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Non-cognitive Skills and Educational Choices in Higher Education

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Abstract: Non-cognitive skills are widely recognized in economics as an important factor that affects various individual outcomes. However, when speaking about personality in educational context, researchers mainly focus on school. This paper aims to disentangle the relationship between non-cognitive skills and individual trajectory in higher education which includes the decision to pursue a degree, probability of graduation, major and university choice. Data are collected from a nationally representative Russian survey RLMS-HSE, 2011, 2016–2018 and include detailed information on individuals aged 15-19 and 23-29. We rely on the Big Five factor model and Locus of control (LOC) to represent non-cognitive skills. Non-cognitive skills, namely openness, conscientiousness, emotional stability, and internal locus of control, are very consistent predictors of educational trajectories. The effect is likely to flow through family environment, productivity, and wage expectations. The paper concludes with some remarks dedicated to the relevance of non-cognitive skills in higher education context.

Paper:

Hundreds of papers in different countries proved the existence of a substantial positive return to education both on micro (Psacharopoulos, 2018) and macro level (Barro, 2001). In recent years, research focus gradually shifted to particular skills associated with education, especially cognitive abilities. However, there are other characteristics, unrelated to intellect, that also affect individual behavior, choices, and outcomes. These characteristics are referred to as non-cognitive skills or personality traits. Non-cognitive skills, which are partly genetically determined and fully formed during early stages of socialization, may determine one's educational choices limiting social mobility. Moreover, non-cognitive skills affect various social outcomes such as wages (Nyhus, Pons, 2012; Brunello, Schlotter, 2011; Gensowski, 2018), employment (Cuesta, Budria, 2017), and well-being (Krishnakumar, Nogales, 2020). Education can serve as an intermediate point between personality and social outcomes. However, economic research dedicated to the link between non-cognitive skills and attainment in higher education remains rather scarce and is usually based on data obtained from high-income countries (Saltiel, 2020; Humburg, 2017; Heckman et al., 2006). The aim of this research is to explore the relationship between non-cognitive skills and individual trajectory in higher education in Russia. Educational trajectory consists of 4 components: 1) intention to pursue university degree, 2) probability to graduate, 3) field of study, and 4) probability to graduate from a selective university.

We use 2011 and 2016-2018 data from a nationally representative Russian household survey RLMS-HSE. We rely on two common psychological measures as proxy for non-cognitive skills – The Big Five

and locus of control (LOC). The survey module dedicated to the Big Five consists of 24 behavioral questions which require an answer on a scale from 1 to 4. Each Big Five category is calculated as an average of the included facets standardized with a mean of 0 and a standard deviation of 1. The survey module dedicated to locus of control consists of 7 questions which are also self-evaluated on a scale from 1 to 4. We construct an integral measure of internal locus of control as an average of the said questions.

To begin with, we use a probit model to estimate the probability of an intention to pursue university degree in the next 3 years. The sample is limited to adolescents aged 15-19 who are not yet involved in higher education. The set of explanatory and control variables include gender, cognitive abilities, non-cognitive skills, socio-economic background and family composition. We run separate regressions for the upper and lower halves of income distribution as well as for males and females.

Next, we assume non-cognitive skills to be stable and analyze the relationship between non-cognitive skills measured later in life to explain earlier educational choices. The sample is limited to adults aged 23-29. Firstly, we use a probit model to estimate the probability of university graduation. Secondly, we use a multinomial logit model to estimate the probability to graduate in a particular field of study (1-STEM, 2-education and health, 3 – economics and management, 4 – liberal arts, 5 – law). Thirdly, we use a multinomial logit regression and a probit model to estimate the probability to graduate from a selective (based on entrance exam) or a leading (i.e. research universities, federal universities and participants of “5-100” project) Russian university.

Our strategy has several limitations arising due to data constraints. One of the core problems is endogeneity. We address this problem in a series of robustness checks and thoroughly analyze possible reversed causality between non-cognitive skills and educational attainment.

Our preliminary results suggest that non-cognitive skills are consistent predictors of educational choices both in terms of intentions and actual attainment. Openness to experience, conscientiousness, and internal locus of control are significantly related to the intention to pursue a degree. However, we find differences for the lower and upper parts of the income distribution which is consistent with previous research (Lundberg, 2013; Peter, Storck, 2014) and can be explained with the process of skill formation. Similarly, openness to experience, neuroticism, and internal locus of control are associated with the probability to graduate. Concerning field of study, emotionally stable individuals are more likely to have a degree in law, agreeable people tend to major in liberal arts, while openness to experience and internal locus of control are associated with graduating in STEM. Finally, graduating from the most selective universities in Russia is associated with higher levels of conscientiousness and neuroticism. Our analysis suggests that policy interventions aimed at reducing inequality should promote positive non-cognitive skills, namely openness, conscientiousness, and internal locus of control, during early stages of schooling.

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