Intergenerational occupational mobility: evidence from Belarus

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ABSTRACT: This paper studies the intergenerational occupational mobility and the role of gender, education, and social origin in Belarus. The methodology applied consists in analyzing the movements along the occupational scale of children with respect to their parents using transition matrices, mobility rates, the estimation of the multinomial logit model and data from the Generations and Gender Survey conducted in Belarus in 2017. The results indicate that personal and labor characteristics have a significant effect on intergenerational occupational mobility. First, the probability of upward occupational mobility is higher for women and about 27 percentage points higher for people with higher education than for people with primary education. Second, the probability of moving up along the occupational ladder increases on average by about 0.3 percentage points for every additional year of labor experience. Finally, full-time workers are 12 percentage points more likely to experience upward occupational mobility.

*Keywords***:** intergenerational mobility; gender; education; occupation.

*JEL classification***:** J62, I21, J79.

1. Introduction

The main focus of the economic literature on intergenerational social mobility is mainly centered around the relationship between the economic status of parents and children. One of its main results shows that the degree of social mobility depends on various factors related to people's economic success. These factors include people's choice to acquire human capital, innate abilities resulting from relationships between parents and children's genetic endowments, gender differences, environmental factors such as type of institution, or the knowledge people have acquired through lifelong learning or work experience (Behrman & Taubman, 1990).

On the other hand, comparative advantages related to inheritance, skill transfer, or the type of investment in education can encourage children to work in the same occupations as their parents, slowing down intergenerational change. Research on intergenerational mobility can help identify and remove barriers to mobility. The reason for overcoming such barriers lies in the more efficient distribution of human skills and talents, which increases productivity and promotes competitiveness and economic growth.

This paper attempts to obtain new empirical evidence on intergenerational social mobility in Belarus by examining the movements of children along the occupational scale in relation to their parents, taking into account other relevant factors, such as gender differences and the educational background of the individuals. In particular, two specific gender dimensions are introduced: on the one hand, it analyzes whether mobility in occupational categories differs for men and women; while, on the other hand, it is studied whether there is a difference in the transmission of occupational categories from fathers and mothers to sons and daughters, because the contribution of the father to occupational mobility does not necessarily coincide with that of the mother.

The methodology used in the study is based on the specification and estimation of multinomial logit models, and the data comes from the Generations and Gender Survey (GGS) conducted in Belarus in 2017 by the United Nations Population Fund (UNFPA) and the United Nations Children's Fund (UNICEF) within the framework of the Generations and Gender Program of the United Nations Economic Commission for Europe. This survey provides additional information about the occupations of parents and children in adulthood. Consequently, these solve the problems of sample selection, since the comparison of fathers and children is
carried out mainly on the basis of offspring that do not live with their parents;
and problems that arise when intergenerational social mobility is only analyzed
through the wage of workers, since the type of occupation is answered for all

individuals. Finally, the methodology of this study applied to the data from the Generation and Gender Study, has[1] no examples in the Belarus literature.

The main results of the study show, first, that, there is a statistically significant relationship of dependence between the occupational categories of children and their parents with higher dependence in case of mother-daughter, and lower in case of father-son gender line. Second, the downward and upward intergenerational changes in occupational status have a strong gender bias: downward mobility is higher for men than for women by 10.0 percentage points, while upward mobility is higher for women than for men by 10.9 percentage points. Third, the findings confirm the important role of education as a mechanism for achieving greater equality of opportunity in society, since the probability of upward intergenerational occupational mobility is about 27 percentage points higher for people with higher education than for people with primary education. Fourth, gender is a significant variable in explaining intergenerational occupational mobility, in particular, males are 10 percentage points less likely to have upward occupational mobility than women with the same (average) socio-economic characteristics. Fifth, work experience positively influences upward intergenerational occupational mobility since the probability of moving up along the occupational ladder increases on average by about 0.3 percentage points for every additional year of labor experience. Finally, full-time workers are 12 percentage points more likely to experience upward occupational mobility and 11 percentage points less likely to have downward occupational mobility than their part-time workers with the same (average) socio-economic characteristics.

The structure of this paper is as follows: after the introduction, the second section provides a literature review of some of the most relevant works on intergenerational occupational mobility along with their main conclusions, and the hypotheses. The third section describes the data and its sources and the fourth section defines the econometric approach implemented in the research and the specific methodological decisions taken in this paper. The fifth section describes the main findings and clarifies the studied relationships, and lastly, our conclusions are presented in the final section.

2. Literature review

Economic literature defines social mobility as the movement of individuals between different social classes (Scott & Marshall, 2009). The basis for the study of social mobility is the theoretical framework of the Family Economy (Becker & Tomes, 1986).[1] In particular, the utility of parents depends on the utility of

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children, and this relationship means that parents choose how to allocate income between consuming or investing in their children's education, which in turn affects the children's future income in the long run (Dutta, Sefton, & Weale, 1999).

Of the many types of social mobility, intergenerational mobility reflects the social changes children experience in relation to their parents' situation (Scott & Marshall, 2009). The scope of this mobility spans various aspects such as educational attainment, income, and occupational status (Black & Devereux, 2011). Consequently, several concepts of intergenerational mobility have been adopted.

Firstly, educational mobility refers to the degree to which education is transmitted from parents to children, given the vital role it plays both in determining social position and in changing that social position. Due to the process of industrialization and constant technological changes in recent years, the role of education has increased in most developed and developing countries, which has led to the need for a highly skilled workforce. These facts can contribute to the emergence of a potentially more meritocratic society with more equal opportunities, where the accumulation of knowledge is a tool to achieve a more efficient distribution of talents. As a result, people from families with different socioeconomic backgrounds may have the same chance of success in terms of expected income and career advancement (Blanden, Gregg & Macmillan, 2007).

Secondly, it is a movement up or down in the income distribution of children compared to their parents. Empirical studies following this methodology yields an intergenerational elasticity coefficient that measures the correlation between parental income and offspring income, and also computes transition probability matrices to estimate income mobility between different segments of the earnings distribution (Atkinson, 1981; Zimmerman, 1992; Checchi, 1997).

Thirdly, intergenerational mobility is analyzed by comparing the type of occupation achieved by children with the occupation of their parents. In this case, mobility is measured using occupational structure as a proxy, and a person's occupation is considered one of the important determinants of a person's social class, social status, and income. This last procedure has some advantages over income analysis. On the one hand, occupational mobility is more stable and results in persistent changes in earnings not necessarily related to short-term wage fluctuations. For example, Keane and Wolpin (1997) propose a model to explain how the expected value of a person's lifetime earnings can be maximized by choosing the optimal sequence of occupations. On the other hand, the occupational category is a proxy for socioeconomic status because it combines variables such as salary,

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educational attainment, and talent. In addition, intergenerational occupational data reported by individuals is likely to be more reliable than income data. For all these reasons, the analysis of occupational mobility is of additional economic interest compared to the study of income mobility.

There are several interesting empirical studies concerning intergenerational occupational mobility (see, for example, Ermisch & Francesconi, 2002; Hellerstein & Morrill, 2011; Long & Ferrie, 2013). Ermisch and Francesconi (2002), using data from the British labor market, analyze occupational mobility between parents and children through movements along with an index of occupational prestige proposed by Goldthorpe and Hope (1974). They found that intergenerational elasticity decreases as parents' social status increases. Hellerstein and Morrill (2011) concentrate on occupational status by examining changes in intergenerational transmission from father to daughter in the US. They found that the likelihood of daughters and fathers having the same occupation increased over the course of the 20th century. Finally, Long and Ferrie (2013) identify historical differences in intergenerational occupational mobility between the UK and the US since the early 1850s, finding that in the US for three decades after 1850, intergenerational occupational mobility was higher than in the UK or US.

In contrast, the gender perspective of intergenerational occupational mobility was hardly considered. Some authors such as Hayes (1987, 1990) and Rosenfeld (1978) explored this issue for Australian, Irish and American women, respectively. These authors considered the mother's occupation as a baseline and thus analyzed the contribution of mother and father to their daughter's occupational outcomes. Fortin and Lefebvre (1998) found that the same was true when using 'occupation of the individual' as an instrumental variable. For Canada, Corak and Piraino (2010) found that at least 40% of young Canadian women are in the same occupational category as their parents. This correlation is even higher when parents have good jobs or are self-employed. Ray and Majumder (2011) analyzed occupational and educational mobility in India. They found that while the educational status of the population is now generally much better than it was years ago, this is not properly reflected in the occupational categories of women. This result suggests that the labor market itself shows a marked reluctance to assume this increase in the level of education of the population and to show a high level of correlation between the occupational categories of parents, especially for women.

As for Belarus, the lack of relevant statistical data, including generational surveys, limits the study of intergenerational occupational mobility. Most of the papers focus not on the intergenerational social mobility, but on the gender wage gap and occupational segregation (see Pastore & Verashchagina, 2005,

2011; Tarasevich, 2009; Fakeyeva & Shpetnaya, 2016). Francesco Pastore and Alina Verashchagina (2005) using data from the Belarusian Household Surveys on Incomes and Expenditures for 1996 and 2001 found, firstly, that the conditional gender wage gap was 16.5 percent in 2001, and secondly, the trend of Belarusian women to move towards low-paid industries and their concentration in the public sector and, thirdly, determined the presence of segregation of women's labor in low-paid sectors of the economy. In their follow-up work, Francesco Pastore and Alina Verashchagina (2011) found a decline in the observed prices of women's skills caused by a process of segregation into low-paid occupations in the public and social services sectors and outside the sphere of material production. In addition, Alesya Tarasevich (2009) also identified that the distribution of working women and men in Belarus is characterized by occupational segregation. Lyudmila Fakeyeva and Natalia Shpetnaya (2016) came to the conclusion that, firstly, the socially accepted traditional model of gender roles is preserved in Belarus – women are considered the main childcare and household duty holders in the family, and, secondly, they determined the specifics of women's behavior who have lost their jobs, that is, great inactivity and the delegation of employment authorization to public authorities.

3. Methodology and hypotheses

This section defines the following methods and indicators used in this study to measure intergenerational occupational mobility in Belarus:

- Correlation indices between occupational categories of parents and children.
- Transition matrices that provide a detailed comparison between the occupational status of parents and their children.
- Mobility rates that summarize in a single value all the information from the transition matrices.
- Multinomial logit model that aims to analyze the impact of a set of covariates on intergenerational occupational mobility. The explanatory variables are: the highest degree of education an individual has received (that is, his/her educational attainment), gender, potential labor experience, calculated as the number of years that the person has regularly worked, status in the labor market (full-time or part-time), and region of residence (individuals are classified according to the

region of residence). The presence of these independent variables in the model is explained by the predictions stated in the sociological and economic literature.

Concerning the last part of the methodology the main hypotheses are as follows. The first one is that intergenerational occupational mobility in Belarus is not a homogeneous phenomenon among individuals and depends mainly on their personal and labor characteristics.

The second hypothesis determines that education has a positive effect on upward intergenerational occupational mobility. This assumption is based on Human Capital Theory (Becker, 1964) and Theory of Career Mobility (Sicherman & Galor, 1990). These theories postulate, firstly, that the acquisition of human capital helps people to start their working career in occupations of a higher level, taking into account the positive dependence of the occupational hierarchy on the level of qualification. Secondly, education has a positive effect on the possibility of obtaining the best opportunities in the labor market, which corresponds to a higher likelihood of upward occupational mobility. Thus, the successful realization of human capital depends on progress in reconciling the acquired formal knowledge in the education system and the professional profiles required by the productive system.

A third hypothesis proposed is that investment in a particular firm's human capital should play an important role in explaining employee productivity gains and promotions (Prendergast, 1993). In this study, investment in training is considered in relation to potential labor market experience, and the proposed hypothesis is that this variable has a positive effect on upward intergenerational occupational mobility.

For the rest of the characteristics, the assumptions are about the emergence of differences or inequalities between subgroups of the population in access to higher-level occupations due to existing features of the Belarusian labor market (see Section 4.3), such as different levels of participation between men and women, occupational segregation and the presence of segments in the labor force. These aspects of the Belarusian labor market fit well into the framework within which the Structural or Dual Labor Market Theory is developed (Doeringer & Piore, 1971; Thurow, 1975). According to this theory, the labor market is divided into two segments: primary and secondary. Workers belonging to the first segment have a stable job, a high probability of upward occupational mobility and high wages. On the contrary, in the second segment, labor relations are unstable, low-paid and have little prospect of promotion.

Regarding the derivation of the econometric specification of the multinomial logit model used to determine the factors of intergenerational occupational mobility in Belarus, it is necessary to outline the dependent variable that shows

the downward and upward occupational mobility, or immobility (the lack of occupational change). The definition of this variable is based on the fact that the occupations in the GGS are coded according to the National Classification of Occupations based on the International Standard Classification of Occupations (ISCO-08), which defines a ranking of occupations based on the performance area and qualification required to carry out the occupation. Performance area means the area of work activity defined by the type and nature of the tasks performed, whereas the level of qualification is the amount and quality of education, training, and experience required in the workplace. The first code would correspond to the armed forces and the last one to the elementary occupations. Accordingly, occupational mobility is defined as shifts between occupations at the 1-digit level, since the GGS does not allow further disaggregation for the parents' occupations. In addition, the relationship of parents with children is taken into account; in other words, the different significance that mothers/fathers have for the mobility of their sons/daughters, through the inclusion of gender lines in the analysis. Thus, the three possible states, in which son/daughter can occur in relation to his/her father/mother are: the individual registers a downward intergenerational occupational mobility, remains in the same occupation – immobility, or experiences an upward intergenerational occupational mobility.

Therefore, the econometric model identified to study the occupational changes between son/daughter and father/mother is a multinomial logit model where the dependent variable defines the three possible alternatives: downward occupational mobility ($Y = 0$), immobility – the absence of occupational change ($Y = 1$) and upward occupational mobility ($Y = 2$). According to the multinomial logit model, the probability for the alternative j is:

$$\Pr(Y_i = j \mid X_i) = \frac{\exp\left(\beta_j' X_i\right)}{\sum_{j=0}^{2} \exp\left(\beta_j' X_i\right)}, \quad \left(j = 0, 1, 2\right), \tag{1}$$

where β_j is the vector of parameters for each alternative j and X_i is the vector of explanatory variables observed for each person.

The necessary restriction to identify the multinomial logit model is that the vector of coefficients corresponding to an alternative is the null vector. In this case, it is considered that this happens for $j = 0$, so the probability of the occurrence of each alternative is:

$$\Pr(Y_i = j \mid X_i) = \frac{\exp\left(\beta_j' X_i\right)}{1 + \sum_{j=1}^{2} \exp\left(\beta_j' X_i\right)}, \quad (j = 1, 2). \tag{2}$$

The parameters of the model are estimated using the maximum likelihood method. Correspondingly, the log-likelihood of the model is defined by:

$$\log L = \sum_{i=1}^{N}\sum_{j=1}^{2} d_{ij}\beta_j' X_i - \sum_{i=1}^{N}\sum_{j=1}^{2} d_{ij} \log\left[1 + \sum_{i=1}^{2} \exp\left(\beta_j' X_i\right)\right]$$

$$\text{where } d_{ij} = \begin{cases} 1 \text{ if the individual } i \text{ is observed in the } j \text{ option} \\ 0 \text{ otherwise} \end{cases} \tag{3}$$

It is difficult to interpret the coefficients from the multinomial logit model. In this regard, this study computes marginal effects as an alternative way of estimating the effect of the covariates on the probability of observing an outcome. Marginal effects for dummy variables are calculated as the change of probability when the categorical variable varies from 0 to 1, whereas all other variables are held at their mean values. For continuous regressors, the marginal effects are obtained using the following expression (Wooldridge, 2010):

$$\frac{\partial \Pr\left(Y_i = j \mid X_i\right)}{\partial x_k} = \Pr\left(Y_i = j \mid k\right)\left\{\left[\sum_{j=1}^{2}\beta_{hk} - \exp\left(\beta_h' X_i\right)\right] \middle/ \left[1 + \sum_{j=1}^{2}\exp\left(\beta_h' X_i\right)\right]\right\}. \tag{4}$$

The estimates of the marginal effects for all regressors included in the multinomial logit model are presented in the next section.[2]

4. Data

4.1 Data and sample selection

This paper uses data from the Generations and Gender Survey conducted in Belarus in 2017 by the United Nations Population Fund and the United Nations Children's Fund within the framework of the Generations and Gender Program of the United Nations Economic Commission for Europe. This survey is a nationally representative dataset covering the whole of the country disaggregated by regions. In the course of the survey, about 10,000 permanent residents of Belarus aged 18-79 were interviewed. The GGS-2017 contains information on a range of individuals (age, gender, marital status, educational attainment, employment status, hours worked, wages earned, etc.) and household-level characteristics (household size and composition, religion, landholding, location,

asset ownership, etc.). We use data on respondents aged 25-79 years and information about their parents' occupations when the children were 15 years old.

In terms of occupational status, GGS reports occupational codes that correspond to the National Classification of Occupations based on the International Standard Classification of Occupations. ISCO-08 establishes an occupational hierarchy based on the field of activity and the qualifications required to perform the job, which allows to define occupational mobility as upward or downward movements along this scale. The GGS uses one-digit ISCO-08 categories: armed forces occupations; managers; professionals; technicians and associate professionals; clerical support workers; services and sales workers; skilled agricultural, forestry and fishery workers; craft and related trade workers; plant and machine operators and assemblers; elementary occupations.

In this study, the respondent's education level is used as a proxy for the respondent's skills to take into account his/her potential productivity. In this regard, the categorical variable is defined to reflect the highest level of education of the respondent: primary education, lower secondary education, upper secondary education, post-secondary non-tertiary education, Bachelor's degree or higher. This approach has been used by Andrew Newell and Barry Reilly (1999) who have studied several transition countries.

In addition to the educational variable, a measure of the respondent's potential work experience is also included as an additional measure of productivity. It is calculated as a person's age minus years of schooling minus six years. Following Daniel Munich, Jan Svejnar, and Katherine Terrell (2005), in the case of women, it also adjusted for the period of maternity leave by subtracting the number of own children times 3 years.

The type of current labor market status is classified as full-time or part-time, determined by the corresponding dummy variable. Region dummy variables control for regional differences in the labor market in Belarus. A complete list of variables and their definitions are presented in Table A1.

4.2 Descriptive statistics

Descriptive statistics for the studied data are presented in Table A2 and A3. Table A2 shows that the share of individuals working in the low-skilled occupations (from the first to sixth category) is 48.0 percent for females and 49.8 percent for males; in the high-skilled occupations (from the seventh to the tenth category) this proportion equals 52.0 percent for women and 50.2 percent for men. The largest

proportion of men and women work in professional positions, which include positions in areas such as teaching and healthcare. However, Belarusian women significantly outnumber men among professionals by 11.0 percentage points. This phenomenon may be a legacy of the long history of women earning more degrees under socialism.

In addition, there are significant differences in the level of education between Belarusian men and women. Firstly, there is a higher proportion of women in upper secondary and bachelor's degree education at 39.1 percent and 40.9 percent compared to 35.9 percent and 33.2 percent for men. Secondly, the share of men in lower secondary education and post-secondary non-tertiary education is higher – 19.9 percent and 9.7 percent compared to 12.5 percent and 6.3 percent among women. Belarusian men have a longer potential work experience – by about 3.8 years. Women and men are almost equally divided into full-time and part-time workers. For example, the proportion of women working full-time is only 1.4 percentage points lower than that of men (see Table A2).

Table A3 indicates, firstly, that main intergenerational occupational changes for male individuals occur in elementary occupations; skilled agricultural, forestry and fishery worker; professionals; managers and armed forces occupations compared to their fathers; while for female individuals main transformations appear in elementary occupations; craft and related trade workers; skilled agricultural, forestry and fishery workers; professionals and managers compared to their mothers. Thirdly, the main increase in the proportion of male/female respondents occurs in professionals and managers compared to their fathers/mothers – 25.5 vs 16.9 percent/36.5 vs 20.6 percent, and 9.2 vs 5.5 percent/6.5 vs 3.1 percent, respectively.

4.3. The Belarusian labor market

The labor market in Belarus is still in the process of liberalization. Although private firms have the right to determine wages themselves, the state still determines the wage structure through a special tariff system, which is a set of regulations, rules and legislation that determines the level of wages of workers.[3] The use of the tariff system in Belarus is mandatory for budgetary organizations and enterprises receiving subsidies from the state. Private companies use rates as the minimum allowable values when setting salaries for relevant positions.

As regards the structure of the Belarusian labor market, in 1995 women accounted for 54.9 percent of the economically active population. As of 2017, 2.16 million women were employed in the economy, or 49.2 percent of the total working population. The female labor force participation rate (for women aged

15+) was 52.6 percent in 1995 and increased to 58.1 percent in 2017, while that for men changed from 66.8 percent to 70. 3 percent (World Bank).

In terms of education, 36.7 percent of working women in Belarus have a bachelor's degree or higher, compared to just 26.1 percent of working men (Belstat, 2018a). However, despite having a significantly higher level of education, women are increasingly employed in low-wage sectors of the economy. In particular, Belarusian women dominate in the non-manufacturing sectors (except for science) and in the service sectors (except for transport). Women are mostly represented in education (81.2 percent of the total number of employees are women), retail trade (74.8 percent), health and social services (84.9 percent). Any affiliation of the labor force to the social sectors is characterized by lower wages compared to the manufacturing sectors (Belstat, 2018a, 2018b).

However, the gender wage gap exists in all sectors of the economy. For example, the gap in agriculture equals 11.3 percent, in manufacturing – 23.1 percent, in construction – 14.4 percent, in wholesale and retail trade – 23.7 percent, in transport activity – 6.4 percent, in information and communication industry – 41.1 percent, in financial and insurance activities – 25.3 percent, in public administration – 15.9 percent, in education – 15.8 percent, in health and social services – 16.7 percent (Belstat 2012, 2018a, 2018b).

Among working women, the main share is professionals, as well as among men. When determining the share of male and female managers in the total number of employees, the difference in the number of women and men is insignificant, that is, the number of male managers is 190.0 thousand people, and the number of female managers is 185.9 thousand people (Belstat, 2018a, 2018b).

In addition, the generally accepted traditional model of gender roles is preserved in the Belarusian labor market. Women are considered the main responsibilities of childcare and housekeeping in the family. Such burdens often affect their career path, meaning that women may prefer flexibility and less workload to reward levels. Furthermore, there is a specific behavior of women who have lost their jobs. They are characterized by great inactivity and delegation of employment authority to state authorities, while men are focused on self-employment (Fakeyeva & Shpetnaya, 2016).

5. Results

This section presents the main results of the study. First, correlation coefficients, transition matrices, and mobility rates are presented in order to deepen the understanding of the intergenerational transmission of occupational categories.

Correlation indices provide an initial measure of intergenerational mobility and show whether there is a statistically significant correlation between the occupational categories of children and their parents. Firstly, the results show that there is a statistically significant dependence relationship in all cases studied. Secondly, in general, a mother has a greater influence on the occupation of the daughter than a father on the occupation of the son. Moreover, the results show that the gap tends to increase over time starting from the middle (third) generation (see Table 1).

Table 1. Spearman correlation coefficients between occupational categories of parents and children by gender lines

| Gender line	Fifth generation 1948-1957	Fourth generation 1958-1967	Third generation 1968-1977	Second generation 1978-1987	First generation 1988-1992	Total sample
Father-son	0.320	0.344	0.386	0.295	0.265	0.338
Mother-daughter	0.363	0.304	0.349	0.323	0.373	0.341

Source: Author's estimates based on GGS-2017.
Note: All coefficients are significant at the 1% level.

Figure 1 and 2 summarizes all the information obtained from the transition matrices for occupations by gender and generations through mobility rates. The evolution of mobility patterns is observed by splitting the sample of individuals into five generations: fifth generation – individuals aged 60-69 years and belonging to the birth cohort 1948–1957, fourth generation – individuals aged 50-59 years and belonging to the birth cohort 1958–1967, third generation – individuals aged 40-49 years and belonging to the birth cohort 1968–1977, second generation – individuals aged 30-39 years and belonging to the birth cohort 1978–1987, and first generation – individuals aged 25-29 years and belonging to the birth cohort 1988–1992 (see Figure 2). Using this information, a more complete picture of the intergenerational transmission of occupational status can be obtained:

- *Downward mobility.* The downward intergenerational changes of occupational status have a strong gender bias: downward mobility is higher for men than for women by 10 percentage points (see Figure 1). Moreover, it increased by 2.3 percentage points for men and by 2.6 percentage points for women starting from the middle generation (see Figure 2).

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- *Immobility.* The intergenerational transmission of occupational immobility is almost equal for men and women, while it is higher by 0.9 percentage points in male case. However, occupational immobility decreased by 3.1 percentage points for men starting from the middle generation, while it increased by 6.8 percentage points in female case (see Figure 2).
- *Upward mobility.* Occupational upward mobility is far more common comparing to downward mobility. For example, 39.7 percent of males and 50.6 percent of females have better occupations than those corresponding to their parents. However, while for male individuals it is almost constant during last four generations – on average 39.0 percent, for females it constantly decreasing from fourth generation up to first generation by 8.6 percentage points.
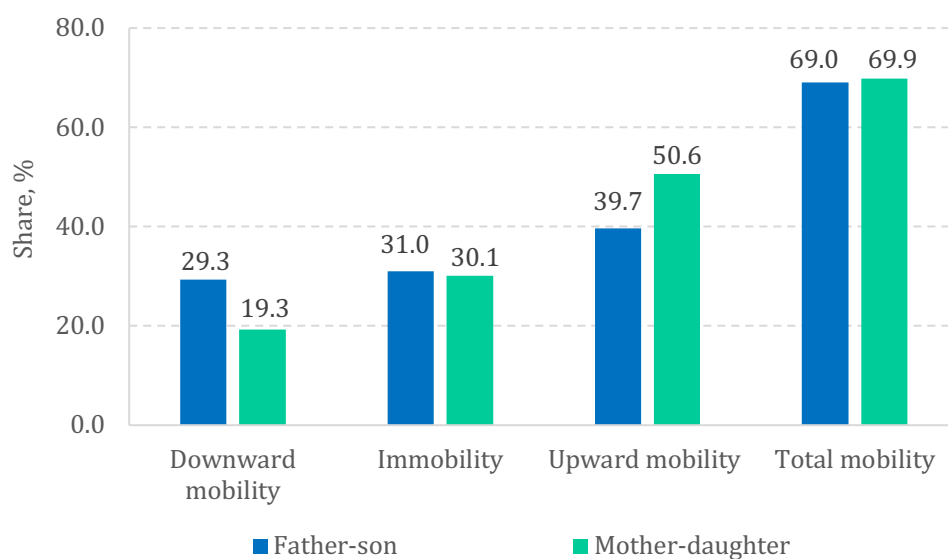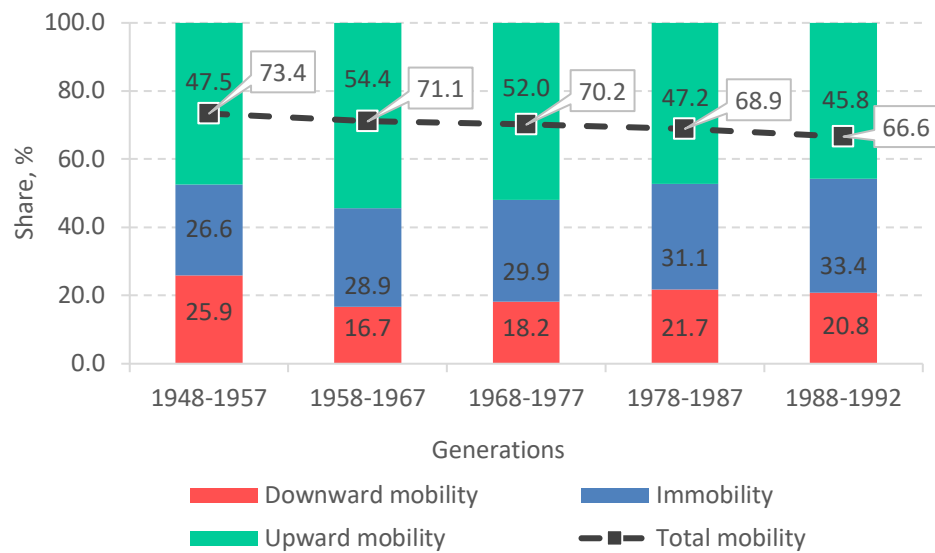

Figure 1. Intergenerational occupational transitions by gender lines, %

Source: Author's estimates based on GGS-2017.
Note: Estimates reflect weighted data.
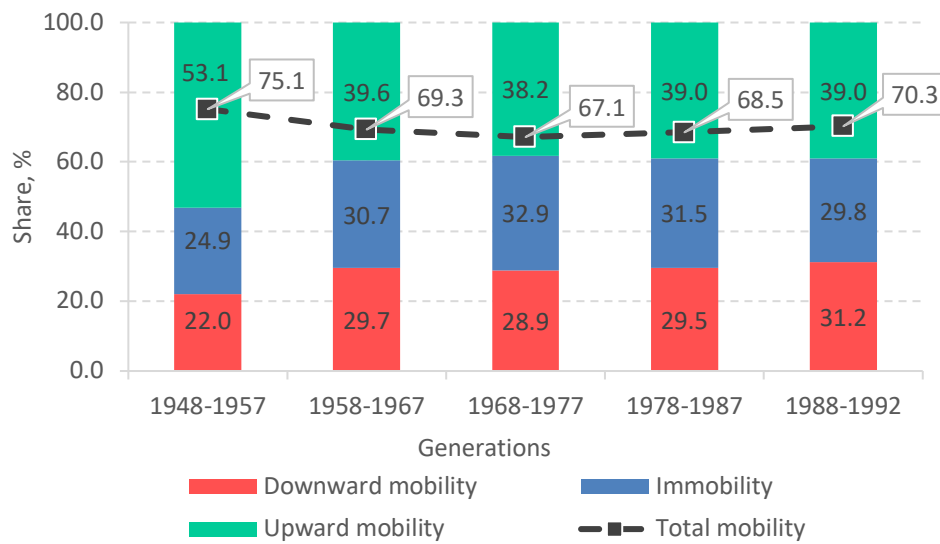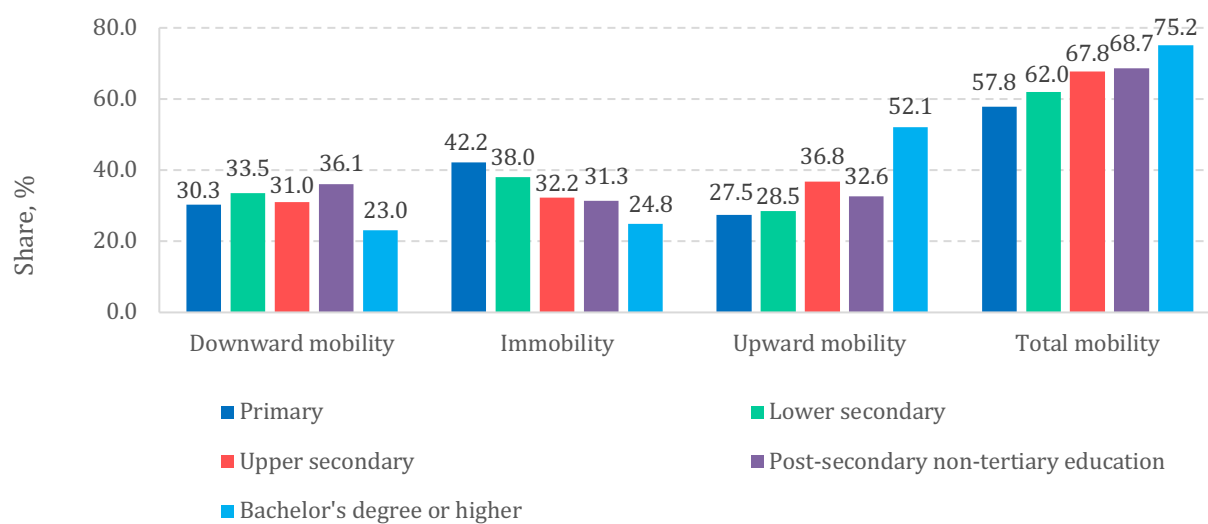
(a) Father-son

(b) Mother-daughter

Figure 2. Intergenerational occupational transitions by generations, %

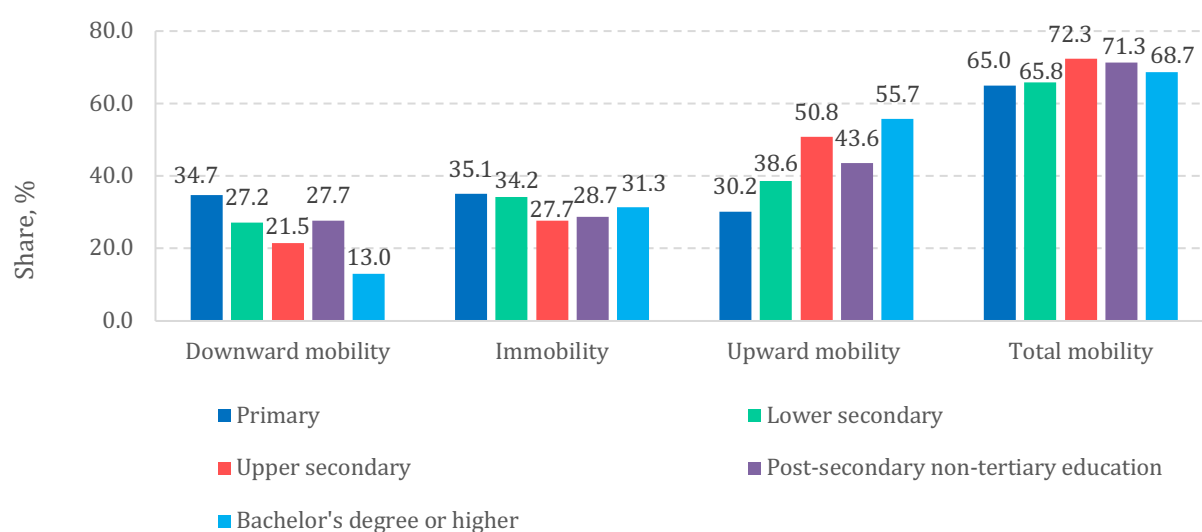*Source*: Author's estimates based on GGS-2017.
Note: Estimates reflect weighted data.

In addition, Figure 3 shows information related to the offspring's intergenerational occupational mobility classified by educational level. Firstly, the obtained results for the father-son gender line indicate that with the increase of educational attainment occupational immobility of the sons decreases, while the upward mobility increases. Secondly, concerning mother-daughter gender line results show that with the increase of educational attainment occupational downward mobility decreases, while the upward mobility increases. Thirdly, post-secondary non-tertiary education has low frequency of upward occupational mobility compared to upper secondary or higher education for both gender lines. Finally, upward occupational mobility is a more frequent phenomenon for daughters than for sons independent of educational level.

(a) Father-son

(b) Mother-daughter

Figure 3. Intergenerational occupational transitions by gender lines and educational level, %

Source: Author's estimates based on GGS-2017.
Note: Estimates reflect weighted data.

The estimates of the marginal effects obtained through assessment of multinomial logit model confirm the first hypothesis about the dependence of social occupational mobility on personal and labor characteristics (see Table 2).

In terms of educational attainment, research findings support second hypothesis that education is a channel of intergenerational mobility. Firstly, higher education attainment has a positive and significant influence on upward occupational mobility reaching its highest value for higher education. The probability of moving up to the occupational ladder is around 27 percentage points higher than the one corresponding to an individual with primary studies and the same (average)

socio-economic characteristics. Secondly, higher education has a negative and significant influence on downward occupational mobility indicating that the probability of moving down the occupational ladder is around 13 percentage points lower compared with primary education.

Finally, it is possible to observe the evolution of human capital's effects on social mobility by computing the predicted probabilities by educational level. The results of this analysis are presented in Table 3 and show that the predicted probabilities of upward occupational mobility increase going through primary education up to higher education, whereas the opposite occurs for downward occupational mobility and occupational immobility. These results are consistent with the predictions of Human Capital Theory (Becker, 1964) and Theory of Career Mobility (Sicherman & Galor, 1990) presented in Section 3, and highlight the fact that education is an important factor in increasing upward occupational mobility and decreasing downward occupational mobility between generations since occupational categories are sorted according to the level of education required to complete the tasks included in them.

Table 2. Estimates of the marginal effects corresponding to the multinomial logit model

Variables	Downward occupational mobility		Occupational immobility		Upward occupational mobility	
Gender:						
Male	0.094***	[0.014]	0.007	[0.015]	-0.101***	[0.016]
Education level:						
Lower secondary education (OV: Primary education)	0.013	[0.057]	-0.019	[0.063]	0.006	[0.056]
Upper secondary education	-0.030	[0.055]	-0.110*	[0.061]	0.136**	[0.055]
Post-secondary non-tertiary education	0.016	[0.060]	-0.087	[0.065]	0.071	[0.060]
Bachelor's degree or higher	-0.131**	[0.054]	-0.137**	[0.057]	0.268***	[0.053]
Potential labor experience (in years)	-0.002**	[0.001]	-0.002**	[0.001]	0.003***	[0.001]
Labor market status:						
Full-time	-0.111***	[0.039]	-0.009	[0.036]	0.119***	[0.038]
Region of residence:						
Brest region (OV: Minsk city)	-0.036	[0.024]	-0.068***	[0.026]	0.104***	[0.027]
Vitebsk region	0.030	[0.026]	-0.098***	[0.027]	0.068**	[0.027]
Gomel region	-0.028	[0.024]	-0.017	[0.026]	0.045*	[0.027]
Grodno region	-0.061***	[0.023]	-0.096***	[0.026]	0.157***	[0.028]
Minsk region	-0.013	[0.023]	-0.067***	[0.025]	0.080***	[0.025]
Mogilev region	-0.013	[0.027]	-0.040	[0.030]	0.053*	[0.030]
Observations						4,363

Source: Author's estimates based on GGS-2017.
Note: Estimates reflect weighted data. Standard errors in square brackets.
Significance: ***: 1 percent; **: 5 percent; *: 10 percent.

From the standpoint of the specifics of human capital, there is a positive impact of potential labor experience on upward intergenerational occupational mobility which confirms third hypothesis. Specifically, the probability of moving up along the occupational ladder increases on average by about 0.3 percentage points for every additional year of labor experience (see Table 2). Therefore, if the number

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of years an individual stays in the labor market is used as a proxy for skill level (Altonji & Williams, 1992), then this result is consistent with the results obtained for the education level variables, as it shows that human capital has a positive effect on the transition of children to better occupations. In particular, the predicted (average) probabilities of upward occupational mobility increase with the increase of potential labor experience (see Table 3).

Table 3. Predicted probabilities by gender, education level, potential labor experience, labor market status, and region of residence, %

Variable	Downward occupational mobility	Occupational immobility	Upward occupational mobility
Gender			
Male	0.289	0.318	0.393
Female	0.193	0.309	0.498
Education level			
Primary education	0.300	0.413	0.286
Lower secondary education	0.313	0.394	0.292
Upper secondary education	0.269	0.306	0.425
Post-secondary non-tertiary education	0.316	0.326	0.358
Bachelor's degree or higher	0.167	0.273	0.560
Potential labor experience			
5 years	0.274	0.334	0.392
10 years	0.266	0.327	0.407
15 years	0.258	0.319	0.422
20 years	0.251	0.312	0.437
25 years	0.243	0.304	0.453
30 years	0.235	0.297	0.468
35 years	0.227	0.289	0.484
40 years	0.220	0.281	0.499
45 years	0.212	0.274	0.514
50 years	0.204	0.264	0.530
Labor market status			
Full-time	0.236	0.315	0.448
Part-time	0.352	0.326	0.323
Region of residence			
Brest region	0.219	0.297	0.483
Vitebsk region	0.287	0.268	0.444
Gomel region	0.229	0.351	0.421
Grodno region	0.193	0.268	0.539
Minsk region	0.244	0.300	0.457
Mogilev region	0.244	0.327	0.429
Minsk city	0.258	0.368	0.374

Source: Author's estimates based on GGS-2017.
Note: Estimates reflect weighted data.

Other results confirm the hypothesis that there are differences between subgroups of the population in access to higher-level occupations related to the characteristics of the Belarusian labor market. Firstly, gender is a significant variable in explaining intergenerational occupational mobility, in particular, the results show that females are more likely to move up the social ladder than their male counterparts, as men are 10 percentage points less likely to have upward occupational mobility than women with the same (average) socio-economic

characteristics (see Table 2). The predicted (average) probability of upward/downward occupational mobility is 0.39/0.29 for men and 0.50/0.19 for women (see Table 3).

This finding is open to various interpretations and evidence of women's progress in terms of employment status in Belarusian society. On the one hand, major barriers to women's economic success may arise even before they enter the labor market. On the other hand, the decision to work, look for a job, or start a business may be a consequence of the utility maximization process associated with professional success. Women will then bear the cost of labor market participation if they expect important economic and social improvements (Mortensen & Pissarides, 1999). In addition, most of the employment of women is in the service sector, which is characterized by occupations that are in the middle of the occupational ladder – the share of women employed in such occupations as services and sales workers, clerical support workers, technicians and associate professionals, and professionals is 73.4 percent, whereas the corresponding share of men is equal to only 48.9 percent (see Table A2).

Secondly, with regard to the dummy variable associated with the current state of the labor market, it is checked that it is relevant and has the expected sign. In particular, full-time work is a work situation that positively affects individuals' progress compared to their parents. The average marginal effect of full-time contract on upward occupational mobility is positive: 0.12. On the contrary, having a full-time contract has a negative significant effect on downward occupational mobility: -0.11. These all mean that the probability of moving up/down along the occupational ladder is on average about 12/11 percentage points higher/lower for full-time employees than for part-time ones with the same (average) socio-economic characteristics (see Table 2). Additionally, the predicted (average) probability of upward/downward occupational mobility is 0.45/0.24 if full-time employee and 0.32/0.35 if part-time employee, also confirming the advantage of permanent employment (see Table 3). Therefore, the impact of employment status on intergenerational occupational mobility depends on the stability of labor relations. As mentioned in Section 3, an explanation for this result can be found in the postulated theory of the segmented labor market (Doeringer & Piore, 1971), which suggests the existence of a secondary labor market where labor relations are unstable and opportunities for finding good jobs are rare.

Finally, conclusions about dummy variables related to the current region of residence show that intergenerational occupational mobility is mostly homogeneous across the territory of Belarus. In particular, the average marginal effects of living in regions of Belarus on upward occupational mobility are

significant and positive for all regions of residence. This means that the probabilities of moving up along the occupational ladder is on average higher from 5.3 up to 15.7 percentage points for individuals living in Belarusian regions than for Minsk city residents (see Table 2).

6. Conclusion

This paper has obtained empirical evidence about the process of social mobility in Belarus. In particular, the research topic has been the analysis of the intergenerational occupational mobility. Data used has been drawn from the module of the Generations and Gender Survey conducted in Belarus in 2017 by the United Nations Population Fund and the United Nations Children's Fund within the framework of the Generations and Gender Program of the United Nations Economic Commission for Europe. The study uses the statistical and econometric methodology associated with the occupational transition matrices, intergenerational mobility rates and the estimation of the multinomial logit model to explain the transitions along the occupational ladder.

The analysis of the correlation indices shows that there is a statistically significant relationship of dependence between the occupational categories of children and their parents. In general, a mother has a greater influence on the occupation of the daughter than a father on the occupation of the son. Moreover, the gap tends to increase over time.

The main findings associated with the occupational transition matrices and corresponding mobility rates show that the downward and upward intergenerational changes in occupational status have a strong gender bias: first, downward mobility is higher for men than for women by 10.0 percentage points, second, upward mobility is higher for women than for men by 10.9 percentage points.

From an econometric point of view, movements up and down the occupational ladder were determined using a multinomial logit model, in particular, the effects of covariates were obtained by calculating marginal effects. Firstly, the findings confirm the important role of education as a mechanism for achieving greater equality of opportunity in society. In particular, the effect is more pronounced for people with higher education, since the probability of upward intergenerational occupational mobility is about 27 percentage points higher for them than for people with primary education. Moreover, these individuals have a predicted probability of moving up the occupational ladder of 56%. In this sense, any change in the Belarusian educational system, implying an

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increase in costs or a decrease in quality, will have adverse consequences for building a more meritocratic society.

Secondly, gender is a significant variable in explaining intergenerational occupational mobility, in particular, the results show that females are more likely to move up the social ladder than their male counterparts, as males are 10 percentage points less likely to have upward occupational mobility than women with the same (average) socio-economic characteristics. The predicted (average) probability of upward/downward occupational mobility is 0.39/0.29 for men and 0.50/0.19 for women. Thirdly, potential work experience positively influences upward intergenerational occupational mobility, which may reveal an underlying effect of training that is an unobservable variable using the information provided by GGS. Finally, the results show that full-time workers are more likely to move up the social ladder than their part-time counterparts, as full-time workers are 12 percentage points more likely to experience upward occupational mobility and 11 percentage points less likely to have downward occupational mobility than their part-time workers with the same (average) socio-economic characteristics.

Notes

[1] Family economics applies economic concepts to the family, such as production, division of labor, distribution, and decision making.

[2] Marginal effects estimates are not affected by sampling bias caused by the limitation of the analysis to sons/daughters and fathers/mothers who lived in the same household at the time of the survey (Andersen, 2001).

[3] The Belarusian tariff system originates from the Soviet period. Its modern form was issued in March 2001 and is still valid today with changes.

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Table A1. Definition of variables

Variable	Variable description

Occupation	Categorical variable defining respondent's occupation category (ISCO-08)[a] ordered from low to high:
	    0 – Armed forces occupations;
	    1 – Managers;
	    2 – Professionals;
	    3 – Technicians and associate professionals;
	    4 – Clerical support workers;
	    5 – Services and sales workers;
	    6 – Skilled agricultural, forestry and fishery workers;
	    7 – Craft and related trade workers;
	    8 – Plant and machine operators and assemblers;
	    9 – Elementary occupations.

Occupational mobility	Categorical variable defining respondent's occupational mobility:
	    0 – Downward occupational mobility;
	    1 – Occupational immobility;
	    2 – Upward occupational mobility.

Gender	Gender of the respondent:
	    1 – Male;
	    2 – Female.

Education level	Categorical variable defining highest level of the respondent's completed education:
	    1 – Primary education;
	    2 – Lower secondary education;
	    3 – Upper secondary education;
	    4 – Post-secondary non-tertiary education;
	    5 – Bachelor's degree or higher.

Potential labor experience (in years)	Potential work experience of the respondent calculated as the respondent's age minus his/her years of education and minus six years. It is also corrected for the maternity leave: number of own children multiplied by 3 years (only for female respondents).

Labor market status	Dummy variable indicating respondent's labor market status:
	    1 – Full-time;
	    2 – Part-time.

Region of residence	Categorical variable defining respondent's region of residence:
	    1 – Brest region;
	    2 – Vitebsk region;
	    3 – Gomel region;
	    4 – Grodno region;
	    5 – Minsk region;
	    6 – Mogilev region;
	    7 – Minsk city.

Source: GGS-2017.

Note: [a]ISCO-08 – International Standard Classification of Occupations.

Table A2. Descriptive statistics

Variable	Males		Females	
	Mean	Std. Dev.	Mean	Std. Dev.
Occupation:				
Elementary occupations	0.126	0.332	0.128	0.334
Plant and machine operators and assemblers	0.066	0.250	0.012	0.108
Craft and related trade workers	0.164	0.370	0.045	0.207
Skilled agricultural, forestry and fishery workers	0.046	0.209	0.022	0.148
Services and sales workers	0.078	0.269	0.195	0.396
Clerical support workers	0.017	0.130	0.079	0.270
Technicians and associate professionals	0.132	0.339	0.084	0.277
Professionals	0.255	0.436	0.365	0.482
Managers	0.092	0.290	0.065	0.247
Armed forces occupations	0.023	0.151	0.006	0.074
Occupational mobility:				
Downward mobility	0.293	0.455	0.193	0.395
Immobility	0.310	0.463	0.301	0.459
Upward mobility	0.397	0.489	0.506	0.500
Education level:				
Primary education	0.022	0.146	0.013	0.114
Lower secondary education	0.190	0.392	0.125	0.330
Upper secondary education	0.359	0.480	0.391	0.488
Post-secondary non-tertiary education	0.097	0.297	0.063	0.243
Bachelor's degree or higher	0.332	0.471	0.409	0.492
Potential labor experience (in years)	23.867	11.908	20.122	10.128
Labor market status:				
Full-time	0.965	0.183	0.951	0.216
Part-time	0.035	0.183	0.049	0.216
Region of residence:				
Brest region	0.134	0.341	0.134	0.340
Vitebsk region	0.122	0.327	0.121	0.326
Gomel region	0.139	0.346	0.142	0.349
Grodno region	0.121	0.326	0.118	0.323
Minsk region	0.174	0.379	0.158	0.365
Mogilev region	0.097	0.295	0.093	0.291
Minsk city	0.214	0.410	0.234	0.424
Observations		2,382		2,249

Source: Author's estimates based on GGS-2017.
Note: Estimates reflect weighted data.

Table A3. Distribution of individuals and their parents by occupations and gender lines, %

Occupations	Father-son		Mother-daughter		Total sample		
	Son	Father	Daughter	Mother	Son/Daughter	Father	Mother
Elementary occupations	12.60	17.82	12.78	24.91	12.68	19.05	23.08
Plant and machine operators, and assemblers	6.62	5.06	1.19	1.63	4.11	5.38	1.70
Craft and related trade workers	16.37	16.57	4.48	7.79	10.88	15.49	7.83
Skilled agricultural, forestry and fishery workers	4.58	10.83	2.23	10.20	3.49	11.88	9.56
Services and sales workers	7.82	7.91	19.46	17.13	13.20	7.70	17.71
Clerical support workers	1.71	2.19	7.89	6.15	4.57	1.92	6.19
Technicians and associate professionals	13.21	11.14	8.38	8.03	10.98	11.13	7.55
Professionals	25.53	16.93	36.53	20.62	30.61	16.50	22.04
Managers	9.24	5.48	6.52	3.09	7.98	5.59	3.39
Armed Forces occupations	2.33	6.06	0.55	0.44	1.51	5.36	0.95
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Author's estimates based on GGS-2017.
Note: Estimates reflect weighted data.