclear, we do not engage with it extensively. Similarly, trade liberalization is another process that has affected low-skilled employment in developed countries through the processes of outsourcing or offshoring to cheaper destinations. Most recent literature has been sceptical about the role of trade liberalization in affecting low-skilled employment (Schlotter and others 2008).

the technological change but the direction of the link has been debated. The endogenous technological progress channel dwells on the idea that the educational expansion is responsible for the changing demand for skills. The educational expansion leads to an overall skills upgrading and an increase in the supply of more skilled people. These changes have been recognized by firms as new profit opportunities and in turn fostered technological progress and increased the demand for skills. The second channel regards the technological progress as an exogenous decision of the entrepreneurs. The need for higher skills in turn induces a response on the supply side through educational expansion.

An accompanying phenomenon to the educational expansion is an upward shift in the overall skill-set required by employers both from low-skilled and high-skilled graduates. Given that diplomas and certifications play a signalling role of the skill endowments of a potential employee, the overall skill upgrading helps firms to more easily screen out the low-educated at a lower cost and at a lower risk of losing a good candidate (Solga 2002). Since educational expansion indicates a decreasing cost of the access to education, it becomes apparent that those who cannot certify at least high-school credentials are more likely to lack not only basic hard skills, but also discipline and motivation which would make them employable. On the other hand, the expansion of secondary and now tertiary education makes it more difficult for employers to distinguish among the candidates. Partly as a result of this phenomenon, weight is increasingly given to the soft or non-cognitive skills which emphasize social and behavioural abilities. These skills include communication, motivation and initiative, teamwork and leadership, inter-personal skills, flexibility, adaptability and honesty, and are expected not only in highly skilled occupation but also in lower-skilled service interactive occupations that have been on the rise.

Solga's (2002) work demonstrates the impact of educational expansion on firm's preferences towards the less educated. As a consequence of becoming a minority or an exception from the educational norm, the low-educated are perceived not only as less capable, but increasingly incapable. While educational attainment acts as a signal for the applicants' productivity and their ability to learn (Spence 1973), the lack of it acts as a signal for failure. Hence, this type of perception on the side of firms decreases the employment opportunities of the less-educated to the extent that they are screened-out from the labour market, in particular in countries where they constitute a minority. This phenomenon has been termed *stigmatization by negative selection* (Solga 2002).

Another dimension of the changing demand for skills is the ***shift towards the service sector***. The service sector growth comprises a wide range of

occupations and industries at especially high and low skill levels (Autor and Dorn 2009). It is closely related to the process of job polarization whereby the demand for the lower and upper-tail of the occupational distribution rises, while the middle-occupations, which require cognitive but repetitive skills, are more easily replaced by automatic machines (Autor et al. 2003). Overall, the demand at the lower tail of the skills distribution tends to rise simultaneously with the increase of the employment in the managerial and professional occupations, i.e. the highly-educated professions.

A crucial element of the growth of the sector is the needed skill-set related to the character of the sector. Across these levels, the sector is customer-oriented and requires sound social skills, in addition to cognitive skills. Service occupations are difficult to automate and require personal proximity related to the possession of social and other soft skills, in addition to the basic cognitive skills. Relatedly, the occurring shift appears to favour low-skilled women against their male counterparts, as women are perceived to have a more adequate development of this type of skills. Along these lines Nixon (2009) studying the UK economy proposed the concept of "job masculinity" (pride, self-esteem and power) according to which men tend to drift away and refuse jobs in the service sector which they regard as female dominated and unable to feed their masculinity. Alternatively, they consider themselves lacking in communication and other skills or simply unfit for the job.

To sum up, a key message emerging from the review of the macro processes affecting low-skillness is that the skills content of the low-skilled jobs has increased, leading to the phenomenon of up-skilling. This seems to hold for all occupational levels and categories. Many of the low-skilled occupations are now only nominally equivalent with what they were some years ago. Additionally, the skills requirements have increased even for the jobs which previously required only physical or mechanical skills. In terms of the evolution of the concept of low-skillness in time, we can say that the skills content of the low-skilled occupations has changed and it increasingly includes aptitudes, attitudes and social or soft skills (Kureková et al. 2013; Kureková, Beblavý, and Haita 2012). This has important implications for the prospects of workers in the low-skilled labour market. Structural processes might create different opportunities and barriers on the individual level, which we now turn to discuss in more detail.

4. Low-skillness as an interplay of structural forces and individual characteristics

Considering structural changes contributes to extending a static focus of low-skillness to a more dynamic approach which considers not only *who is* but also *who is likely to become* low-skilled at the individual (micro) level. The

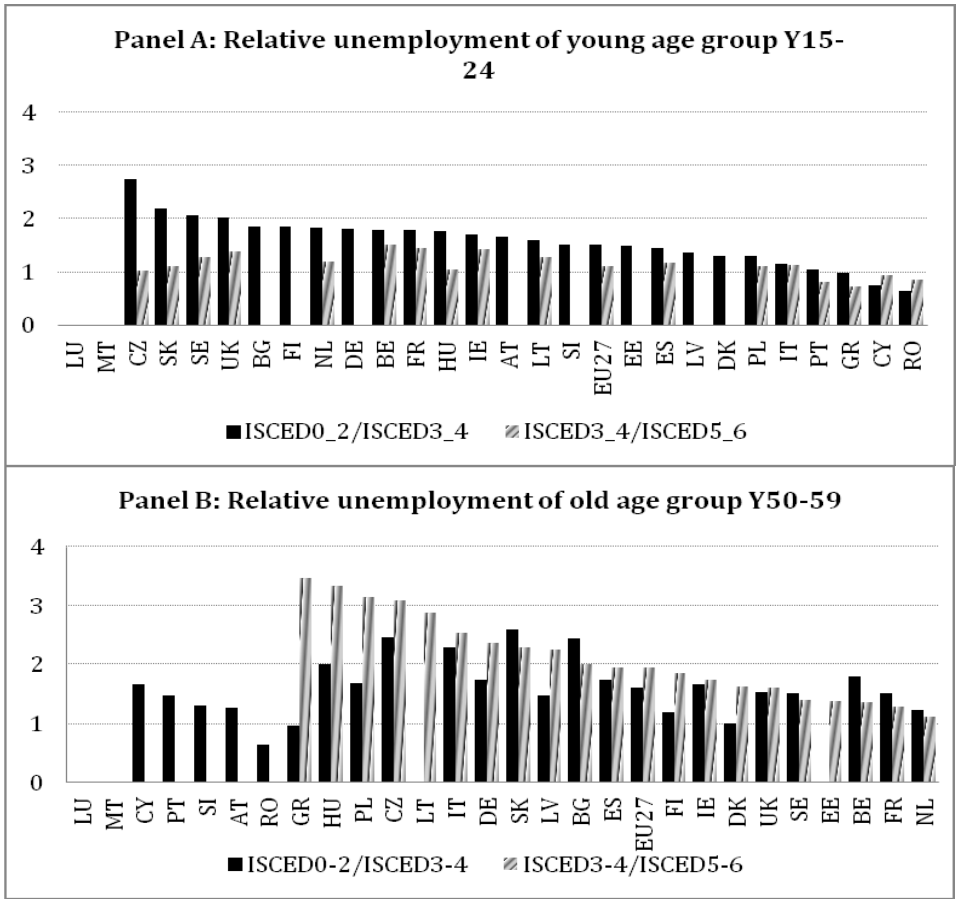
processes of technological change, growing service sector or educational expansion are not neutral in terms of how they affect different types of people. Based on this, we propose that it is interplay of several factors which interact to determine who low-skilled people are in a particular labour market. Examples of such interactions include dynamics between age, skill and structural change (skill obsolescence); nationality/country of origin, type of host country labour market and institutional framework (migrants); or skill, gender and sector. We discuss selected interactions below and providing empirical illustration of these phenomena.

Age

Structural processes described earlier are not age neutral. The interaction between the qualification levels and age deserves particular attention. The educational expansion is reflected in the fact that the younger age cohorts have markedly lower shares of low-educated (ISCED 0-2) than the old age cohorts did, and the educational structure in general is very different compared to 15 years ago. As a result of this shift, the meaning of low-qualifications in the labour market across the age cohorts differs. This is likely to have implications on how the same level of education is valued across time and cohort. Importantly, across the EU countries, low-qualifications can be valued differently between the youth and older workers. Mayer & Solga (2008) find that in countries with low share of low-educated (e.g. Norway or Switzerland) their unemployment risk is the highest. Conversely, in countries with high shares of low-skilled (Portugal, Spain) the unemployment risk of this group is low.

We evaluate the importance of formal education across different age groups in Figure 1 where we show the relative risk of unemployment computed as the ratio of the unemployment rate of one educational/age group to the next. We compute the relative unemployment risk of one educational group to the next within the age cohorts for young in Panel A (Y15-24) and older workers in Panel B (Y50-59). Thus, each bar of Panels A and B shows how much the young and the old respectively compete for jobs within their own cohort and between the educational levels. We see that among the young workers (Panel A) competition for jobs takes place between medium educated and low-educated rather than between medium and high-educated. This is visible when comparing the levels of the relative risk of unemployment and also the difference between the first and the second bar which is quite pronounced in most of the countries. However, competition among the older workers takes place in most countries between medium skilled and high-skilled (Panel B). Hence, we seem to confirm that attained level of education has a different meaning in the labour market for young workers and labour market entrants and for older workers.

Figure 1: **Relative unemployment between education levels and across youth and older age cohorts**



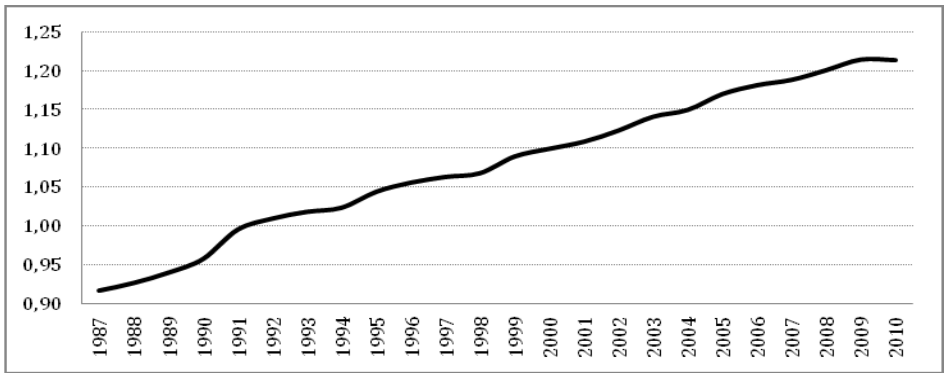
Source: EU LFS. Own calculations.

In the context of the educational expansion and educational inflation where more and more people earn college degrees, the risk of the younger workers being trapped into a low-skilled job might be also increasing. A specific group of workers are therefore young graduates who, due to their lack of working experience, are forced to start at entry level positions. This most likely leads to the underutilization of skills and over-qualification mismatch. The existing literature proposed varying views on the persistency of this situation (Quintini 2011).

Gender

From the discussion it also follows that gender is an important element signalling differential impact of the undergoing structural processes on males and on females. This is related to a number of processes. First, with educational expansion, the gender gap in access to education has been closed (Lyly-Yrjänäinen 2008). However, in spite of higher average educational attainment among women, males are overrepresented in employment and underrepresented in inactivity (Kureková, Haita, & Beblavý 2012). Secondly, the opportunities for female employment might grow with further expansion of service sector that is shown to be female-biased (Figure 2), especially at the low-skilled end. This also has implication ensuing from the disappearance of male-dominated middle-level jobs. A distinct vulnerable category is that of the low-skilled men who tend to detach from the labour market as a consequence of the expansion of the service sector. Nixon (2009) documents this for the case of the low-skilled men in Great Britain whose inactivity numbers doubled from 1970 to 2009. This points to a psychological dimension of low-skillness that in policy application often seems to be underestimated (Fossum et al. 1986).

Figure 2: **Ratio of females to males working in the service sector, EU level**



Source: EU LFS. Own calculations.
Note: NACE Rev. 1.1 classification until 2008, NACE Rev.2 after 2008.

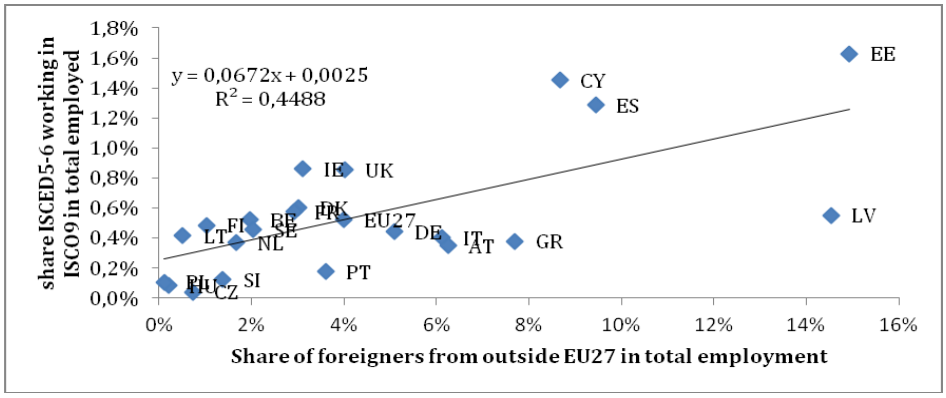
Nationality or ethnicity

Immigrants represent a distinct category of low-skillness in Europe. In many countries immigrants are disadvantaged relative to the native population when it comes to their integration in the labour market of the host country. In terms of actual qualification levels, they are fairly heterogeneous. While the low-skilled immigrants often face weak job opportunities, high educational attainment also does not guarantee employment and work in occupations of

similar level, quite the contrary. Interestingly, wide-spread down-skilling in the EU has been the case not only with respect to the third-country immigrants but also for the post-accession labour mobility from the CEE countries to the EU where the recognition of qualifications, at least in theory, should be less of an issue (Kahanec and Kureková 2013). The position of immigrants in the EU labour markets raises the issue of whether low-skilled should be defined through the skills they own or through the jobs they perform.

We tally this phenomenon in Figure 3 which shows a cross-sectional analysis of the shares of employed immigrants coming from outside the EU27 and the educational mismatches measured as the share of ISCED 5-6 educated workers working in ISCO9 occupations in the total employment of the country. This simple illustration show a positive correlation between over-educational mismatches and the shares of immigrants across the EU27 countries, indicating that a phenomenon of low-skillness is very likely to take place among the population of immigrants.

Figure 3: **The share of immigrants (non-EU 27 nationality) vs. the share of over-educational mismatches**



Source: EU LFS, own calculations.

The position of immigrants is similar to that of workers with obsolete skills, but the mechanisms or causes which lead to such an outcome are vastly different. They mostly relate to the lack of recognition of qualifications or language deficiencies. In light of this discussion, we propose to label this group of workers *temporarily low-skilled* since from the perspective of the host labour market they are regarded as low-skilled. This is one instance of discrepancy between job and qualifications that goes in similar direction as the obsolescence case: highly-qualified workers engaged in low-skilled

occupations, but the remedies of which would require very different approach and measures.

Skills obsolescence

The economic processes discussed have altered firms' skill needs and generated a sustained period of high skill obsolescence - worker's deficiency of skills necessary to fulfil the tasks associated with one's employment position. Skill obsolescence at the lower end of the skill hierarchy in effect often means *de facto* labour market exclusion, although these workers are not formally un-qualified. From the perspective of economic reality, people whose skills have become obsolete can therefore be regarded as low-skilled or unskilled people. Skill obsolescence can be an outcome of two sometimes interrelated processes: external changes of the economic structure and internal changes related to skill atrophy (due to illness or non-use) (Fossum et al. 1986).[5] Skill obsolescence is a phenomenon typically experienced by the older workforce, while with respect to the youth 'lack of skills' rather identifies a lack of experience, poor quality of education systems as well as cross-country differences in labour demand affected by the economic production which might be more or less 'skill-specific'. Skill obsolescence in effect means skill mismatch and leads to the situation when otherwise trained and educated individuals (with formally acquired skills through education and/or experience) are pushed down on the occupational ladder, ending up performing jobs which require a low level of cognitive skills or being pushed out from the labour market altogether.[6]

For empirical illustration we use the unemployment and inactivity figures to construct the macro picture of skill obsolescence across the EU countries, focusing on the older age group (Y50-59) and contrasting them with the prime age group (Y24-49) (Figure 4). Panel A shows that the unemployment is more prevalent among the prime age workers, although in most of the countries they do not differ significantly from the older workers. However, if we look at the inactivity rates (Panel B), we find that these are by far larger for the older workforce. This suggests that people with obsolete skills are to be found among the inactive.

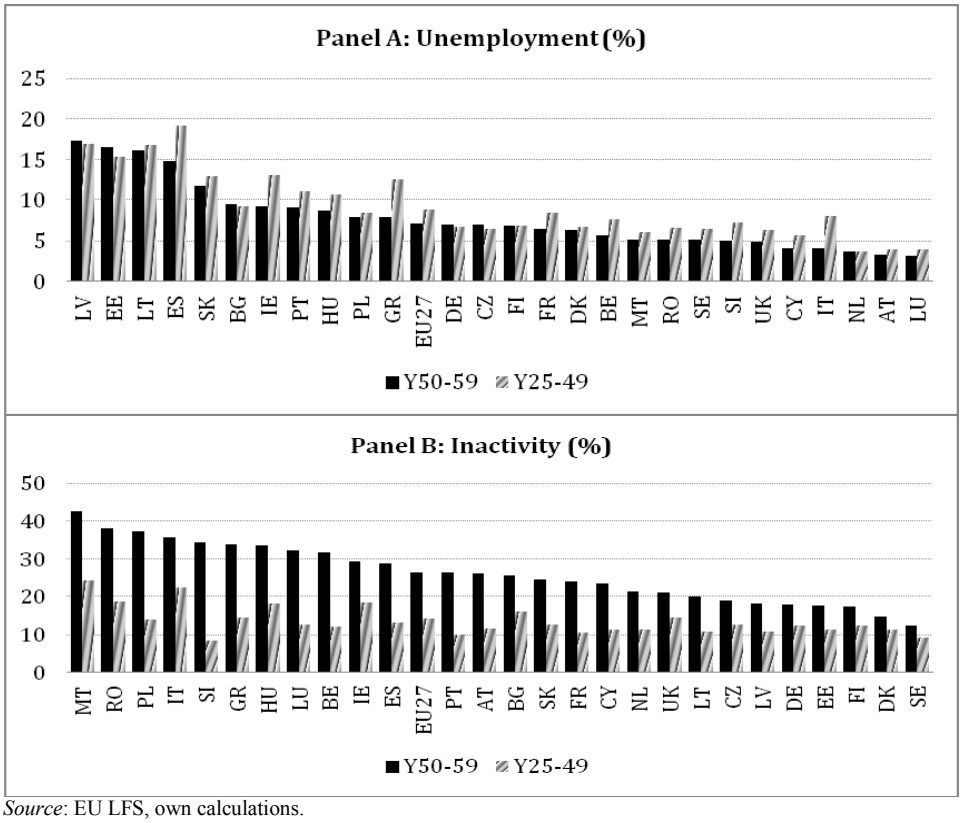
We propose that people with obsolete skills, although formally not low-qualified, are *de facto* low-skilled and should be considered as an important category in the investigation of low-skillness. The existence of skills

[5] An example of external depreciation is the natural experiment which took place in the Eastern European countries after the fall of the communism. Abandoning the controlled economy and adopting the rules of the market economy, many workers have lost the value of their human capital both due to the extent of structural economic change and its speed. With the adoption of the market economy rules, the skill content of the blue-collars has been under pressure for continuous upgrading. It is for these reasons that workers with vocational secondary education (and not only those with ISCED 0-2) in these countries are at high risk of unemployment or face inactivity.

[6] Early-retirement policies were a common solution aimed at dealing with older workers with difficulties to find employment. These were used extensively in Central and Eastern Europe in the 1990s but also across OECD countries.

obsolescence happening also due to the increase in skill requirements for the same nominal jobs motivate us to look at low-skillness as a dynamic phenomenon of the relationship between jobs and people. This is the key element of new approach to studying low-skillness that we now propose.

Figure 4: **Labour market status: old vs. prime age**



Source: EU LFS, own calculations.

5. New approach to low-skillness and categorization of low-skilled

In our conceptualization of low-skillness we emphasize the link between people and jobs in a dynamic way. In time worker's skills are subject to acquisition, evolution and depreciation, while the nature of the job and its requirements suffer alterations due to organizational, technological and structural changes which ultimately reshape the production process affecting the worker. When these changes are asymmetric in time and/or intensity,

mismatches arise, as it is the case with the above-mentioned skills obsolescence and deskilling.[7]

Apart from the dynamic aspect, looking at the interaction between jobs and people helps us to also point to certain categories of people, whose vulnerability in the labour market has a high relevance for policy making. Under this scope are the young graduates, who due to the educational inflation and the disproportionate evolution of the labour demand are forced to occupy less skilled positions (Vedder, Denhart, & Denhart, 2010). Taken alone, with disregard to the work in which these people are employed, their educational attainment would indicate that they are high-skilled. However, their *de facto* status is that of a low-skilled with a possibility of eroding the skills obtained during their formal education if they are captured for a long time in the low-skilled positions.

From this discussion and our brief empirical demonstration it becomes apparent that the concept of low-skillness comprises heterogeneous classes of people, jobs and even situations. Heterogeneity of low-skillness is encountered both within and across countries and it is very often a function of the social and economic context. Our approach to low-skillness has the potential to capture a more comprehensive definition of low-skillness offering perspectives for identifying new dimensions of heterogeneity of the low-skilled phenomenon as a whole. As a consequence, we believe that the more complete the understanding of this phenomenon is the more precisely tailored cures for it can be designed.

In Table 1 we suggest a broader range of categories that capture low-skillness. Combined, they aim at providing a conceptually richer understanding of low-skillness which considers the interaction of macro-structural changes with individuals' characteristics. We therefore include also those workers who might be formally educated, experienced or trained but *de facto* work in low-skilled jobs or are outside the labour market. The essence of our claim is to go beyond low educated and qualifications as the primary measure of low-skillness, and include a wider range of low-skillness 'types', which include people with obsolete skills, temporarily low-skilled, mismatched workers, discouraged, detached and displayed workers or stigmatized, among others.

This broader classification leads us to advocate also a different approach to measuring low-skillness. Although any cross-country comparative work will need to continue to rely on the available classifications and measures, such as ISCO and ISCED, what we advocate is their usage in a conceptually broader and richer manner. In line with our approach to low-skillness, this involves

[7] The process in which the job becomes void of content and the worker becomes over-qualified for the tasks required by the respective job.

three aspects: a/ greater focus on ISCO measure, i.e. the actual job placement; b/ inclusion of higher ISCO and ISCED categories than typically used in other empirical analyses; and c/ measuring low-skillness both in and out of the labour market, i.e. looking at employment, unemployment as well as inactivity.

Table 1: **A broader categorization and conceptualization of low-skillness**

Category	Characteristics
Low educated	People with basic level of education (no more than ISCED 2 – lower secondary education). In line with the educational expansion, when the majority of people complete at least a high-school degree (ISCED 3-4), this category of low-skilled typically comprises school drop-outs. They often belong to disadvantaged social groups – socially deprived or segregated communities.
People with obsolete skills	Obsolete education due to structural and market changes (external depreciation or economic obsolescence). It amounts to the fact that their skills become unmarketable. This is in particular the case with older people, who often have higher education than ISCED 0-2. Due to the non-use or atrophy of skills (technical obsolescence) – mostly for individuals with long-spells out of the labour market, like women with career interruptions or long-term sick. Aging, decrease of mental abilities (internal depreciation).
Temporarily low-skilled	Migrants who take up low-skilled jobs which do not need certification of qualifications. Temporary migrants who take up short-term low-skilled jobs but do not intend to settle in the host country.
Mismatched, over-qualified workers	Immigrants "settling for less" (de facto high-skilled established immigrants who never make it to their true qualification status). Youngsters at entry level positions due to their lack of experience.
Discouraged and detached	Unemployed and inactive, unmotivated to join training programs which would prepare them for coping with the skills requirements of the new (knowledge) economy. People who encountered long spells out of the labour market and who are not searching for a job. Potentially, they may be searching for a job, but they encounter discrimination from the employer' side based on their long absence from the labour market. Discriminated minorities.
Displaced workers	People affected by the "jobs polarization" phenomenon, i.e. those displaced from the low-skilled occupations by those formerly occupying the middle-skilled occupations. Typically they would be found in unemployment.
Stigmatized	Low educated people, and especially, youth, who are part of a majoritarily highly-educated society. They are negatively selected from the pool of employable people and thus fail to gain the chance of developing additional skills through experience, learning-by-doing, and/or on-the-job training.

Source: Authors.

Due to the fact that our conceptualization identifies categories by *de facto* use of skills, we propose to engage more extensively with occupational low-skillness measured through ISCO. ISCO classification is useful also due the fact that the ISCED classification cannot account for the skills which are not acquired through formal training. The non-cognitive, soft skills are more and more demanded in the modern workplaces, but weakly correlated with the

cognitive skills and less likely to be acquired through formal education (Hoffmann 1999; Brunello and Schlotter 2010). Moreover, together with the job content (the tasks required for performing a given job), the conceptualization of ISCO is also based on the concept of skill level, which is a function of the complexity and range of the tasks and duties involved (Hoffmann 1999).

Further, reflecting the impact of structural macro-processes on formally educated workers as well as those employed in medium-skilled occupations, we suggest to consider in empirical investigations of low-skillness also occupations above the ISCO 9th category and to include the medium-skilled categories. To reflect this, any analysis of low-skillness should consider also those who have acquired secondary education (ISCED 3-4) in addition to primary education (ISCED 0-2) as a relevant dimension, and to engage with the interaction of different demographic factors with educational attainment. Through the frame of these more extensive measurements, low-skillness can be investigated and identified in the labour market (employment unemployment) as well as out of it (inactivity).

6. Conclusion

With dynamic processes affecting advanced economies today, the approach to studying low-skillness and addressing it at policy level needs revisiting. Motivated by the lack of a thorough conceptualization of low-skillness, in this paper we reviewed structural macro-level processes leading to a changing demand for skills and attempted to evaluate the implication on the low-skilled labor market segment along a number of dimensions. Importantly, the processes of technological change, growing service sector or educational expansion impact different types of people differently, conditional on a range of characteristics, such as age, gender or nationality. This is fundamentally affecting who is likely to occupy a low-skilled job, who is *de facto* low-skilled and who is more likely to be pushed out of the labor market into marginalization and inactivity, while answers to these propositions could vary from country to country. For example, individuals with secondary or even tertiary formal educational attainment may well be performing low-skilled jobs due to their immigrant status or other instances of over-educational mismatch.

We have argued that educational attainment alone is a too narrow conceptualization and measure of the low-skillness, too sterile to capture heterogeneity of the issue. Given that we consider low-skillness both a status and a process, we proposed a broader conceptualization of the low-skilled where we identified various categories of low-skilled groups. In addition to the typically included 'low-educated', our typology includes categories of workers who might be formally well-educated, experienced and trained but have been

drawn into low-skillness as an outcome of structural forces or institutional barriers. This approach has helped us to distinguish components along which one can study low-skilled empirically, going beyond the typical measurements.

While we have drawn on the existing theoretical and empirical literature, we believe that our contribution lies in putting together different approaches and perspectives in a more comprehensive and analytically useful way. It in particular brings forward both the transient and the very durable nature of low-skillness that varies across different categories (temporarily low-skilled vs. discouraged or stigmatized workers) and highlights the differentiated nature of remedies that are needed for economic, social and political integration of these groups. Our conceptualization has key implications for policy that suggest that interventions need to go beyond the formal educational system most commonly encountered as the intervention field in the EU policy documents (Kureková, Haita, and Beblavý 2012). A dynamic understanding that we promote implies that policy focus is a moving target and that more varied nature of low-skillness makes policy-making more difficult and challenging.

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