

## 6 HUMAN CAPITAL, PART III THE ROLE OF NON-COGNITIVE SKILLS

### 6.1 THE IMPACT OF THE INCREASING SIGNIFICANCE OF NON-COGNITIVE SKILLS ON THE LABOUR MARKET SITUATION OF WOMEN

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The labour market situation of women has improved in most countries of the world over recent decades: their enrolment ratio has increased and a higher share have entered upper-secondary and higher education. The proportion of entrants to the labour market with upper-secondary or higher education qualifications has increased, the likelihood of their employment in jobs requiring a higher education qualification has grown significantly and the gender wage gap has narrowed (*Autor–Wasserman, 2013, Deming, 2017, Cortes et al. 2018*). However, the likelihood of women becoming managers or entrepreneurs has not changed and the gender wage gap at the higher end of the wage distribution is still very large (*Cortes et al. 2018, Collischon, 2018*).

Improvements in the labour market situation of women are accompanied by the relative deterioration in the situation of men. In the labour market of the United States, the educational attainment, employment probability and real wages of men at around the median of the wage distribution have also worsened in absolute terms over recent decades. This trend is so conspicuous that not only research articles discuss it (*Jacob, 2002, Lai, 2010, Cortes et al. 2018*), but numerous popular books, essays and blogposts analyse the reasons for boys' and men's failures at school, in the families and at workplaces as well as how the trend is related to technological development and demographic, social and political trends (*Zimbardo, 2015, Farrel–Gray, 2018, Peterson, 2018, Smialek, 2018, Gross, 2018*). This shift took place in a period when the returns on *non-cognitive skills* increased considerably in the labour market (*Borghans et al. 2008, Deming, 2017, Deming–Kahn, 2017, Edin et al. 2017*). Its reasons and consequences were explored in one of the *In Focus* chapters of last year's *Hungarian Labour Market* (Fazekas, 2018. p. 149.). Based on relevant literature, this Subchapter presents how the increasing importance of non-cognitive skills has been related to changes in the labour market situation of women.

Empirical research in economics on the characteristics of, and reasons for, gender-related differences in the labour market mainly focuses on the effects of human capital. It is problematic that the usual variables of the discipline (educational attainment, school marks and the results of cognitive skills tests)

do not explain a substantial part of the differences. Therefore new research that covers previously not included fields such as non-cognitive skills, cultural contexts or preferences for social roles (*Grove et al. 2011, Lundberg, 2017*) is of great significance. Analyses on the impacts of human capital have usually differentiated between the cognitive and non-cognitive skills of employees in recent years (*Heckman et al. 2006, Borghans et al. 2008*). Cognitive skills enable us to understand the information flooding us from the moment of birth and to process it in the course of learning (for example writing skills, reading comprehension, numeracy and intellectual capacity). Non-cognitive skills, on the other hand, ensure that one is motivated to accomplish learning or work-related tasks, give self-confidence to take risks, encourage one to compete and enable oneself to trust others when undertaking tasks in efficient cooperation with other people.

It is certainly a welcome trend to include new, previously neglected areas in economic narratives. However, it is crucial for economic analysis to integrate the newly included factors in a uniformly interpreted, coherent conceptual framework and to be able to measure their qualities in a uniformly interpreted, standardised way (*Zhou, 2016*).

The gender differences in non-cognitive skills and their impact on education, the labour market and career success have a huge psychological, sociological and economic literature (*Autor et al. 2016, Rosen et al. 2010*). Relevant research generally suggests that there are significant differences in the majority of non-cognitive skills between boys and girls (usually to the advantage of girls) already in early childhood and this gap has a considerable impact on the school success and failures of boys and girls (*Jacob, 2002, Feingold, 1994, Baron-Cohen et al. 2005, Koenig et al. 2011*).

It is a particularly important finding that the differences seen in kindergarten and primary school age children tend to increase over the years (*DiPrete-Jennings, 2012*). As early as in primary school, girls are found to be more disciplined, able to focus more on learning tasks and more motivated to achieve better learning outcomes (*Frenette-Zeman, 2007*). However, this mainly results in better school grades rather than better test results. This difference directed the attention of researchers towards the role of teachers marking children's work. Presumably, teachers also take the *quality of non-cognitive skills* into account when marking the *quality of cognitive skills* of individual children. Researchers think this explains why school marks predict further education rates, the probability of dropping out and even labour market success or failure following graduation as well as individual social characteristics more precisely than school test results measuring only cognitive skills (*Cornwell et al. 2011, Martins 2017*). At the same time, several empirical studies show that boys tend to have greater self-confidence, be more inclined to take risks and perform better in a highly competitive environment (*Altonji-Blank, 1999*).

These differences partly explain why there is a higher proportion of men than women in management positions (*Niederle–Vesterlund, 2007, Harrington 2017, Koenig et al. 2011*).

According to the relevant literature, the gender gap in non-cognitive skills in early childhood partly has evolutionary causes (*Baron-Cohen et al. 2005*), and is partly the result of parental, familial and community upbringing and early cultural impacts. Parents and individuals in the residential environment of the family convey, from infancy onwards, expectations about the gender roles accepted in the given culture. This also means that parents and the school set differing expectations for boys and girls and try to develop their various non-cognitive skills to a different degree.

The increasing importance of non-cognitive skills has had substantially different impacts on the labour market situation of women and men over recent years (*Deming, 2017, Sheikh, 2015*). This trend is partly related to the nature of technological development. As a result of the spread of computer-controlled, automated and, more recently, artificial intelligence governed production and service systems, the share of routine tasks requiring low qualification, physical strength and dexterity as well as the share of analytical tasks requiring high qualification and advanced cognitive skills declined, while the share of tasks requiring emotional intelligence and non-cognitive skills increased. Available data indicate that women and men adapted to these changes to a very different degree. From 1981 to 2015, the number of female employees performing routine tasks decreased from nearly 60 per cent to below 35 per cent, the number of those performing non-routine, analytical tasks stagnated, while the proportion of women performing tasks requiring social skills increased from 48 per cent to over 65 per cent in the United States (*Seikh, 2015*). It is not only that the number of jobs in the labour market requiring social skills is increasing but the proportion of women in these jobs is also growing.

The emergence of non-cognitive skills highly depends on cultural conditioning and gender stereotypes, which affect the development of skills and in this way educational attainment, employment and the gender wage gap. A good example is the number of women employed in jobs requiring science, technology, engineering and mathematics (STEM) skills and knowledge of mathematics and natural sciences. *Deming (2017)* calculated that the share of tasks requiring *both* good social skills and good cognitive skills such as mathematics and science competences has increased most in recent years in the labour market of the United States. At the same time, school test results showed that girls' STEM skills are worse and girls get worse grades in STEM subjects than boys. However, research suggests that these differences are not due to biological attributes but due to educational and cultural impacts faced from early childhood onwards. In a sufficiently encouraging environment, the STEM results of girls are not at all worse than those of boys. Improving female

employability and increasing wages in STEM jobs encourage an increasing proportion of girls already at school to improve their STEM skills.

The changing labour market position of women is not simply a result of technological changes with a varying impact on skills. This change is an extremely complex, multifactorial process, with largely social and demographic reasons. Because of the increasing proportion of services, including the share of those working in human, healthcare and geriatric services, the share of tasks requiring empathy and advanced emotional intelligence also increases. Since such skills of women are generally better than those of men, they are able to perform these tasks more easily and successfully.

Numerous empirical analyses show that skill levels achieved in early childhood determine life events experienced in later life (*Cunha–Heckman*, 2008, *Cunha et al.* 2010). Empirical studies on the gender gap in non-cognitive skill levels measured in early childhood are mainly from developing countries (*Lavado et al.* 2014, *Nakajima et al.* 2016). Research undertaken in rural Indonesia indicates that girls are better than boys in cognitive and non-cognitive skills already in early childhood. Skill levels are affected by the quality indicators of the environment, participation in early childhood development programmes, the quality of early childhood education institutions and parenting methods. Research from both developed and developing countries suggests that girls have an advantage in non-cognitive skills as early as in kindergarten, and they retain this advantage throughout primary and lower-secondary education. It is very well illustrated by the results of the Early Development Instrument (EDI) used in Australia and Canada for measuring non-cognitive skills in early childhood. It reveals a particularly large difference in the cooperation skills, the willingness to follow norms and the emotional stability of children. (*Australian Government*, 2013, *Janus–Duku*, 2007).

In accordance with a recent social trend, the educational attainment of women exceeds that of men globally to an increasing extent and in an increasing number of social groups. In the sixties in the United States twice as many men than women graduated from university, while today the number of women obtaining a Bachelor (BA) degree exceeds that of men by 30 per cent. Several empirical studies showed that the participation rate of women in higher education is primarily explained by their better non-cognitive skills. This does not only mean that women with better non-cognitive skills achieved better test results at upper-secondary school and thus were able to enter universities in higher proportions. *Jacob* (2002), based on data from the turn of the millennium, found that the effect of non-cognitive skills remains significant even after controlling for upper-secondary school test results. This trend was also observed in Hungary in this period (*Székelyi et al.* 1998).

The characteristics of and the reasons for the gender wage gap are discussed in the Subchapter *In Focus 2.1*. It is well-known that men and women with

identical cognitive skills have very different patterns of occupational and workplace choices as well as wage levels. The gender wage gap at workplaces is usually explained by discrimination against women and the dissimilar occupational structure (*Cobb-Clarc, 2011*). If that is true, it is also likely that the dissimilar non-cognitive skills of men and women to some extent explain the gender wage gap through occupational choice. Relevant empirical research shows that it is actually so and the effect is significant although not very strong. Men and women with very similar non-cognitive skills choose very different occupations. Nevertheless, the lower relative wages of women in general are due not only to the differences of male and female occupational choices but also to the fact that women are paid less than men in the same occupation.

The results of relevant studies more or less consistently reveal that data controlled for age and qualification still show a 20 per cent wage advantage for men. These data clearly indicate that differences in non-cognitive skills have a considerable role in these differences. Overall, including non-cognitive skills in the analysis increases the explanatory power of the models that examine the reasons for the gender wage gap (*Fortin, 2008, Nikolaou, 2012, Yamaguchi, 2012*). The better non-cognitive skills of women indeed improve their wage situation. Nonetheless, half of the gender wage gap cannot be explained by either cognitive or non-cognitive skills (*Brenzel-Laible, 2016*).

A major part of the wage gap is obviously attributable not to the wages characteristic of the occupation concerned but to the position held in the management hierarchy of a given firm (*Collischon, 2018*). The fact that women with the same cognitive skills as men are considerably less likely to become managers is often called the 'glass ceiling' in relevant literature. The phenomenon is partly explained by the differences in non-cognitive skills: women tend to take less risks and have lower self-esteem and self-confidence. (*Harrington, 2017, Chen et al. 2017*.) However, this relationship strongly depends on the cultural context in which the skill gap is seen in the labour market, for example, what skill differences between men and women decision-makers recruiting managers assume in spite of these skill differences existing or not in a particular case.

Research on the differences in the non-cognitive skills of women and men holding management positions suggests that these differences have a significant impact on the probability of becoming a manager. *Barrett-Staneva (2017)* reports that extroverted men are more likely to become chief executive officers than extroverted women. *Harrington (2017)* analyses the impact of four groups of non-cognitive skills (non-cognitive personality traits, self-confidence, self-esteem and willingness to take risks) on the probability of becoming a manager. Findings show that assertiveness, self-confidence and high-risk tolerance significantly but not strongly affect the probability of becoming a manager.

It is well-known that women are considerably underrepresented among entrepreneurs. According to the relevant literature, this has strong cultural reasons in different societies. In developed countries, the differences in the non-cognitive skills of women undoubtedly have an important role in their underrepresentation. *Koellinger et al.* (2013), in their study covering 17 countries, found that this is not because of differences in the survival rate of companies run by men and women but because of the difference in entrepreneurship between men and women. The reason for this principally lies in the lower self-confidence and risk taking of women (*Segal*, 2014).

The gender gap in non-cognitive skills emerging in early childhood has a strong impact on the enrolment ratio, the dropout rates in upper-secondary education and the chances of entering higher education. (*Cunha–Heckman*, 2008, *Cunha et al.* 2010, *Cornwell et al.* 2011, *DiPrete–Jennings*, 2012). Experience shows that the cognitive skills of children can be developed more in early childhood, while socio-emotional skills can also be developed at later stages (*Cunha–Heckman*, 2008, *Almlund et al.* 2011, *Kautz et al.* 2014).

The increasing importance of non-cognitive skills transforms the labour market positions of men and women, it undoubtedly improves the employment opportunities of women and reduces the gender wage gap. However, this trend is strongly context dependent and cannot be examined separately from the cultural attributes of society. Improvement in the labour market positions of men and women ultimately depends whether society is aware of the transformation of skills necessary for the development of the economy induced by the technological revolution and to what extent it is able to develop these from the moment of birth, throughout life, in accordance with individual personality traits and gender-related attributes.

Considering the increasing significance of non-cognitive skills and the considerable lagging behind of men in these skills, it is important that adult education programmes take these characteristics into account and that the development of non-cognitive skills receives more focus in the curricula, teacher evaluation and initial teacher education.

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