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Do local characteristics matter? Secondary school track choice in Poland

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Abstract

This paper examines to which extent the school track choice in Poland between vocational and general education can be attributed to variation of personal characteristics and to which extent to variation of the local conditions. We assume that not only a family background, but also local characteristics are important determinants of school track decisions.

As we make distinction between three different types of secondary schools: basic vocational, secondary vocational, and general secondary, and we want to examine the county specific characteristics we apply a multilevel method for multinomial logistics regression to address the issue.

Our results indicate that both child's characteristics such as sex and school performance and characteristics of household are related to school track decisions. We also found that there is statistically significant variation in school track choice on the county level. Local unemployment rate is statistically significant determinant of school track decision and it also explains a great variation between counties. This finding is important in the light of EU regional cohesion policy aiming at diminishing regional disparities.

Keywords: secondary school track, school choice, local labour markets, multilevel modelling
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1. Introduction

Empirical studies confirm that the level and type of education determines future labour market prospects (Hanushek, Woessmann and Zhang 2011; Arum and Shavit 1995; Cedefop − European Centre for the Development of Vocational Training 2013), earnings (Mincer 1974; Psacharopoulos 1994; Brewer, Eide and Ehrenberg 1999), health status and even well-being (Grossman 2006; Hartog and Oosterbeek 1998). Therefore the secondary school track decision is a crucial turning point in the life of all pupils, and it is important to find out what are the main drivers of this decision. Majority of studies analyse the determinants of post-compulsory educational decisions (Averett and Burton 1996; Cappellari 2004; Checchi and Flabbi 2007; Dustmann 2004; Nguyen and Taylor 2003; Betts 2011; Rice 1999) while relatively less studies focus on tracking at the lower level of education. Our main goal is to address three research questions, related to secondary school track choice in Poland:

- *What is the role of socio-economic characteristics of family in the pupil's secondary school track choice?*
- To *which extent the local characteristics influence the school track choice?*
- *Do we observe in Poland the county specific heterogeneity of secondary school track choic*e?

We focus on the secondary school choice. It allows us to observe all pupils, as they are still at the compulsory education level, avoiding problem of selection, as the school dropout rate at this age is relatively small. Moreover, the majority of studies concentrate on individual and family related determinants of school tracking while only few take into account the characteristics of local educational system (Mocetti 2012), which is the main focus of our study.

This paper builds on previous empirical studies for Poland, which analyse the educational mobility of Poles (Domański 1997; Sokołowska 2014). However to our knowledge there are very few studies, which are aimed at examining the local characteristics as determinants of secondary school track choice in Poland (Putkiewicz and Zahorska 2001).

Due to character of our microdata, which is representative of young population in nine chosen regions in Poland, we decided to apply the multilevel analysis methods. This allows for more comprehensive analysis of the association of local conditions and tracking choices made my pupils and their parents.

The remainder of this paper is structured as follows. In the next section we describe educational system in Poland. Section 3 identifies possible determinants of school track choice based on previous empirical studies. Following section describes datasets used in the research. We then present methodological approach, and main results of our analysis. The discussion of results follows, and the summary and concluding remarks are given in the last section.

2. The school system in Poland

For better understanding of the secondary school track choice in Poland the knowledge of main characteristics of Polish educational system is essential. In Poland education is publicly funded and compulsory until the age 18. At the end of lower secondary education pupils take a final exam at age 16 and are allowed to choose any upper secondary school in Poland. The admission to upper secondary school is based on both coursework and on final examination results, and it is a stage when the tracking takes place. Pupils have several alternatives, they can choose: basic vocational school, secondary vocational or general secondary school.

Basic vocational school lasts three years and provides students with theoretical background and practical skills in numerous occupations, however, it only offers basic training, and it does not permit direct assess to post-secondary education.

Secondary vocational school during four years of training prepares pupils to work in a wide range of occupations, but also offers them a general curriculum. As a result pupils can take the final "maturity exam", which is required for further tertiary education. Both basic vocational and secondary vocational schools prepare pupils to take vocational exams in specific qualifications.

As for general secondary school it lasts three years and it prepares pupils mostly for post-secondary and academic track. At the end of three year program pupils take a final "maturity exam". The exam is not compulsory, however it is required for further tertiary education.

In the school year 2013/2014 19% of first year pupils in upper secondary education were in basic vocational schools, 37% had chosen secondary vocational schools, while remaining 44% were in general secondary schools (*Oświata i wychowanie w roku szkolnym 2013/2014* 2014). Although this proportion has been relatively stable over the last ten years in the late nineties the distribution of pupils between those three types of secondary schools looked different. More pupils were attracted to basic vocational schools (34% of first year pupils in 1997/1998), while general secondary schools had fewer pupils (31% of first year students in 1997/1998). Demand for different types of schools is closely associated with the situation of labour market. Each type of school provides pupils with different skills, qualifications resulting in different job or further educational career prospects. Dramatic decline in employment in publicly owned companies during and after transition period probably discouraged pupils to choose the basic vocational path, as workers with such qualifications were the most likely to experience long spells of unemployment. At the same time high returns to tertiary education in Poland (Myck, Nicińska and Morawski 2009) increased interest in general secondary schools which gave access to academic path.

3. Determinants of school choice decisions

Previous empirical studies indicate that parental background and local characteristics play an important role in shaping child's educational path. Below we present the review of the existing empirical studies.

3.1. Pupil's characteristics

According to the expectations pupils performance is a strong predictor of the school choice (e.g., Christensen, Melder and Weisbrod 1975; Borus and Carpenter 1984; Rouse 1994; Ganderton and Santos 1995; McElroy 1996; Hilmer 1998, 2001). Cappellari (2004) shows that pupils with better performance are more likely to choose general high school, rather than vocational. Study of Putkiewicz and Zahorska (2001) confirm those findings for Polish pupils. Test scores are also important for the post-high school decisions (Nguyen and Taylor 2003) and, as shown by Mocetti (2012), failure at earlier stage of education is a good predictor for dropping out behaviour and for choosing vocational or technical school.

3.2. Family characteristics

There is a wide literature on relationship between family background and pupils' achievements (Haveman and Wolfe 1995; McLoyd 1998; Bradley and Corwyn 2002).Yet, it is not only crucial for school performance but also influences school track choice (Ellwood and Kane 2000; Checchi and Flabbi, 2007). Type of household, parents' education and their occupational status are significant predictors for drop-out and, if education is continued, for school track choice.

Dustman (2004) shows that probability of going to high school comparing to general school with vocational preparation (*Hauptschule*) rises with parental educational level. Similar conclusions are drawn from an Italian study of high school attendance, which demonstrates that pupils from families of higher occupational status tend to select into general schools (Cappellari 2004). Also in the Polish literature we find similar evidences. Herbst and Sobotka (2014) using descriptive statistics for Poland show that having parents with university degree increases chance of being enrolled in general secondary school, while having lower educated parents decreases this probability. Sawiński (2008) also noticed, that in Poland school choice is determined by parental education level. Similar pattern arises from another Polish study by Putkiewicz and Zahorska (2001), in which authors also find that the parental background has stronger impact on boys' than on girls' school choice.

A recent literature suggests also that apart from parental education also family income (Cameron and Heckman 1998; Ellwood and Kane 2000; Hilmer 2001) and

parents' occupational status (Nguyen and Taylor 2003) play an important role in school choice decision. Family size, number of siblings, and living with a single parent are also found to be related to school choice decisions (Averett and Burton 1996; Nguyen and Taylor 2003).

3.3. Local characteristics

If the availability of certain types of schools in the local area is limited, the demand for particular school might not be met, and the actual choice is determined by school accessibility and proximity. For the Netherlands Sá *et al.* (2006) show that geographical accessibility is important factor influencing the transition from high school to post-secondary education, or labour market. Similar study done in Irish context by Cullinan and *et. al.* (2013) adds additional perspective, demonstrating that for pupils from a low socio-economic background the choice of school is more influenced by the school proximity and school distance than for pupils from wealthy families.

Some studies also confirm that level of urbanization plays an important role in determining the school track decision (Riphahn 2002; Nguyen and Taylor 2003). The more densely populated area, the higher asses to different types of school and the lower distance to them. Local labour market characteristics could also influence the choice of the school type. For example prospective pupils might perceive as more relevant vocational training than general one in an area with high presence of industry and low unemployment rates. Several studies in which local labour market characteristic are considered as explanatory variables for a decision to continue post-compulsory education address this issue (Rice 1999; Carmeci and Chies 2002; Mocetti 2012). Mocetti (2012), considering four possible choices for a pupil: – not enrolled, general school, vocational school, technical school and art school, found that higher unemployment rates reduce probability of being enrolled in vocational school. Similar evidences are presented by Rice (1999), who shows that for England and Wales, staying in education is more probable in regions with higher unemployment rates. Economic recessions and growing unemployment rate also influence the behaviour of young people, who are more likely to remain in school and continue their post compulsory education. In the Polish context Putkiewicz and Zahorska (2001) add an additional perspective claiming that the differences between school tracks are strongly marked by the differences between rural and urban areas.

Clearly, the above literature shows that there is a vast series of potential determinants of school track choice behaviour of pupils with respect to both family related and local characteristics.

4. Empirical framework

This paper seeks to provide explanation to research questions presented already in the introduction:

- *What is the role of socio-economic characteristics of family in the pupil's secondary school track choice?*
- *To which extent the local characteristics influence the school track choice?*
- *Do we observe in Poland the regional – county specific heterogeneity of secondary school track choice?*

To provide answers to the above questions we assume that each pupil in lower secondary school have a possibility to choose from three alternatives[1]: a basic vocational, a secondary vocational, and a secondary general school. Due to character of our dependent variable we use multinomial logit model to asses the relation between our independent variables (family and child characteristics and county characteristics) and our outcome: school choice.

The probability that the subsequent school choice for student i is a school type k, conditional on regressors X (research questions 1 and 2), is as follows:

$$\Pr(Y_i = k \mid X_i, Z_i) = \Pr(\omega X_i + \tau Z_i + \epsilon_i > 0),\ k = 0,1,2 \tag{1}$$

where: k equals zero if a pupil chooses a vocational secondary school, equals 1 if he/she moves to basic vocational school, equals 2 is she/he chooses general secondary school; X_i is a vector of individual and family characteristics; while Z_i is a vector of county characteristics (it is equal zero in specifications, in which local characteristics are not taken into account); ε_i is an error term, independently distributed across unites and choice alternatives.

While applying the logit form, we obtain:

$$\Pr(Y_i = k \mid X_i, Z_i) = \frac{e^{\omega X_i + \tau Z_i}}{\sum_{k=0}^{2} e^{\omega X_k + \tau Z_k}},\ k = 0,1,2 \tag{2}$$

As the probabilities of all possible outcomes must sum to one, Pr ($Y_i = 0$) is known when we already have probabilities for the two other alternatives (k = 1,2), so the equation 2 becomes:

$$\Pr(Y_i = k \mid X_i, Z_i) = \frac{e^{\omega X_i + \tau Z_i}}{1 + \sum_{k=1}^{2} e^{\omega X_k + \tau Z_k}},\ k = 0,1,2 \tag{3}$$

We then transform the equation to log likelihood, which is then estimated using maximum likelihood.

[1] Although the education is compulsory until age 18 some of the pupils might drop out from school, or repeat the same grade, which broadens the possible choices. However, those situations are relatively rare in Poland, and such observations do not occur in our sample.

To approach third research question we additionally estimate the effect of county (j) using multinomial logit with a random intercept, so the equation (1) will now take the following form:

$$\Pr(Y_{ij} = k \mid X_{ij}, Z_{ij}) = \Pr(\omega X_{ij} + \tau Z_{ij} + \gamma_j + \epsilon_i > 0),\ k = 0,1,2 \quad (4)$$

where γ_j is a random intercept for a county. It means that intercept of regression lines is allowed to v ary randomly across counties.

All models are estimated using the gllamm command (Skrondal and Rabe-Hesketh 2003) in STATA. It applies the numerical integration by adaptive Gauss-Hermite quadrature for obtaining marginal log-likelihood which is maximized by numerical first and second derivatives.

5. Data

The analysis of school track choice is based on data from the research project: "A Study on the Economic Determinants for Objectives and Guidelines on Allocation of Private and Public Education Spending in Poland (BECKER)"[2], conducted by the Educational Research Institute (IBE) in 2013 and 2014. This study was conducted in nine selected Polish counties (four big cities and five counties with rural and urban areas) representing different types of wealth, urbanization and school quality. The main objective of this study was to describe the role, motivations, and the scope of financial contribution of public and private institutions directly or indirectly engaged in the process of education. For our analysis we use two datasets collected within BECKER project:

- County Adult Population Survey (respondents: individuals age 20 and more, 2013). The Survey includes opinions and preferences of adults (20+) about local governance, local budget structure and public spending on education. It includes also information about socio-economic status and social capital in the county.
- Household Survey of households with children aged 3−19 (respondents: parents, children aged 14−19, 2013). The Household Survey focused on parental expenditures on child's education. Therefore there are many questions about educational spending and its context, it includes also data about participation in extra-curricular activities. The survey includes also questions about the socio-demographic, economic and cultural status of the household, parental aspirations towards their child, parents' and teenagers' opinion about school,

[2] Data collected within the systemic project "Quality and effectiveness of education – strengthening of institutional research capabilities" executed by the Educational Research Institute and co-financed from the European Social Fund (Human Capital Operational Programme 2007–2013, Priority III High quality of the education system).

teachers and local infrastructure for children and youth. Detailed questions were related to only one child in the household, randomly selected to the study.

We focused on the people age 15−18, for whom we have information about the type of secondary school they have attended. Our sample consist of 1230 young respondents of which 13% attend basic vocational school, almost 35% attend vocational secondary school and 52% are in general secondary school. The type of school is our dependent variable.

Vector of independent variables can be grouped into (a) individual level characteristics: gender and school marks; household characteristics: parental education and material situation of family and (b) local level characteristics: evaluation of access to postsecondary schools, indicator of urbanisation of the region, and an indicator of regional unemployment. To construct the local characteristics we used data from the County adult population survey (BECKER) and from Polish National Statistics Office.

The choice of these particular independent variables was mainly motivated by the evidence from previous empirical studies. We refer to them below, when providing the definitions and explanation of our regressors.

The average school marks are based on the average marks from all subjects two years before the interview and were provided by respondents. The higher score the better educational achievement. Previous studies show that the educational achievements are substantial for future choice of school track and school-or-labour decisions. Pupils with better performance are more likely to choose general education (Putkiewicz and Zahorska 2001; Cappellari 2004) or stay in post-compulsory education (Nguyen and Taylor 2003).

Parental education is defined as the highest level of education completed by any of parents and this information was provided by a responding parent. We decided to include this indicator of parental human capital, as previous empirical studies indicate that those are important drivers of children school choices (Checchi and Flabbi 2007; Cappellari 2004). Also material situation of the household was self-defined by a parent, who participated in the survey. In our analysis it is a binary variable coded "1" for those who agreed that they have enough resources to cover all required expenses, and for those who do not need to save even for considerable extra expenses. Previous empirical studies demonstrate that those socioeconomic characteristics of a child and a family are important determinants of the school track choice (Cappellari 2004; Checchi and Flabbi 2007; Dustmann 2004).

Descriptive statistics of individual level characteristics are presented below. They suggest that there are differences in the personal and family characteristics between pupils of different types of schools. Girls are more likely to be in general secondary schools than in technical or basic vocational. As we can also see the average school marks and parental background (education and family financial situation) differ by school types.

Table 1. Descriptive statistics for individual level variables

	Basic vocational school (13%)	Vocational secondary school (35%)	General secondary school (52%)	Whole sample (100%)
Females	26.08%	43.55%	59.81%	49.75%
Average school marks	2.82	3.71	4.72	4.12
Parental education: tertiary	3.72%	13.81%	32.86%	22.43%
Parental education: vocational secondary	22.36%	31.61%	30.37%	29.76%
Parental education: general	10.55%	13.11%	16.66%	14.63%
Parental education: basic vocational or lower	63.37%	41.47%	20.11%	33.18%
Good material situation	1.86%	9.36%	18.22%	13.01%

Source: own calculations.

If the distribution of pupils of upper secondary schools in all counties in Poland remain on the similar level then we would hardly find arguments that the local characteristics matter. Yet, in our sample there are 8% pupils of basic vocational schools in pruszkowski county and as much as 29% in sępoleński county. Based on the previous empirical studies we could expect that the part of this variation is explained by observable individual characteristics of students and their family. In the Appendix we present descriptive statistics by type of school and county. These results indicate that indeed counties differ in respect to socio-economic profile of families and characteristics of students.

We also expect that local characteristics can be important factors explaining the county variation in school type choices. As a proxy for school accessibility we use opinions from the County population survey. The respondents were asked to asses the accessibility of secondary general and secondary vocational schools in their county on the scale: very bad, rather bad, rather good, very good. We constructed an indicator which shows the share of positive evaluation (rather good, very good) in the total number of answers. Although this is a very subjective measure, it seems appropriate to be applied in our study, as quite often the common opinion and beliefs shape real choices.

The second indicator is based on data from the Local Data Bank, provided by the National Statistical Office, and it depicts the share of urbanised area in the total county area. The more urbanised areas the higher accessibility to upper secondary schools. We assume that this will be especially important for those choosing basic vocational or secondary vocational schools as the general upper secondary schools are more uniform, and not so specialised. A pupil who would like to continue edu-

cation in vocational profile will more easily find the range of specialised schools in a larger, more urbanised settlement than in the small town.

The same dataset was used to construct the indicator of local unemployment, which is the share of unemployed in total population. Previous studies show that the situation and structure of labour market may influence the educational choices of the pupils (Carmeci and Chies 2002; Rice 1999).

Descriptive statistics by county are presented below.

Table 2. Descriptive statistics for local level variables

County	głogowski	sępoleński	pruszkowski	Tarnobrzeg	sokólski	Siemianowice Śląskie	giżycki	Poznań	Świnoujście
Good access to general schools	41.47%	44.73%	50.72%	55.32%	40.38%	53.76%	63.63%	72.93%	43.15%
Good access to vocational schools	38.97%	42.96%	49.62%	54.29%	38.14%	49.23%	62.95%	70.34%	41.86%
Share of urban area in total area	7.97	3.34	23.06	13.66	3.48	55.88	3.65	43.48	8.55
Share of unemployed in total population	10.30	14.88	2.83	11.58	7.65	6.36	8.67	1.86	5.23

Source: own calculations.

6. Results

We first estimate the multinomial logit ignoring the fact that pupils are nested in counties. In the first specification we include individual data. In the second one counties characteristics are also accounted for. In model 2 we additionally include variables from a county level to check if they have a direct relation to the pupil's school choice.

Some of our variables are related to each other, the pupil's sex is correlated with the average marks, while the highest level of parental education is correlated with the material situation of the household. This induces the multicollinearity, which still leaves our estimates unbiased but could lead to the increase of standard errors. However, the correlation between independent variables is not very strong and the correlations between each of them and our dependent variable are much stronger, so the multicollinearity issue is abstained in the further analysis.

The relative risk ratios from a multinomial logit are presented in Table 3. Our outcome is a secondary school choice which consists of three possibilities: basic vocational, secondary vocational (our base category) and general secondary school. First we can notice that a gender variable is statistically significant in both specifications. Being a woman decreases the relative risk ratio of choosing basic vocational versus secondary vocation school, and have an opposite effect for the general secondary over vocational secondary school choice. Also yearly average school grades are significant in both specifications, indicting that a teenager with better grades is more likely to attend a general secondary than secondary vocational school. An increase in school grades by one unit decreased the relative risk for the basic vocational school relative to secondary vocational school by a factor of 0.58 (Model 2: 0.57). Having parents with tertiary education diminishes the relative risk of choosing a basic vocation school over a secondary vocational school, while increases relative risk of choosing general over vocational secondary school.

Table 3. Multinomial logit results − Relative Risk Ratio

	Model 1	Model 2
Basic vocational school		
Gender	0.587*	0.585*
Average school marks	0.577***	0.569***
Parental education: tertiary	0.216***	0.227**
Parental education: vocational secondary	0.555*	0.575*
Parental education: general	0.622	0.642
Good material situation	0.334	0.370
Good access to general schools		0.000
Good access to vocational schools		2.6e+07
Share of urban area in total area		16.523
Share of unemployed in total population		7.0e+04***
General secondary school		
Gender	1.578**	1.574**
Average school marks	1.653***	1.671***
Parental education: tertiary	3.800***	3.652***
Parental education: vocational secondary	1.728**	1.713**
Parental education: general	2.281***	2.195***
Good material situation	1.297	1.292
Good access to general schools		0.000
Good access to vocational schools		4.0e+10
Share of urban area in total area		13.330*
Share of unemployed in total population		0.408
Maximized log likelihood	-975.497	-962.381
N	1230	1230

Base outcome is a secondary vocational school. Base category: for gender – men, for parental education-basic vocational education or below, for % of pupils-pupils in general schools, for % of population –population working in services. Exponentiated coefficients, * p<0.05, ** p<0.01, *** p<0.001.
Source: own calculations.

Coefficients in the Model 2, in which we incorporated the county characteristics, are similar to those in Model 1. Proxy used for secondary school accessibility is not statistically significant, while unemployment indicator is, but only in the case of basic vocational school choice. We also find that in more urbanised area pupils are more likely to choose general secondary schools over vocational secondary ones.

In above specifications we assumed that the association of each independent variable with the school choice is homogeneous regardless the regional characteristics. Yet we expected that secondary school choices may be county specific. Therefore we assume some unobservable heterogeneity between child and its family (level 1) and the county (level 2). To account for this run the set of multilevel models using a maximum likelihood method.

Model 3 builds on Model 1, and it is a random intercept model, in which we recognize that there are some constant unobservable characteristics different for each county and school alternatives – in this we estimate random intercepts for each county for each alternative: basic vocational school, and another random intercept for each county for general secondary school alternative.

Model 4 develops further Model 3 as we additionally account for county characteristics including them directly into the regression. Some background analysis (not presented here) demonstrated that the model is better fitted if county specific characteristics enter directly the regression on school choice, than if they enter indirectly via regression on the second county level.

These two specifications allow us to answer the following question: *Does the differences in regards to school track choice between analysed counties still exist if we control for certain characteristics of those counties?*

Table 4. Multinomial logit results with random intercept − Relative Risk Ratio

	Model 3	Model 4
Basic vocational school		
Gender	0.575*	0.574*
Average school marks	0.572***	0.571***
Parental education: tertiary	0.209***	0.216**
Parental education: vocational secondary	0.561*	0.572*
Parental education: general	0.633	0.631
Good material situation	0.357	0.372
Good access to general schools		0.000
Good access to vocational schools		2.9e+06
Share of urban area in total area		14.369
Share of unemployed in total population		3.1e+04**

General secondary school		
Gender	1.644***	1.645***
Average school marks	1.650***	1.655***
Parental education: tertiary	3.765***	3.717***
Parental education: vocational secondary	1.660**	1.660**
Parental education: general	2.245***	2.215***
Good material situation	1.314	1.308
Good access to general schools		0.000
Good access to vocational schools		7.7e+14
Share of urban area in total area		30.045*
Share of unemployed in total population		2.221
Maximized log likelihood	-968.269	-960.901
Variance at county level – basic vocational	0.154	0.107
Variance at county level – general secondary	0.089	0.047
Correlation between random intercepts	0.652	1
N of level 2	9	9

Base outcome is a secondary vocational school. Base category: for gender – men, for parental education-basic vocational education or below, for % of pupils-pupils in general schools. Exponentiated coefficients, * p<0.05, ** p<0.01, *** p<0.001.
Source: own calculations.

In Model 3 with child's and family's specific controls, the introduction of alternative specific random intercept on a county level improved the model log-likelihood. This indicates that Model 3 is better fitted to our data than Model 1. The outcome of Model 3 also suggests that there is a variance (0.154) between counties in regards to choice of basic vocational school, indicating that there is unobserved heterogeneity at county level. The variance of random intercept related to general secondary school is slightly lower (0.089), however, there is a correlation of random intercept for alternative 1 and alternative 2 equal to 0.652.

Though when we had included in the regression county specific characteristics (Model 4) both the model fit improved, and the variance of both random intercepts decreased, by around 30% for basic vocational education and 50% for general secondary education. This means that county specific variables explained a large share of heterogeneity, which we had identified in Model 1 and Model 3.

Moreover, the estimates for coefficients in Model 3 (Model 4) slightly changed in comparison to Model 1 (Model 2), however the direction of correlation remained unchanged.

7. Summary and conclusions

Our study showed that different specific family and child characteristics play role in the school track decision. Average school marks are the most statistically significant indicator of the choice – pupils with higher marks have higher probability

to choose general secondary education over secondary technical, and lower probability to be in basic vocational schools. This is an intuitive finding. The admission to higher secondary school is a competitive process, based on pupils' final exam outcome and average grades from a previous school year. Our analysis also confirmed that parental human capital depicted by parental educational attainment is associated with a child's school track decision. This finding is in line with previous evidence for Poland, which shows high reproduction of family human capital (Domański and Tomescu-Dubrow 2008; Sawiński 2008).

We also address the issue of regional disparities in regards to secondary schools choices. Our results indicate that our proxy for school accessibility is not statistically significant predictor of the pupil's choice. This result might be affected by the way how school accessibility is operationalised in our study. The access to upper school is measured by the opinion of all adult respondents in the given county, which might not reflect some recent changes of school availability and coverage. However, the second proxy for school accessibility, which is the share of the urbanized area in the total area of the county is statistically significant. In more urbanized counties pupils are more likely to choose general secondary schools than secondary vocational schools. The presence of universities or easier access to them in more urbanized areas could be a possible explanation here. Therefore, in the cities the academic path is more popular.

What seems to play more important role in explaining the country variation in school choice is an indicator of local labour market conditions. Higher level of regional unemployment is associated with higher chances of choosing basic vocational school over technical, vocational secondary schools. It is a well known fact that the highest unemployment rates are among population with the lowest educational attainment, thus this result is a concern. In part this correlation might be an effect of the lower socio-economic status of the given location, however, we control in our regression the parental education and financial situation of the household. Therefore, one plausible explanation might be a negative peer effect: while one lives in a county with low employment prospects, where unemployment is high among friends, acquaintances and extended family members his/her motivation for choosing academic track might be lower than for a similar student living in a county with thriving economy.

Another potential explanation is related to migration. Education in basic vocational schools lasts shorter than in secondary vocational but provides a student with practical skills, skills which are often required abroad. It is much easier to find a job while having practical preparation than a diploma of a general school, which again can attract certain students from less economically developed regions to basic vocational education.

One of the drawbacks of our analysis is relatively small sample size, especially in regards to those who stay in basic vocational schools; the sample is too small to

properly describe its characteristics in each of the analyzed counties. The further extension of this paper will focus on the potential endogeneity. This issue can arise if a pupil's decision to choose certain type of school is driven by some unobservable factors and those factors also influence the average school grades. Addressing this issue requires an instrumental variable estimation, however finding an appropriate instrument is a challenging task.

Another issue which needs further consideration is a better proxy for measurement of school availability and accessibility. The access to geospatial data which provides information about exact school location could be used to construct school proximity indices, which will eliminate the measurement problem.

One of the objectives of the reform of educational system in 1999 was the equality of educational opportunities. Much previous empirical research confirms that family background still matters. It turns out that the local conditions may be relevant too, as the main result of our study indicates that there is a county specific variation in the school track choice in Poland. This result needs further investigation, as it could have important policy implications. The fact, that in counties with higher unemployment rate pupils choose basic vocational education is also a concern. Basic vocational education does not give a direct access to higher education, as general or secondary vocational education does. Basic vocational education is underfunded in Poland and does not prepare properly for the modern labour market demands, as young people with basic vocational education have higher chance to be unemployed than their more educated counterparts. This leads to regional differentiation of the level of human capital and promotes the reproduction of the social structure.

Nevertheless, it is very likely that trends in school track choice will change as a result of the planned reform of education. According to the new policy, pupils will make a school track decision one year earlier, after eight years of general curriculum at the age of 15, as the lower secondary school (*gimnazjum*) are going to be terminated. It is difficult to assess the impact of this change, but for sure less mature students will have to decide about their future, which could lead to more misguided choices. Politicians also proposed changes in basic vocational schooling, which will be transformed into industrial education, in that it might change the negative associations with this kind of education, so we could expect some increase of interest in it. Moreover, there are some important changes planned in respect to secondary vocational schools. Since the introduction of new educational policy there will be a special maturity exam after vocational track. As a result graduates of these schools will not have access to master degree studies, as it is now, but could continue education only in vocational universities, which as we expect, could also influence their school track decisions.

It is difficult to estimate the overall impact of this new educational reform on the school track decision; however, we can be sure that the motivation and choices of student will be affected by it.

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Appendix

Table A. Descriptive statistics

		Basic vocational school	Vocational secondary school	General secondary school	Whole sample
głogowski	Type of school	16.67	44.93	38.41	100.00
	Females	0.35	0.43	0.71	0.53
	Average school marks	2.70	3.82	4.88	4.04
	Parental education: tertiary	0.04	0.17	0.33	0.21
	Parental education: vocational secondary	0.13	0.28	0.33	0.27
	Parental education: general	0.13	0.12	0.17	0.14
	Parental education: basic vocational or lower	0.70	0.43	0.17	0.38
	Good material situation	0.00	0.03	0.23	0.10
sępoleński	Type of school	29.25	34.69	36.05	100.00
	Females	0.21	0.51	0.63	0.47
	Average school marks	2.64	4.04	4.69	3.89
	Parental education: tertiary	0.05	0.12	0.13	0.11
	Parental education: vocational secondary	0.23	0.20	0.40	0.29
	Parental education: general	0.03	0.14	0.13	0.11
	Parental education: basic vocational or lower	0.69	0.53	0.33	0.50
	Good material situation	0.00	0.10	0.08	0.06
pruszkowski	Type of school	7.81	25.00	67.19	
	Females	0.20	0.42	0.59	0.52
	Average school marks	2.90	3.65	4.42	4.10
	Parental education: tertiary	0.00	0.16	0.41	0.31
	Parental education: vocational secondary	0.40	0.45	0.28	0.33
	Parental education: general	0.10	0.10	0.16	0.14
	Parental education: basic vocational or lower	0.50	0.29	0.16	0.22
	Good material situation	0.00	0.06	0.22	0.16
m. Tarnobrzeg	Type of school	11.49	29.73	58.78	
	Females	0.00	0.41	0.60	0.49
	Average school marks	3.23	3.74	5.11	4.56
	Parental education: tertiary	0.08	0.24	0.32	0.27
	Parental education: vocational secondary	0.15	0.35	0.33	0.32
	Parental education: general	0.23	0.18	0.18	0.19
	Parental education: basic vocational or lower	0.54	0.24	0.17	0.22
	Good material situation	0.08	0.15	0.09	0.10

sokólski	type of school	7.98	33.51	58.51	
	women	0.00	0.34	0.58	0.46
	grades	3.00	3.60	4.69	4.20
	p: tertiary	0.07	0.06	0.27	0.19
	p:voc sec	0.21	0.35	0.39	0.37
	p:general	0.00	0.10	0.16	0.13
	Parental education: basic vocational or lower	0.71	0.48	0.17	0.32
	good material situation	0.00	0.15	0.18	0.16
Siemianowice Śląskie	Type of school	15.79	31.58	52.63	
	Females	0.37	0.37	0.56	0.47
	Average school marks	2.89	3.87	4.54	4.09
	Parental education: tertiary	0.00	0.03	0.27	0.16
	Parental education: vocational secondary	0.26	0.29	0.24	0.26
	Parental education: general	0.16	0.18	0.20	0.19
	Parental education: basic vocational or lower	0.58	0.50	0.29	0.39
	Good material situation	0.00	0.08	0.10	0.08
giżycki	Type of school	9.70	43.03	47.27	
	Females	0.25	0.46	0.58	0.49
	Average school marks	2.56	3.57	5.03	4.15
	Parental education: tertiary	0.06	0.15	0.39	0.25
	Parental education: vocational secondary	0.13	0.37	0.27	0.30
	Parental education: general	0.06	0.07	0.14	0.10
	Parental education: basic vocational or lower	0.75	0.41	0.20	0.35
	Good material situation	0.06	0.07	0.19	0.13
m. Poznań	Type of school	16.98	32.08	50.94	
	Females	0.46	0.47	0.60	0.54
	Average school marks	3.15	3.69	4.42	4.00
	Parental education: tertiary	0.00	0.19	0.40	0.27
	Parental education: vocational secondary	0.31	0.28	0.24	0.26
	Parental education: general	0.08	0.28	0.16	0.19
	Parental education: basic vocational or lower	0.62	0.25	0.20	0.27
	Good material situation	0.00	0.06	0.14	0.09
m. Świnoujście	Type of school	10.71	38.57	50.71	
	Females	0.50	0.51	0.58	0.54
	Average school marks	2.86	3.58	4.71	4.08
	Parental education: tertiary	0.00	0.17	0.42	0.28
	Parental education: vocational secondary	0.29	0.28	0.22	0.25
	Parental education: general	0.29	0.11	0.19	0.17
	Parental education: basic vocational or lower	0.43	0.43	0.17	0.30
	Good material situation	0.07	0.13	0.41	0.26

Note: results in grey are based on the small number of observation (below 30), therefore should be considered with caution. Source: own calculations.