

Research Projects

From School to Work: Individual and Institutional Determinants of Educational and Occupational Career Trajectories of Young Poles

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BASIC OBJECTIVES AND RESEARCH QUESTIONS

The study is the first stage of a longitudinal project aimed at monitoring links between basic skills, educational qualifications and labor market outcomes in Poland. We focus on specific aspects concerning educational and occupational choices of young Poles and of broader issues of social stratification and mobility in post-industrial societies. In addition to theory, our research is also driven by social policy issues designed to deliver practical recommendations for educational and labor market policies.

To accomplish these objectives we will carry out panel study based on representative sample of young Poles born in 1992–1993 who were surveyed for the first time in 2009. Our research would follow-up with them in 2013, and in 2014.

Alongside social origin, questions concerning impact of basic skills on educational and occupational achievements (mediated by cultural, and social capital, and other variables) is of growing interest; our research will be a systematic approach to examine these associations in Poland, bearing in mind that only panel data can establish causal relations.

We will conceptualize these links within three areas covered in the tradition of *school-to-work transition* research, namely: (i) relationships between educational and occupational achievements and meritocratic factors – relative to effects of social origin, social and cultural capital, and other individual variables; (ii) impact of institutional context on these associations as related to the educational system; and (iii) impact of institutional determinants embedded in the labour market.

Given extensive transformation of political and economic institutions, paralleled by significant changes of the educational system, one can expect that in Poland different patterns have emerged regarding the role of education in allocating people to jobs. Societal idiosyncrasies might also emerge despite convergence in other aspects of social structure. Driven by hypotheses presented below we will attempt to establish the extent to which new institutional arrangements in the *school-to-work transition* overlap each other. Such a question may be: how far are new stratification patterns based on meritocracy in rewarding people for their skills and educational credentials? While principles of meritocracy may lead to economic effectiveness (and approved by most as meeting principles of distributive justice), meritocratic rules also bring inequality and social exclusion. We ask: to what extent are young people exposed to meritocratic selection? Do ascribed characteristics such as social origin continue to be important? Do distinctions between types of schools continue to influence their students' chances on the labor market? Do employers rely on educational credentials when selecting individuals for specific jobs and – accordingly – do individuals invest in education in order to improve their competitive advantage on the labour market?

As societies vary in the institutional arrangements that constrain the school-to-work transition, cross-national perspective matters. What may be regarded as an additional asset of our research is the opportunity to combine our data with PISA- Programme for International Student Assessment, a well-known international dataset of 60 countries.¹ Harmonizing with PISA allows us to address questions on coordination mechanisms and linkages between Polish institutional subsystems of the market economy, and partially places us within the “varieties of capitalism” literature (Amable 2004; Hall and Soskice 2001).

BEYOND HUMAN CAPITAL AND MERITOCRACY

It is evident that both individual investments in education and the use employers make of qualifications influence the pattern of association between education and labor-market outcomes. But it is far from clear how this association is generated.

Human-capital theory approaches educational stratification from the point of view of investment and returns – young people invest in themselves and their futures by enrolling in schools, and reap the returns on those investments in the labor market (Becker 1972). The sociological variant of this perspective rests in modernization theories. According to the functional theory of social stratification, stability and efficiency of the market system requires that occupational positions are allocated on the basis of competencies, qualifications, and skills. The stronger the relationship between these requirements and occupational positions, the better it secures the effective recruitment and fulfillment of the occupation duties. This is particularly important in case of the highest, most complex and responsible positions (Davis and Moore 1945; Treiman 1970). Still another interpretation of the link between educational achievements and occupational outcomes is in the meritocratic approach. This thesis states that a strong association between individual “merits” – namely intelligence, credentials, and education – and social rewards is inherent in a highly industrialized society (Young 1958). In all countries studied there is significant relationship between education and occupational position controlling for the occupational position of father, gender, and other characteristics. Therefore, the educational attainment, commonly employed in quantitative research as measure of investments (or merits), has been considered to directly influence socio-economic position (Treiman and Hartmann 1981; Treiman and Yip 1989; Muller et al. 1998; Muller 2005).

The contributions of the human-capital investment and functional perspectives to understanding of educational stratification should not be exaggerated as they give only a general explanatory framework for the processes of social modernization. In particular, the human-capital investment perspective encourages us to look at education as a fungible linear accumulation, much like a financial investments. Furthermore, it concentrates on the role of education, neglecting human capital derived from qualifications and skills received outside formal schooling. Another important aspect of transition from education to work is the relationship between what is learned at school and job prospects. A part of the knowledge and skills taught in schools are considered unimportant or even harmful at the time of job search. As it was argued in the “credentials” and “signaling” theories, employers are generally interested in hiring intelligent (but inexperienced) students and training them on the job. Diplomas are used as “credentials” signaling non-cognitive traits such as punctuality, diligence, and trainability that are not directly observable

(Spence 1973; Collins 1979). One can expect that in Poland – as with the UK (Goldthorpe and Jackson 2006) – many companies, especially in the banking and service sector, appear to be more interested in selection of applicants equipped with better cultural capital viewed as useful in personal communication, a trait obviously strongly influenced by parents. Finally, the actual course of the educational career depends on the institutional constraints such as admission standards and enrolment limits imposed by capacities of teaching staffs, classroom size, and budgets for supplies and equipment. This differentiation in educational systems complicates the human-capital account of educational stratification and challenges interpretations given by the functional theory of stratification and the meritocratic approach.

In addressing these questions, the 2013–2014 survey will focus on the mechanisms that shape educational trajectories. As regards examination of the path from education to occupational position, we postpone it to future waves. Our starting point would be the PISA 2009 dataset including individuals of the 1992–93 birth cohorts that in majority are still in education, with about only one-third of the 2013–2014 sample being either employed or looking for a job. The sample covers also individuals not active on the labor market, and/or being at risk of social exclusion.

Concerning educational attainment our primary goal is highlighting mechanisms that generate educational inequalities. Although changes in educational selection were extensively examined (Sawiński 2008), tracking in the educational system (students must chose among various tracks) and other forms of differentiation within education has not been extensively examined (for example see Sikora and Pokropek 2012). To deepen our insight into these linkages we will use a standard way of examination of educational attainment processes, decomposing them to a sequence of transition points – or tracks – at which students either continue to the next level or drop out.

The question that still remains unanswered is why educational expansion in Poland did not significantly reduce class inequalities in educational level. There were no major changes, indeed, in the effect of parental position on educational achievements (Domański and Tomescu-Dubrow 2008; Sawiński 2008) despite a massive increase in participation in education on the university level, and related development of private schools. In trying to explain this paradoxical phenomenon (which is by no means limited to Poland), several scholars have argued that paralleled with expansion, qualitative differentiation replaces inequality traditionally defined in quantitative terms (Arum et al. 2007: 4). We take up this argument to assume that in Poland, as tertiary education expands, and as differences between social classes (and other social categories) in the odds of attaining tertiary education remain basically unchanged, between-classes differences widen with respect to the

“kind” of tertiary education attended. The rankings of higher education institutions clearly display that, on average, quality of education is higher in the public sector (as measured by number of publications, international cooperation, number of professorial positions, etc.). While in most state-owned schools the selection of candidates is based on competition, in private schools the role of merit selection is smaller, and the barriers to admission are related more to tuition fees. The second hypothesis focuses on the effect of difference between full-time and part-time programs. Part-time programs are usually considered to be of lower quality and this should be reflected in the over-representation of young people of lower socio-economic background in these programs. Accordingly, children coming from the middle-class and upper middle class families should be over-represented in full-time programs, which administer competitive entrance examinations, and prepare more effectively for their future career.

Full-time programs are tuition free and part-time programs are paid – it does not overlap with division into state-owned and private schools since almost both them run these educational arrangements. We do not expect that participation in full- and part-time programs is related to the economic position since candidates from lower classes are less likely to afford higher expenses for studies, in comparison with students originating from families occupying higher socio-economic position. Rather, lower cultural capital of lower class families tracks them to part-time education as they tend to lose in competition with students coming from the intelligentsia. Students from lower class background simply are at a competitive disadvantage in entrance examinations and the more demanding full-time programs.

By testing the above hypotheses we will address more general questions of the consequences of the distinction between “better” and “worse” educational institutions for stratification of individual educational opportunity. We expect to confirm an intuitive feeling – not scrutinized until now in Poland – that “old” dimensions of educational inequality are replaced by “new” ones, based on qualitative tracks. The main axis of the “new” differentiation seems to be determined by “kind” of schools: the tuition-free and full-time public schools that provide higher quality education – on the one hand – and the non-public, and part-time paid programs, which are more about provision of diplomas than skills – on the other hand. We expect that the “new” stratification reflects the inequality of economic resources, and involve cultural capital of the “dominant” social classes referred to as the „new intelligentsia”. This also suggests that recruitment to public institutions is to a greater extent based on merits, favoring students with higher cultural capital and who come mostly from the families of higher managers and professionals. Lower class families, in turn, are left with an open – but expensive – opportunity to obtain a diploma in private schools.

TRANSITION FROM SCHOOL TO THE LABOR MARKET – INSTITUTIONAL CONSTRAINTS IN EDUCATIONAL SYSTEMS

In contrast to the unchanging effect of social origin on educational attainment, the strength of the path from level of education to the socio-occupational position has become weaker (Domański et al. 2008). Over the last decades, an apparent decline of the effect of education on occupational position has been a striking feature. One should consider it in a more universal context of a changing role of the educational diploma, which is losing significance in favor of other credentials such as specific skills, apprenticeship, experience, or job seniority. For prospective employers, these are the “signals”, which are instrumental in recruiting candidates for jobs and in rewarding them (Spence 1973). Looking from the macro-structural perspective, this tendency bespeaks of systemic dysfunctions given that selection to occupational positions according to educational level is a prerequisite of economic effectiveness and is socially approved.

The weakening association between education and occupational position in Poland indicates a new phenomenon which contradicts expectations of the growing role of meritocratic selection. Within our project we will investigate this linkage, focusing on school-to-work transition defined in terms of employment chances in the labour force. According to international research, this association is stronger in economies favoring *occupational labor markets* (OLM), which channel the supply of various qualifications to the occupational structure (Germany, Austria, some Scandinavian countries). Vocational qualifications are used by employers to organize jobs and to allocate persons among them. A large number of occupation-specific skills are taught in specific school tracks. Firms are often collaboratively involved in the training programs, for example, by provision of apprenticeship schemes. Viewed from the perspective of individual strategies, the OLM may be regarded both as an asset and a handicap. It is an asset insofar as it provides graduates of vocational school with avenues to secure jobs. Yet, vocational education is less prestigious than academic education. The more successful students tend to attend academic programs. Moreover, strong differentiation into vocational and academic education increases inequality of educational and occupational attainment with working class students being disproportionately placed in vocational programmes which teach useful skills and label students as dull and unmotivated (Shavit 1990).

Vocational tracking appears weaker in countries such as Great Britain or Ireland, in which schools provide individuals with general education, while experience and specific skills are gained on the job within the *internal labor markets*. Educational qualifications are not valued for the skills they represent but for indirect information – they provide employers an indication of work habits, abilities or job discipline about job applicants (Muller and Gangl 2003; Shavit and

Muller 2003). Under the OLM system students are separated early on into tracks which differ greatly in curricula and in the odds that students would continue to the tertiary level which makes the link between education and occupational more rigid. By contrast, in the ILM system, tracking begins at a later age, the curricula of various tracks are somewhat similar, there is more inter-track mobility, and, consequently, correlation between educational qualifications and labour-market outcomes is lower (Marsden 1997; Hannan et al. 1999; Shavit and Muller 2000).

Most educational systems offer a mix of general and specific skills. The system of vocational schools, which was well developed in the communist Poland, was closer to the OLM system. Perhaps the departure from this system, indicated by a decreasing number of vocational schools, and a rising number of general high schools, contributed to a weakening impact of formal education on allocation to occupational positions. Another macro-structural factor conditioning the decline in the association between education and occupational position relates to a growing disparity between demands of the labour market and the types of education received. A considerable growth of tertiary education produced a surplus of graduates who could not be absorbed by the occupational system, especially by the category of higher managers and professionals that did not significantly increase. In the 2000s the latter category accounted for only 6–9% of the adult labor force, which is much less than in the majority of European countries (Domański 2007). Since the supply of highly educated candidates did not find a sufficient demand in the occupational structure, the market value of education had to decrease. Of course, inflation in the value of college diploma only partially explains the weakening impact of education on occupational position since it refers only to the youngest cohorts who are just at the beginning of their occupational careers.

The conclusions of our study will be important for understanding education-job matches. Once previous studies on the education-labour market linkage in Poland did not use information on the entry to the labour market, one can hardly determine what institutional relationships are involved in the transition from school to work, and generally – how Polish case compare with other countries. What we know is based on findings concerning relationships between educational level and employment variables established at the time of survey that is at the later stage of the occupational career. According to the analyses based on European Social Survey 2004, compared to Western European countries, in post-communist societies educational qualifications have a greater impact on job placement (Domański 2006). This suggests that Poland is still patterned more according to the more selective OLM system. We also know that in Poland this relationship was stronger in the 1980s than in the beginning of 2000s (Domański et al. 2008) which may indicate that during Communism recruitment to jobs was closer to

the OLM system than under transformation to the market society. The decline of correspondence between level of education and occupational position is not the same as saying that contemporary Polish society is less meritocratic. It may be the case that reduced effect of education on job placement was compensated by stronger effects of other qualification credentials that influence occupational destination; although, it might have been also replaced by the growing role of the resources of the parental family in the career development.

We derive three hypotheses concerning the significance of education for the chances of finding employment, and for class position in the first job. Our first concern relates to the shape of these effects. The question is as follows: to what extent does education, qualifications, and competences measured by examination results and other achievement tests (used by us for the first time in educational studies in Poland) increase odds of access to higher occupational positions? We know that in most of the countries for which such data exists the class-education linkages do not correspond to the linear model. It means that if (for example) a university degree produces the most predictable outcome, with the strong positive association with membership in the upper service class, the chances of entry to semi-professional categories (compared to routine clerical jobs) are not increased by any higher qualification (Muller and Shavit 2003). Thus, although tertiary education provides a specific advantage in access to the upper service class, it is not simply a matter of “the higher the level, the higher position”, as far as shape of this relationship is concerned.

Following this assumption, we will test hypothesis three about the non-linear effect of educational achievements on chances of obtaining employment and quality of first job. It posits that matriculation or lower tertiary education tends to lead to higher (service-class) positions, and that there is a gap in educational structure – when it translates to occupational hierarchy – with much lower advantage of the lower educational levels in competition for jobs. We establish where this gap occurs.

As to the alleged devaluation of the labor-market value of educational credentials we expect it to differentiate according to specific educational levels. One can assume that general decline in effect of education on current occupational position (Domański et al. 2008) most drastically displays in weakening link between the university diploma and entry to higher managers and professionals – which are the Polish counterpart of the upper-middle class. The most important source of these processes would be expansion of tertiary education resulting in an increase of the “supply” of the educated population that might diminish the market value of a university diploma. When the educational diploma undergoes devaluation, employers have to resort to additional criteria in recruiting applicants to occupational positions. Since Poland is no exception and the educational

attainment is indeed on the rise, it seems likely that the returns to different levels of education diminished; today, it is not just formal education that counts but also several other factors.² In line with this argument, with hypothesis 4 we examine the situation that, due to rapid proliferation of higher education that is not paralleled by adequate increase in number of the highest occupational positions, the allocative power of the university diploma diminished. If this phenomenon really took place, it would be the first empirically diagnosed case of „over-education” in Poland, reflected in mechanisms of social stratification.

The third group of hypotheses recognizes the role of vocational education in governing life course. Consistent with above arguments – that each type and level education should distinctly affect the prestige and class position of the first job – we expect that there is a positive association between vocational education and skilled work because of the strong link between vocational schools and industry and because of the system of industry unions which negotiate work contracts pressing for standardized rules for personnel recruitment, job allocation, and pay. As union membership is dominated by skilled workers, there is a pressure to guarantee the pay-offs for the training investments made by their members by making job allocation and pay scales dependent on educational credentials.

Across 13 societies, attendance at vocational schools was a significant predictor of access to skilled (as opposed to unskilled) manual work, controlling for level of education, gender, and educational arrangements (Muller and Shavit 2003: 33). In Poland it was a core element of the occupationally segmented structure of the working class that served as a typical dead-end channel of entering the labor market. Vocational training system was extensively developed under the Communist system to provide manufacturing and economy with a skilled labor force, especially in the accelerated industrialization of the 1950s. In 1988 skilled workers still were the biggest segment of social structure (accounting for 26% of the actively employed) and unskilled workers made 9.6%.

This state of affairs changed rapidly in the last two decades. Between 1995 and 2011 number of these schools declined from 2625 to 1763, pupils from 722,000 to 225,000, and graduates from 216,000 to 77,000 (Rocznik Statystyczny 2011: 333). It by no means implies obliteration of the skilled-unskilled dichotomy, especially since skilled workers remain the biggest category – in 2011 they constituted 20% – and unskilled workers slightly increased – 12.2%. In this context we anticipate (hypothesis 5) that the locus of intergenerational reproduction of this division continues to reside in the vocational school based tracking.

RISK OF SOCIAL EXCLUSION, SEGMENTATION OF THE LABOR MARKET, AND NON-STANDARD JOB FORMS

Clearly, it is not solely the distribution of educational qualifications that determines the occupational positions reached. These links are also affected by the economic demand for educational labour and by the institutional features of the labour market. As regards institutional features, we will examine the role of labor market segmentation. Different explanations of how labour markets operate have been proposed by a number of economists dissatisfied with neoclassical theory. Some of these alternatives simply extend neoclassical models to include the effects of various institutional factors, reject a predominantly competitive analysis, and emphasize instead the fragmented nature of labour markets and the importance of institutional and social influences upon pay and employment. A common label for these alternative approaches is segmented labour market theory.

The underlying theme of these approaches is that the labour market should be viewed as a collection of parts, or segments. Labor market segmentation (LMS) may be defined as a historical process whereby political-economic forces encourage the division of the labour market into separate submarkets distinguished by different LM characteristics and behavioral rules. Segments may cut horizontally across occupational hierarchy as well as vertically. Dual labor market theory maintains that there are two sectors of the labor market: one with high wages, good working conditions, stable employment, rewards for education and job experience and opportunities for advancement (primary sector) and one with low wages, bad working conditions, unstable employment, no rewards for education or job experience and no opportunities for advancement (secondary sector). The secondary market can persist because primary jobs are rationed – not everyone who wants and is qualified for a primary job is able to obtain one. In particular, women and minorities face discrimination in obtaining primary sector employment (Piore 1980).

Apparently, labor market segmentation more clearly displayed since the 1970s, after the slowing down of economic growth in Western societies. Facing recession, employers apply various recruitment strategies that allow them to reduce costs on labor. They are unwilling to undertake large-scale investment unless the product demand is stable and predictable; when demand is variable, labor-intensive techniques are preferred. Firms with stable product demand create primary conditions of employment, including job security. Firms which face unstable demand operate in the secondary segment of the labour market. In case of a downturn, employers seek to increase the share of secondary jobs, emphasizing the virtues of functional flexibility, in terms of workers being able to undertake a number of different tasks (multi-skilling) or having temporary contracts to adapt to changes in demand for services and products.

In recent years increasingly prominent ways of organizing work have become non-standard employment relations such as part-time work, temporary help and contract company employment, short-term and contingent work, and independent contracting. Highly flexible employment contracts can suit those at the margins of the labour market; for example, students staff hotels for part-time or weekend shifts which fit in with their study commitments. Such transient workers are likely to form an increasing proportion of the workforce in response to changes in higher education funding. In other examples, colleges provided piecework contracts that allowed people to pursue one or more careers, such as musicians supplementing their income with some teaching work.

What is more important, perhaps, is the impact of flexible contracts on the mainstream labour force and on employment opportunities for socially excluded groups. If employers can meet their staffing needs with part-time or casual employees, they will have few incentives to create more stable job opportunities which imply longer-term commitment to members of the workforce. On the whole, most employers find it more efficient (and financially beneficial, in the long term) to employ most workers on permanent contracts and to offer them terms and conditions which nurture a high-trust psychological contract and workforce stability. Nevertheless, to the extent that less highly skilled jobs can be fragmented without damage to productive or service quality – as in hospitality and retail part-time employment – flexible working is likely to increase (Kalleberg 2000).

Turning to Poland, we will explore these processes from perspective of sorting high-school students into different career tracks. Hypothesis 6 concerns the association between educational qualifications and employment status. Once colleges and universities are ranked hierarchically – with some of them being more prestigious than others and providing better quality of education – there is more pressure to attain education in “better” educational institutions. Consequentially – and on the declining labour-market value of academic credentials – jobs are unevenly distributed between colleges and universities with graduates from the top universities being more likely attracted by the “core” LM’s whereas firms located in secondary LM’s recruit candidates from the bottom-level universities. This tendency may be reinforced by higher prospects of finding more lucrative jobs by applicants of regular studies whereas completion of the part-time programs (so-called “evening” schools) provides tracks for more “peripheral” jobs.

Our next hypothesis concerns non-standard job forms. Although the number of diploma-holders and university graduates in precarious jobs continued to increase, and professionals are also enrolled on temporary contracts, firms still offer them permanent jobs more frequently than the less educated. We advance hypothesis seven that despite deteriorating opportunities for school-leavers on the whole, tertiary education still provides advantages over lower levels of education

in that working in non-standard-jobs – as in the cases of university graduates and professionals – serves as a passage to permanent jobs and to successful job placements; whereas in the case of the poorly educated workforce, entry to non-standard jobs traps them in dead-end positions with lower attachment to the labour force and limited advancement opportunities.

It is easier to get better education and to find permanent employment for mobile individuals who are willing to change their place of residence to improve their socio-economic position. Western middle class families are more ready to pay a very high price for the best possible education for their children. In order to find out whether these strategies are already pursued in Poland we test hypothesis 8 saying that middle class families are more likely to move to areas with better schools for the sake of their child's education. Accordingly, individuals originating from the professional and managerial families (hypothesis 9), are more eager to change residential location to find better employment.

ORIGINAL CONTRIBUTION

The scope of our project follows the main themes of the research that has been conducted in advanced economies, showing the specific characteristics of the Polish case. Five aspects of the study listed below are of particular importance.

1. As we have shown, Poland is one of the countries that have faced “inflation” of education at the university level. It manifests in the decreasing strength of relationship between education, socio-occupational position and other pay-offs. Increase in educational quantity has not caught up with changes in the occupational structure. In particular, the number of jobs requiring higher education has not increased, which is a situation that forces some graduates to seek employment in the occupational categories with lower status (Freeman 1976; Baudelot and Claude 1989; Borghans and de Grip 2000; Teichler 2000; Domański 2008). The aim of our project is to monitor these phenomena in the coming decade. Longitudinal data will allow us to analyze the factors that affect the decreasing value of the university diploma and to systematically pursue consequences of this for individual attitudes and life choices. Drawing on consecutive waves of the panel study we will be able to make predictions about the educational and occupational trajectories in the longer run.

2. The majority of existing studies used only level of education (tertiary, secondary, elementary) and rarely focus on more detailed criteria of meritocratic occupational selection such as schools' rank or students' academic achievement. In this project, we will be able to combine measures of individual educational attainment with information on the basic cognitive skills, based on the use of standardized and internationally recognized instruments and methodology.

3. In the analyses of the role of institutional factors in determining school-to-work transitions we will take into account the characteristics of schools and other higher education institutions (referred above as the “quality of education”) and their allocative power in the occupational structure. Through this we gain a deeper insight into the mechanisms shaping educational trajectories.

4. Concerning institutional underpinnings the novelty of our approach is to take into account the role of the labour market segmentation as a determinant of occupational career. Different aspects of the LMS are mediating links in these processes of sorting out individuals with the same level and quality of education to unequal positions.

5. The study will create a dataset that includes a variety of students’ skills measures and types of school characteristics into the public domain.

SIGNIFICANCE OF THE PROJECT

Whereas education is positively valued for equipping individuals with general knowledge, skills, and meritocracy, it is also well-recognized core link in intergenerational transmission of class barriers. In our project we develop several hypotheses regarding educational inequalities and the role of credentials in sorting, selecting, and placing of workers into jobs, alongside with the importance they attach to the institutional embeddedness of this processes.

First, results of the panel study will deliver data about the openness of Polish society. We establish to what extent ascribed characteristics, related to parental family, are replaced by meritocratic recruitment to schools and entry to employment. Does selectivity of the educational system increase or decline? To what extent do divisions into general and vocational tracks (with dead-end schools at the secondary level) reinforce intergenerational transmission of benefits or poverty?

Linkages between education and labour-market outcomes on the first job are characteristics of the “absorptive” capacities of the labour market. On the one hand, it is important to assess employment prospects of graduates from schools of differing ranks – on the other hand, examination of transition from schooling to work will provide information on matching educational with occupational structure. Once academic education is seen as an antidote to the risk of unemployment, relative to high-school drop-outs and graduates of vocational programmes, the empirical exploration of whether expansion of the higher education generates unemployment for college graduates which lead to wastage of resources and social instability is needed.

Regarding practical implications of our research, they concern an effective educational policy by the state and enhancing quality of education by institutional

reforms. It is of special interest of how the allocation of individuals to occupational positions is structured by factors other than the amount of education. We will interpret our findings as supporting (or rejecting) the view that person's level of education is crucial for his/her educational attainment. With respect to social origin, similar issues arise. By exploring the nature of this association we will gain some insights into both the intergenerational reproduction of social inequality and the process of social mobility prevailing in Poland. For estimating these effects we use battery of questions, repeated in each wave, on how much pupils/students are financially supported by parents, and on parental standard of living.

The project seems to directly respond to demands on evaluation studies that are used in evidence-based policy by agencies of state. Given that such evaluation should rely on "hard" data, shedding light on causal relations between investments and outcomes, we emphasize that causal associations can be only approached under panel design. Our research may be regarded as a departure point for systematic evaluation of educational system in Poland in addressing the "big" issues raised by general theories such as modernization of Polish society, its credentialisation, raising of meritocracy in allocation people to jobs, demise of traditional Polish "intelligentsia" – to be replaced by Western-like professional categories – and so on. In the case of credentialism, we figure how much formal education becomes supplemented by alternative career paths, such as on-the-job training, life-learning, and the like.

CONCEPTUALIZATION AND MEASUREMENT

General plan of the study

Our research is designed to be a panel study based on the two data sets taken from surveys carried out in 2009. The first comes from the PISA 2009 conducted by the Institute of the Philosophy and Sociology of the Polish Academy of Sciences (IFiS) under the auspices, and on the request of, the Ministry of Education. Intention of this study was to assess the level of skills of 15 year-old students (national representation of gymnasiums' attendants of the third grade) in the area of reading, mathematics and science. It aimed to understand what factors conditions these skills (OECD 2009a). From the point of view of methodology of international comparative research, PISA may be regarded as a milestone in educational field with respect to setting standards in data collection, procedures, implementation, documentation, and the statistical analysis (OECD 2009b). The second data-set comes from a national sample of the first grade students of secondary schools, researched also by IFiS. In both surveys students were asked to fill the form with permission to participate in a future research, and with contact details. This enables us to pursue them in a follow-up study.

Because students who participated in PISA 2009 were derived mainly from the two cohorts – born in 1992 (national sample of pupils from first class of secondary schools) and 1993 (national sample of gymnasiums' students) – we plan to approach them in 2013, and 2014, when they are 21 years old.

METHODOLOGY

Measurement of skills and other characteristics

Drawing on the PISA design provides us with a unique opportunity to make use of various characteristics of qualifications that are relevant in transition from school to workplace, and which add to educational credentials obtained in a formal way. We exploit experiences of the 2009 study in which information on three types of the skills were collected, namely: (i) reading literacy (131 tasks included in PISA test), (ii) mathematical literacy (35 tasks), (iii), science literacy (53 tasks). Based on this information, following methodology applied in the PISA, three measures of skills were constructed. It was shown that they are valid and reliable indices of skills (OECD 2009a).

Using “students’ questionnaire” 2009, we will also replicate measurements of their time spending on learning, tutoring, using the computer for learning, scientific activities, student’s assessments of their school, and relationships with teachers and peers. Additionally, we will implement “parental questionnaire” with items on education of parents, expectations for the future educational career of the child, and parental involvement in children’s learning. These data are supplemented with information about students’ school obtained from questionnaire filled out by school principals.

Sample design

The two combined samples of 2009 will be followed-up in 2013–2014 study, with restrictions to respondents who agreed in 2009 to take part in the future research, and for whom measures of skills are available. Students who for various reasons were not able to solve the test, and complete the questionnaire were excluded in accordance with the standards of the International Association for the Evaluation of Educational Achievement. Effectively, the combined, total sample of 2013–2014 will comprise 7843 students, consisting of 4447 lower-secondary schools students and 3396 upper-secondary schools students. It is representative for two cohorts: born in 1992 and born in 1993.

It was drawn according to two-stage stratified sampling scheme with schools as primary sampling units, and students or classes as secondary sampling units. In case of the lower-secondary school students, stratification was made according

to the sector of school (public vs. non-public), and in case of the upper-secondary schools pupils – according to school type (general high-schools, profession oriented high-schools, vocational secondary schools, and basic vocational schools). Schools located in the selected sectors and types were then systematically sampled according to the number of students and size of inhabitants in place of residence. This sampling design provides higher efficiency relative to simple random sampling from strata.

In the second stage, in the lower secondary schools sample, 30 students in each school were selected by simple random sampling without replacement, and in the upper-secondary schools sample – one class of the first grade were selected by simple random sampling. Detailed information about sampling scheme may be found in Polish PISA 2009 report (MEN 2009).

Planning and conducting the survey

Our research strategy will be to employ *Mixed Mode Research Design* (De Leeuw et al. 2008). The basic procedure for the collection of the information will be *face-to-face* interview, supplemented for inaccessible respondents with: online (web) questionnaires, CATI, and mail questionnaires. These additional modes will be employed only in case of respondents who definitely refuse to participate in *face-to-face* interview, and if interviewer failed to approach respondents in the first and second contacts attempts. We believe that *face-to-face* mode provides most reliable information in comparison to other techniques, especially in that it makes easier to convince respondent to participate in survey (Sawiński 2005).

To achieve high response rate and to minimize the risk of panel attrition the advance letter will be sent to the respondents with information that it is the continuation of research carried out in 2009 by the Institute of the Philosophy and Sociology of the Polish Academy of Sciences, and with presentation of selected results from this study. It may facilitate to convince respondents about the usefulness and importance of this study, increasing response rate. When going to fieldwork, interviewers will be motivated by financial incentives to make many calls in approaching non-available respondents. We also plan the extensive control of interviewer's job with respect to completion of interviews and non-response cases.

Methods of analyses

Analysis of educational inequalities and transition from school to employment requires using various statistical techniques. In studying relationships between aggregate measures – like characteristics of schools or residential areas – and variables defined on individual level, we use *multilevel modeling* which is most relevant for analyzing hierarchically organized data. Using multilevel models

allows avoiding bias in estimation of parameters and standard errors, necessarily involved in clustering of individuals in schools or residential locations. In seeking for causal relationships we apply structural equation modeling that combines confirmatory factor analysis with regression models. Especially useful in analyses of the panel data will be multilevel structural equation models that makes it possible to control for correlations between measurement errors which are in-built in case of the repetition of measurement of the constructs in subsequent panel waves. Finally, to deal with challenging question of missing data resulting from panel attrition we will use: (i) maximum likelihood estimation with missing data, (ii) Bayesian multiple imputations, (iii) propensity score matching methods, and (iv) Heckman's selection models.

NOTES

- 1 Contributors of this project are also involved in conducting the Polish edition of PISA.
- 2 From 1995 to 2010 the number of college or university graduates grew from 89 to 479 thousands (*Rocznik statystyczny* 2010: 341).

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