

Education reform and inequality: fifteen years of new lower secondary schools in Poland

ZBIGNIEW SAWIŃSKI

Institute of Philosophy and Sociology, Polish Academy of Sciences*

Inequalities in education are so deeply embedded in social stratification that even far-reaching school reforms are not able to weaken the influence of social origin on school achievements. The aim of this article is to verify whether the education reform, which in Poland established a new type of 3-year lower secondary school (*gimnazjum*), simultaneously equalised the chances of students from different social backgrounds at the transition from lower to upper secondary school. All hypotheses were tested using PISA data from the years 2000–2012, which covered the period before and after school reform in Poland. In case of the first hypothesis, which concerned changes in the impact of social origin on student's performance in the last year of the new schools, i.e. a year before transition to upper secondary school, PISA data clearly demonstrated that after the reform, there was no significant decrease in correlations between socio-economic status of students and their results in three PISA domains: mathematics, reading and science. In case of the second hypothesis, which was directly focused on social selections to upper secondary schools, PISA data did not confirm that anything changed in this respect after the reform. The third hypotheses addresses the problem of the growing differences among schools in terms of their performance. During the fifteen years since the reform, new schools started to diversify more and more, especially in large cities. PISA demonstrates, however, that this diversification did not perpetuate social inequalities, but rather resulted from competition among schools in the quality of instruction. The latter result was supported by PISA data from eight European countries where students, as in Poland, attend schools which are not divided into tracks. Between 2003 and 2012, growing differences among schools was observed in most of these countries, but in none of them was it accompanied by growing inequalities in education.

KEYWORDS: sociology of education; inequality; education reform; lower secondary schools; PISA.

One of the objectives of the reform of Polish education in 1999 was to reduce social barriers at the transition from primary to upper secondary school (Ministerstwo Edukacji Narodowej, 1998a). In the period preceding the reform, graduates of an eight-grade primary school (*szkoła podstawowa*) could choose between general upper secondary school (*liceum ogólnokształcące*),

vocational upper secondary school (*technikum* or *liceum zawodowe*) and basic vocational school (*zasadnicza szkoła zawodowa*). This choice was largely influenced by social background (Zawistowska, 2012). Young people from rural areas were in a particularly disadvantaged situation as the poor results of some primary schools did not enable students to enter secondary school, which would meet their aspirations (Putkiewicz and Zahorska,

* Address: ul. Nowy Świat 72, 00-330 Warszawa, Poland.
E-mail: zsawins@ifispan.waw.pl

© Educational Research Institute

1998). Shortening the period of education in primary schools by two years and establishing a network of newly organised, well-equipped three-year lower secondary schools (*gimnazjum*) was intended to equalise the educational opportunities of young people (Ministerstwo Edukacji Narodowej, 1998b).

The assumptions of the reform did not devote much consideration to the justification that new schools would actually help reduce inequality in education. This seemed obvious, as the introduction of new schools was to delay the decision concerning the student's further educational path for a year. The new schools gained an additional year to eliminate disparities related to students' socio-economic background, and the students themselves became more mature and their educational decisions became less dependent on their parents' situation.

However, previous studies have confirmed that inequalities in education are not easily changed as they are deeply embedded in social stratification (Boudon, 1974; Coleman, et al., 1966; Halsey, Heath and Ridge, 1980; Shavit and Blossfeld, 1993). Even the most thought-out reforms are not able to change these macro determinants, so the visions of the creators of new schools in Poland did not necessarily have to come true. From the start, the new lower secondary schools began to diversify into better and worse, which was visible particularly in large cities (Dolata, Jasińska and Modzelewski, 2012). Therefore, concerns that inequalities in education, even if temporarily suppressed by school reform, would start to rebuild in a new form seemed quite legitimate.

The article analyses whether the new schools have changed the map of inequalities in Polish education in the 15 years since the reform. Results of empirical studies, conducted for more than half a century in various countries, formed the basis of hypotheses that the reform did not change the inequalities at the transition from the lower to upper

secondary school. These hypotheses were verified by data from the PISA study, which covered the periods both before and after Polish school reform. Attention was also paid to whether the increasing differences between new lower secondary schools, especially in large cities, are the result of competition among schools in the quality of teaching or whether the increasing differences among schools perpetuate social inequalities, as better schools become new channels of advancement for children from privileged families. These considerations have been enhanced with a look at the inequalities in Polish education from the perspective of European countries, where – as in Poland – young people attend schools which are uniform in terms of organisation and programme.

Previous studies on changes in educational inequality

Inequality in education

The article considers all manifestations of unequal school achievement, which have a source in social stratification, as inequality in education. When school grades, test scores, or chances of moving to the next school are related to social origin, we talk about inequality in this stage of educational careers. Inequality may refer to each level of the school system. My considerations will be devoted to inequality at the entry to upper secondary schools, the reduction of which was one of the objectives of Polish school reform.

Inequalities arise within schools, but are also a result of differences among schools. If the school tries to compensate for the deficits resulting from disadvantaged social background, it may reduce the distance between unprivileged students and the students from a more favourable background. However, if teachers favour students from higher social classes, then the inequalities within the school will be strengthened. Inequalities among schools arise when some

schools, more than others, are able to attract parents and begin to translate their resources into the better performance of students. When parents pay tuition, the school is well equipped and employs teachers with higher qualifications. As a result, it becomes more attractive for parents who want to invest in their children's education. This leads to the elitism of some schools and the impoverishment of others. Schools polarise in terms of resources that help to achieve good results.

Persistence of inequalities in education

In the 1990s, when Poland was engaged in fundamental reforms of education, the world was dominated by the belief that inequalities in education were persistent. This belief resulted from research accompanying the expansion of education, which in the second half of the twentieth century took place in most countries. In the face of this expansion, it seemed obvious to conclude that facilitating access to education should lead to a reduction in educational inequalities. Surprisingly enough, studies did not support this conclusion.

The earliest studies concerning this issue were conducted in the United States. They covered the period from the 1930s to the 1960s. During this period, the average number of years of schooling completed by American students increased from nine to twelve – as a result of increased school enrolment in all social classes. However, the study found that the impact of origin on educational attainment did not decrease (Duncan, 1967; Hauser and Featherman, 1976). A similar conclusion was reached in Great Britain, where reforms were aimed at creating easily accessible secondary level education in place of existing elite schools. Despite the fundamental character of the reforms, British researchers failed to demonstrate that the changes led to a noticeable decrease in the impact of origin on educational attainment (Halsey, Heath and Ridge, 1980; Heath and Clifford, 1990).

Among other countries, Hungary is worth mentioning. In Hungary, as in other communist countries, there were strong attempts to regulate access to education using administrative measures. At the end of the 1940s, restrictions on admitting to schools young people from the so-called “hostile class” were introduced. Schools and universities established enrolment limits, and some young people were moved to rural areas, which deprived them of the opportunity for a good education. On the other hand, enrolment was facilitated for working-class candidates and activists of political organisations. This included a “Special school leaving exam (baccalaureate)” [*szakérettségij*], which allowed a student to move on to university after completing a one-year secondary school course. However, the empirical studies convincingly showed that neither the fundamental reforms of the school system nor administrative interventions visibly reduced the impact of origin on selections in the Hungarian school system (Simkus and Andorka, 1982).

Research concerning this period was summarised in a book entitled “Persistent inequality” (Shavit and Blossfeld, 1993). It included data from 13 countries covering the period from the 1920s to the 1980s. On one hand, it examined the impact of the characteristics of origin on the attained level of education, on the other hand, the role of social inequalities at different school levels, which included, among others, transitions from primary to secondary school and from secondary to the tertiary level. In most countries, there was no evidence that the impact of origin on educational attainment changed. This allowed the concept to be formulated of the persistent nature of educational inequality. The significance of this concept results not only from the fact that there were no visible effects of educational expansion and deep reforms of education systems. It is even more important that in the

same time, far-reaching changes took place in most societies. The model of the multi-generational family working in agriculture or industry gradually transformed into the nuclear family model, characteristic for the middle class. In the face of these changes, it became clear that the reasons for inequality in schools need to be sought outside education. Although the book has not resolved the fundamental issues: whether the persistence of educational inequality is universal and applies to all countries, it formulated a warning to researchers and politicians. Inequalities in education are derived from social inequality, and reforms and activities limited to the school system do not necessarily produce the desired effects.

Horizontal inequalities

After the year 2000, researchers shifted their attention from vertical to horizontal inequalities in education. In the case of secondary schools, this applies to the type of school (one that enables a move to be made to university or entrance into the labour market), and in the case of higher education – the choice between different institutions and programmes (Lucas, 2001; Shavit, Arum, Gamoran and Menahem, 2007).

Horizontal inequalities in education are defined as “tracking” (Gamoran, 2009). This term encompasses the division of schools of the same level into parallel tracks. Most often this refers to the division between academically (grammar schools) and vocationally oriented schools, but the term is also used to define the divisions within schools according to the curriculum, students’ performance levels or vocational orientation. However, the first stage of education in each country is carried out in schools with a general comprehensive programme, and the division into tracks takes place at a later stage. In Germany, tracking takes place after the 4th grade of primary school, when students are 10, in the Nordic countries after nine years of

schooling, while in the United States after the 12th grade of secondary school. This does not mean, however, that separate tracks are not formed within schools (Gamoran, 2009).

Comparisons between countries indicate that early tracking supports inequalities in education. Based on the results of PISA and PIRLS, Eric Hanushek and Ludger Woessmann (2006) demonstrated that in countries where students are placed into tracks at an early age, inequalities in education are stronger. Similar conclusions were reached by Giorgio Brunello and Daniele Checchi (2006), who used the results of ISSP and IALS studies. Comparisons among countries are, however, subject to limitations. Tracking at a later stage usually takes place in countries seeking to equalize the standard of living of all social classes, as exemplified by the Nordic countries. So one cannot be sure, whether these countries reduced educational inequalities as the result of extending the period of common schooling or by reducing inequalities in society.

The impact of school reforms on inequalities in education

There are few studies focussing on the impact of school reforms on educational inequality. However, at least some of them do not separate between the actual consequences of school reforms and the more essential changes taking place in society. In 1972–1977, nine-year comprehensive schools were established in Finland, replacing a highly selective system of private secondary schools. One study analysed the results of aptitude tests conducted among Finnish army recruits. After the reform, the largest improvement in test results was observed in the group of recruits whose parents had low education and low income. This was interpreted as a decline in the importance of origin for educational achievements (Kerr, Pekkarinen and Uusitalo, 2013). On first sight, this interpretation seems justified, especially

as it is consistent with the idea of providing equal opportunities in Finnish schools. In another study, however, the same authors found that with regard to the generation educated in the new schools, the impact of origin on earnings was slightly lower than among students educated before the reform (Pekkarinen, Uusitalo and Kerr, 2009). This demonstrates that after the reform, Finnish society became more egalitarian. However, it does not say whether this was the result of the reform, which led to a decline of the dependence of educational attainment on origin or the result of weakening relations between origin and the achieved position. The fact that school reforms are part of a policy of providing equal opportunities does not mean they have a causal impact in this regard. The reformed school can reproduce social inequalities in the same way as before the reform, but in the meantime these inequalities may become weaker.

The authors of the study on the reform in Sweden managed to avoid this trap. In Sweden, a comprehensive nine-grade school was introduced in 1972, and in the 1990s, programmes of vocational and comprehensive upper secondary schools were equalized in terms of duration. Both reforms increased the chances of young people from the working class of entering schools offering an academic path of education. However, the authors of the study point out that the introduction of a nine-grade school coincided with improvements in living conditions in Sweden and with a reduction in income inequality (Erikson and Rudolphi, 2010). Thus, they openly admit that the decrease in educational inequalities was not necessarily the result of the reform of the school system, but could be the consequence of reduced inequalities in Swedish society.

Educational reforms in other European countries have not created such a clear situation, where uniform comprehensive schools were introduced to replace a selective school

system, although conclusions from at least several studies deserve attention. One of the objectives of the reform carried out in 1968 in the Netherlands was to reduce the role of social factors determining the choice of educational paths and increase the capacity to change a previously selected track. Comparing education careers before and after the reform, Nicole Tieben and Maarten Wolbers (2010) demonstrated that the first objective of the reform was achieved, because after the reform, the choice of school became less dependent on parents' social standing. However, the ability to change the selected track often caused a return to a type of school which better corresponded to the student's social background. Therefore, actions taken under the same reform may lead to both a weakening and strengthening of school inequalities.

In Denmark, the study concerned the reform carried out in the 1970s and 1980s, when secondary schools were divided into general and vocational schools. The former allowed education to be continued at university, the latter provided entry to the labour market. The reform was to introduce a third possibility – vocational secondary schools, which were to provide students with vocational qualifications and at the same time allow them to enrol in higher education. The study showed that the reform reduced inequalities at the secondary level, as the new type of school gave young people from disadvantaged backgrounds the opportunity to receive a full secondary education. However, graduates of new schools were often reluctant to make use of the opportunity to enrol in university, therefore, the new path did not increase the number of university students from less favourable social backgrounds. The Danish reform partially solved the problem of inequality in selections to secondary schools, but failed to provide equal access to higher education (Holm, Jæger, Karlson and Reimer, 2013).

Changes of educational inequalities in Poland

The centrally controlled system of education in communist years (before 1989) served, primarily, to cater to the needs of a technologically delayed economy. After graduating from primary school, more than half of young people were directed to basic vocational schools to then continue in careers as manual workers. The opportunity to gain higher education was provided to only 10% – though in many university departments, the number of applicants repeatedly exceeded the set limits. The need to satisfy educational aspirations of the society contributed to one of the first reforms undertaken after the collapse of communism. In 1991, Parliament adopted the Education Act which limited the central role of the state in education management and equated the rights of non-public and public schools. Since that time, Poland has witnessed an educational boom. In 1990, less than half of young people (46%) attended upper secondary schools which gave access to tertiary education; in 1999, in the year when the new lower secondary schools were introduced, the proportion of students enrolled in upper secondary education already amounted to 66% and in subsequent years, increased to 86% (Główny Urząd Statystyczny, 2007). Parallel to this, the number of students at the tertiary level was growing. In 1991, only 10% of young people aged 19–24 years were attending institutions of higher education, while after 2000, this proportion increased to 40% (Główny Urząd Statystyczny, 2008).

However, the education boom did not result in a weakening of the barriers relating to origin. Such a conclusion was formulated by comparing the results of empirical studies conducted before and after the systemic change in Poland. These studies concerned the impact of origin on the choice of a further education path after primary and after secondary school. Based on studies carried out in

the early 1980s, the relationship between origin and choice of education path was estimated and compared to studies conducted after 2000. The estimated effects of social background were surprisingly similar, and it was concluded that neither the collapse of communism nor the educational boom of the 1990s had any impact on reducing inequalities in education (Sawiński, forthcoming).

In another study, referring to the theory of cultural domination by Pierre Bourdieu, a presumption was formulated that in the case of easier access to education for all social classes, the intelligentsia will try to maintain its privileged position relating to ensuring a proper education for their children. The results of empirical studies confirmed this assumption. When education became accessible to everyone, the intelligentsia managed to maintain an advantage over other social classes (Domański and Tomescu-Dubrow, forthcoming).

The expected effects of school reform

The aim of the school reform in 1999 was to improve and modernise the education system in Poland. Before the reform, a major concern was the wide variation in the quality of primary school teaching. Particularly poor results were achieved by small, primary schools in rural areas (Putkiewicz and Zahorska, 1998). Therefore, the eight-grade primary school was shortened to six years, and a new type of school – the three-grade lower secondary school – was introduced. With this change, the duration of schooling at the upper secondary level was shortened by one year, with the school leaving age remaining the same. Efforts were made to avoid having the new schools be a direct continuation of primary schools, with the same teachers teaching the same students. In practice, this demand turned out to be unrealistic, as it required significant resources for the construction of new or the adaptation of

existing school buildings. As a result, in the 1999/2000 school year, the first year these new schools functioned, only 8% of them occupied independent facilities. Since then, the percentage has gradually increased. In the 2012/2013 school year, the percentage of new schools in independent facilities reached 45% (Herczyński and Sobotka, 2017).

The way the new schools were organised had a major impact on inequalities in access to schools of this level. If a new school shared a building with a primary school – which happened more frequently in rural areas – then graduates of primary school automatically became students of the new lower secondary school, so the transition did not include a social selection. The situation was different in cities, especially in large cities, where there were many schools available. Although public schools are obliged to accept all young people from their catchment area, this limitation can be overcome in many ways. The school can turn into a bilingual school or arrange specialised classes, which enables it to take the best candidates regardless of their place of residence. The percentage of non-public lower secondary schools which are not obliged to take into account students' residence was also growing. Immediately after the reform, non-public lower secondary schools accounted for 7% of the total number of such schools in Poland. In 2012, this percentage increased to 11% (GUS, 2014).

If students who achieve better results try to find better schools, this inevitably leads to an increase in the differences between schools. This conclusion was confirmed by the results of the central examinations given at the completion of lower secondary schools. In 2002–2012, the diversity of schools of this level, measured by the between-school variance of results of central examinations, was more or less similar in rural areas and averaged 9%. In small towns, with up to 20,000 residents, the percentage of between-school variance in 2002 was similar as in

rural areas, but by 2012, it increased to 23%. In the largest cities with more than 100 000 residents, in 2002 the diversification of lower secondary schools was already significantly higher (24%), and at the end of the period it increased to 45% (Dolata, Jasińska and Modzelewski, 2012). The central examinations confirm the growing stratification of lower secondary schools, but due to the anonymous nature of the exams, they do not provide information about students' origins. Therefore, it is difficult to decide whether the growing differences among schools result from school performance, or whether some schools prefer candidates from privileged backgrounds, which converts into good results in the central examinations.

Data

Verification of the hypotheses on changes in educational inequality after lower secondary school reform is based on the results of the PISA survey of 15-year-old students (OECD, 2014). The first edition of PISA in 2000 was carried out among first-year students of secondary schools from the old system, whereas subsequent editions, from 2003, 2006, 2009 and 2012, included third-year students from the new lower secondary schools. This way, PISA enables us to keep track of the changes in the impact of social background on school performance before and after school reform. Starting with 2006, Poland's PISA added another module carried out among the first-year upper secondary school students from the new system. This allows us to define the role of background barriers in the selection of different types of upper secondary schools to attend. The PISA study uses a two-step sample design. First, schools are selected at random and then students from the selected schools are chosen. This allows us to analyse the impact of social background on student performance within schools and also to compare schools

– enabling us to analyse the role of the growing differences among schools in perpetuating educational inequality.

PISA measures performance in three domains: mathematics, reading and science. Students are also asked about the education and occupation of both parents, as well as about living conditions, including, among others, household income, number of books at home, and whether a separate place for learning exists. On this basis, an index was construed called “Economic, social, and cultural status” (ESCS), which combines all background variables in one scale. In particular editions of PISA, the index was constructed slightly differently, but in 2012, the index was standardized, and its values for all editions of the study were re-calculated (OECD, 2014).

It should be noted that data from the PISA study has already been used to analyse the impact of school reform on inequalities in Polish schools. This took place immediately after the reform, when correlations between performance of students and socio-economic status of their parents were compared with analogous correlations calculated in the study conducted in 2000, when students attended the first year of secondary schools in the old system. It was found that the correlations remained the same, which indicated the existence of “permanent mechanisms promoting children from families with higher socio-economic status” (Haman, 2008, p. 86).

Hypotheses

In this article three hypotheses are tested. The first relates to the impact of social background on students’ performance. The hypothesis is that the impact of social background has not changed when the students from before and after the reform are compared, which means that the reform has not reduced barriers related to social origin. The second hypothesis is that social background has not changed its role in determining the

choice of the upper secondary schools (general secondary, vocational secondary and basic vocational school). The third hypothesis relates to the increasing differences in performance among lower secondary schools in Poland, especially in large cities. The hypothesis is that this does not lead to an increase in educational inequality. As the findings concerning the last issue constitute an important argument in the debate on education in Poland, they will be supplemented by the results of PISA from other European countries, where 15-year-olds, as in Poland, attend comprehensive schools with the same curriculum. This will help in finding an answer to two more questions. First, are the increasing differences between lower secondary schools a strictly Polish phenomenon; and second, whether growing differences among schools lead to an increase in educational inequalities in any of the countries?

H₁: The new lower secondary schools did not weaken the influence of social background on students’ performance

Correlations between the ESCS index and the PISA results are presented in Figure 1 and Table A1 of the appendix. In 2003–2012, when students attended the third year of the new lower secondary schools, the correlations for each PISA domain were covered by the confidence interval constructed for the 2000 data. Therefore, there is no reason to reject the hypothesis stating that the influence of social background on students’ performance was the same before and after the reform. School reform, which extended the common curriculum by one year, did not result in the equalisation of school performance of students from different social backgrounds. In order for this to happen, the new schools would have had to use this additional year to supplement the deficits of students with disadvantaged social background. Regardless of whether such activities were actually implemented, PISA has not revealed their effects.

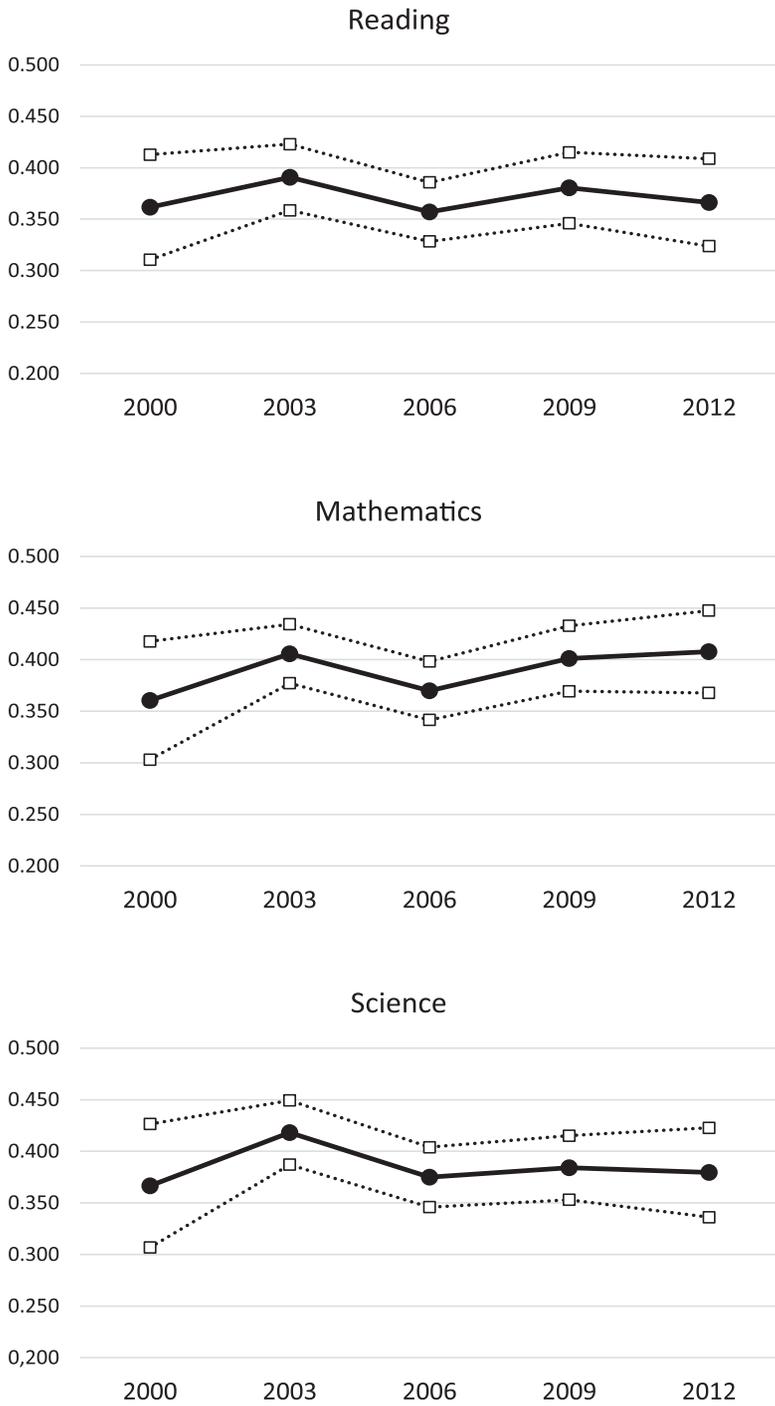


Figure 1. Correlations between the ESCS Index and PISA results in three domains.

H₂: After the reform, the importance of social background in choosing the type of upper secondary school has not decreased

To verify the hypothesis, we used the data from the national PISA option, which was conducted in parallel with the international option in 2006, 2009 and 2012. In 2006, students from the first and second years of all types of upper secondary schools were surveyed, while the next two editions were limited to first year students. This made it possible to extract four groups of students who started upper secondary schools in 2004, 2005, 2008 and 2011, and compare these groups with the results of the first edition of PISA, which included students who began the upper secondary school of the old system in 1999.

In the national option, the ESCS index was not estimated, so parental education was adopted as the indicator of social background. This is one of the few indicators that was designed the same way in all PISA editions. Parental education was divided into four levels: elementary, basic vocational, secondary and tertiary, whereas the higher level of education of the father and mother was selected as the value for this variable. The schools at the upper secondary level

were divided into three categories: general secondary, vocational secondary and basic vocational school. The correlation coefficient in the canonical version was adopted as the measure of impact of parental education on choice of school (Kendall and Stuart, 1979), as the variables on both sides of the model are in the form of categorisation (4 levels of education and 3 types of schools).

In the four studies of lower secondary school graduates, the role of parental education seems to be slightly weaker than among primary school graduates in 1999 (Figure 2, see also Table A2 of the appendix). For those starting school in 2004 and 2008, the observed correlations are below the lower limit of the confidence interval established for the 1999 data, which means that the correlations decreased in comparison to the value prior to school reform. However, in the case of students beginning upper secondary school in 2005, the correlation is within the confidence interval for 1999, which does not provide the grounds to reject the hypothesis that in 2005, the correlation had the same value as before school reform. Also, data for students beginning school in 2011 do not provide a clear answer to the problem. The

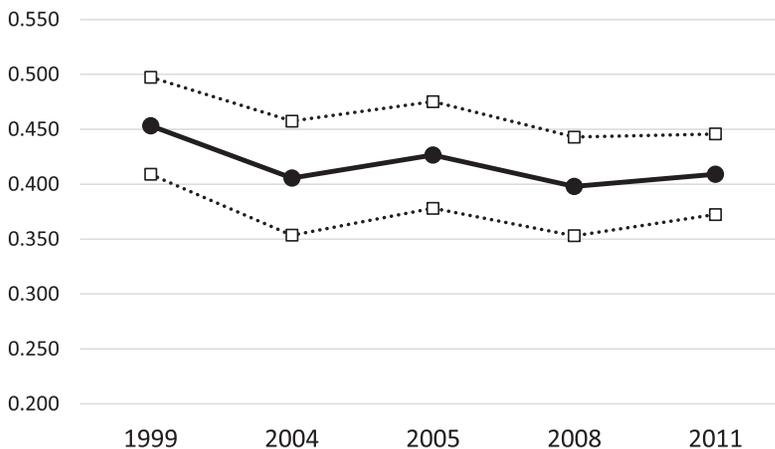


Figure 2. The canonical correlations between parental education and choice of type of upper secondary school.

correlation for this group lies exactly on the border of the confidence interval.

In this situation, it is difficult to decide whether or not to reject the hypothesis on the lack of impact of the reform on the role of parental education in choosing among different types of upper secondary schools. The decision to reject the hypothesis would not be consistent with the results of other studies, according to which secondary school choices exhibited durability in the face of systemic change in Poland and the educational boom of the 1990s (Domański and Tomescu-Dubrow, forthcoming; Sawiński, forthcoming). On the other hand, the conclusion that the introduction of new lower secondary schools has not changed anything in this respect also seems hasty. The PISA study does not include the entire population, as it excludes students who dropped out of regular school or are continuing their education in evening schools. In addition, only one indicator of social origin, namely parental education, was taken into account. Faced with these constraints, it is safest to assume that there is not enough evidence to definitely say whether school reform decreased social selection at the transition to upper secondary school.

H₃: The increasing differences in performance between the new lower secondary schools do not perpetuate social inequality

There are two ways in which social background converts into student performance. The first is the direct influence of the life style and socio-economic status of parents, which help students achieve good results independently from the particular school they are attending. The second is the performance of the school, which can support each student regardless of their social background.

To separate the effects of individual social status from the effect of the social status accumulated in schools, a two-level regression model can be applied, which combines

the differences within schools and among schools (Raudenbush and Bryk, 1986). At the first level of the model, a student's background is compared with the average status of all students in the school, which allows the effect of social background to be determined for individuals. These considerations are taken into account when estimating the parameters of the second level of the model, when the differences in the results achieved by schools are considered. Since at the first level, parental status had already explained individual student achievement, the remaining differences in performance of schools reflect both quality of teaching as well as differences in social composition of students. In this way, it is possible to isolate the status component that is functioning at the level of the school.

The hypothesis about a role of increasing differences among lower secondary schools was verified by comparing PISA studies from 2003 and 2012. The first study occurred in not long after the reform, when the differences in performance among schools in Poland were rather low, the second took place in the period when the differences were fully revealed (Dolata et al., 2012). The comparison will be limited to the mathematics part of PISA, which in both studies constituted the major domain.

The parameters of the two-level regression model are presented in Table 1. The first row demonstrates the percentage of between-school variance, namely the index of variation of schools in terms of results in mathematics. This result has been quoted in order to show that the PISA study, which does not cover all schools, reflects the trend of increasing differences among lower secondary schools determined on the basis of central examinations. If we assume that PISA results provide an accurate picture of the changes taking place in Polish lower secondary schools, then there is no reason to reject the hypothesis stating that the benefits

Table 1

Percentage of between-school variance and the coefficients of the two-level regression model of performance in mathematics against the average ESCS of students. Poland, PISA 2003 and 2012

Parameters	PISA 2003	PISA 2012	Difference
Percentage of between-school variance	12.1* (1.6)	20.5* (3.4)	8.5* (3.8)
The average difference of the results in mathematics for schools which differ by one unit of the ESCS index	26.0* (4.7)	36.4* (7.4)	10.4 (8.8)

Source: OECD 2013, Tables II.2.8b, II.2.9b. Standard error in parentheses.

* $p < 0.05$

associated with the choice of a better school do not increase over time. The coefficients of the two-level regression model, provided in the last row of Table 1, constitute the basis for this conclusion. In 2003, the choice of a school deviating from the average by one unit of the ESCS status received a bonus of 26 PISA points, regardless of the socio-economic status of the student. In the PISA of 2012, the bonus associated with the choice of a better performing school increased from 26 to 36 points. However, a significant standard error in estimating this difference does not allow us to determine whether such an increase actually took place. Thus, there is no reason to reject the hypothesis that the increasing differences among lower secondary schools had no effect on educational inequality. In the period under consideration, the benefits connected with attending schools which attract children from the advantaged social backgrounds have not increased in a statistically significant way.

The diversification of schools in European countries

It is worth looking at the increasing differences among lower secondary schools in Poland from the perspective of those countries where all 15-years-old students are attending uniform comprehensive schools. This allows us to determine whether the growing diversity of schools at this level is specific to Poland. Analyses will be limited

to European countries, due to the need to preserve the similarities in living standards and cultural traditions. Apart from Poland, 15-year-olds in eight other European countries attended uniform comprehensive schools and also participated in both comparable editions of PISA in 2003 and 2012. This group included five Nordic countries: Finland, Sweden, Norway, Denmark and Iceland, as well as Ireland, Spain and Latvia.

Between the two editions of PISA, the diversification of schools in terms of performance increased in almost all the considered countries (Figure 3). Even Finland – a country which is an unsurpassed example of equal and high quality instruction in all schools – failed to prevent schools from diversifying into better and worse. When assessing the rate of the diversification of lower secondary schools in Poland, it should be said that compared to other countries, the differences are deepening relatively quickly.

Iceland, Finland and Norway are the only countries apart from Poland, where between 2003 and 2012, the differences among schools in performance had a statistically significant increase. Does the growing polarisation of schools in these countries lead to a visible increase of educational inequalities understood as the correlation between students' performance and social origin? In Poland, these two phenomena do not go hand in hand, as in the years 2003–2012, when lower secondary schools began

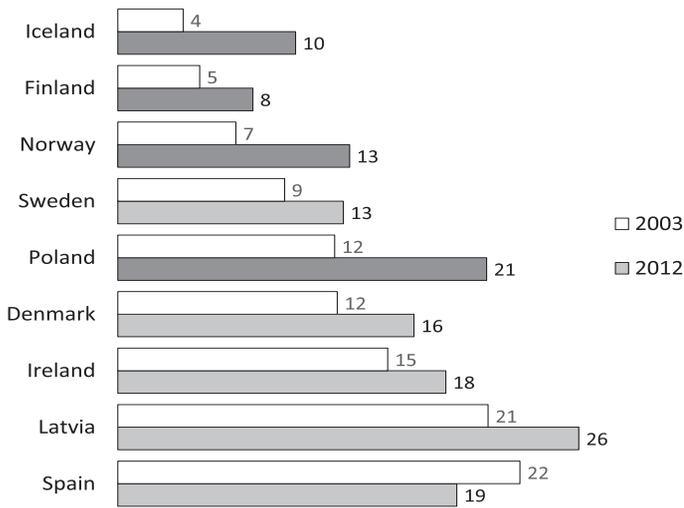


Figure 3. Differentiation of schools in mathematics performance (between-school variance in %). PISA 2003 and 2012, European countries where 15-year-olds attend uniform comprehensive schools.

Based on OECD (2013, Tab. II.2.9b). Countries in which the difference between 2003 and 2012 was statistically significant at $p = 0.05$ are marked with a darker colour.

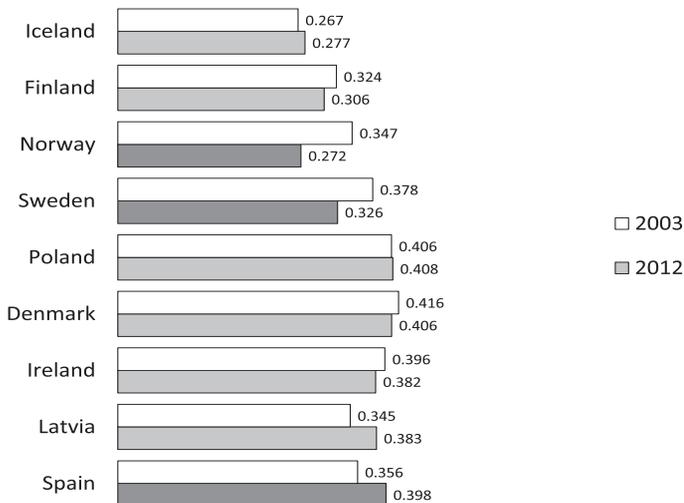


Figure 4. Changes in the correlation between PISA results in mathematics and the ESCS index.

Based on OECD (2013, Tab. II.2.9b). Countries in which the difference between 2003 and 2012 was statistically significant at $p = 0.05$ are marked with a darker colour.

to diversify, inequalities did not rise. Figure 4 presents the corresponding data for included countries. It turns out that educational inequalities have not increased in any of the three Nordic countries where school diversification was most widely observed. Even more, such inequalities were found to have had a statistically significant decrease in Norway.

Therefore, the growing differences between schools do not lead to an increase of educational inequalities. All variants of the co-existence of the two phenomena are possible, including a situation when, despite the increasing differences among schools, inequalities decrease. It may be assumed that the decrease of inequalities will be affected by actions taken within schools aimed at providing special attention to students whose educational capabilities are lower due to their background. Among the presented countries, Norway was the only one in which the importance of status differences within schools decreased in 2003–2012 (OECD, 2013, Table II.2.9b). This issue is definitely worth further study. For many years, the attention of the world was focused on Finland. But it turns out that other countries may also provide input on how school policies can counteract educational inequalities.

Discussion

The belief that differences among schools influence educational inequality at the individual level dominates in the discourse on the effectiveness of reforms leading to educational success. In Poland, as a result of the reform which moved 15-year-olds from the first year of highly selective upper secondary schools into the third year of the uniform system of newly established lower secondary schools, the between-school variance decreased in the PISA study from an very high level, characteristic for countries where students are divided into tracks at an early age, to a level

characteristic for the Nordic countries. Since then, PISA reports began to refer to Poland as an example, especially when attempting to show the connection between counteracting inequalities and obtaining good results.

Poland produced a substantial improvement in overall performance by converting a secondary school system that was organised according to the social class of its 15-year-olds to one in which comprehensive schools enrol all social classes (OECD, 2011, p. 247).

It should be considered, however, that educational inequalities are dependent on the inequalities in society, and no reform can stop parents from helping children in their school career. This is illustrated in Figure 5, which includes the previously considered European countries. The horizontal axis presents countries in terms of income inequality expressed by the Gini index (World Bank, 2015), which can be regarded as a measure of inequalities in society. The vertical axis shows the indicators of educational inequality in terms of the correlation between ESCS status and achievement in mathematics. The disparities in educational inequalities cannot be explained by school reforms, as all the countries have school systems for 15-year-olds organised in a comparable way. However, these countries differ in terms of social inequalities, which provides a relatively good explanation of the size of educational inequality.

The educational inequalities show significant resistance to a wide spectrum of school reforms, such as extending the period of compulsory education or expanding comprehensive school curricula. This was also the case with the educational reform in Poland. The reform undoubtedly improved the results of Polish students – at least in terms of the analysed PISA studies. Such an increase could be a result of having reorganised the school system, extending the comprehensive programme or successively introduced changes in the curriculum. But

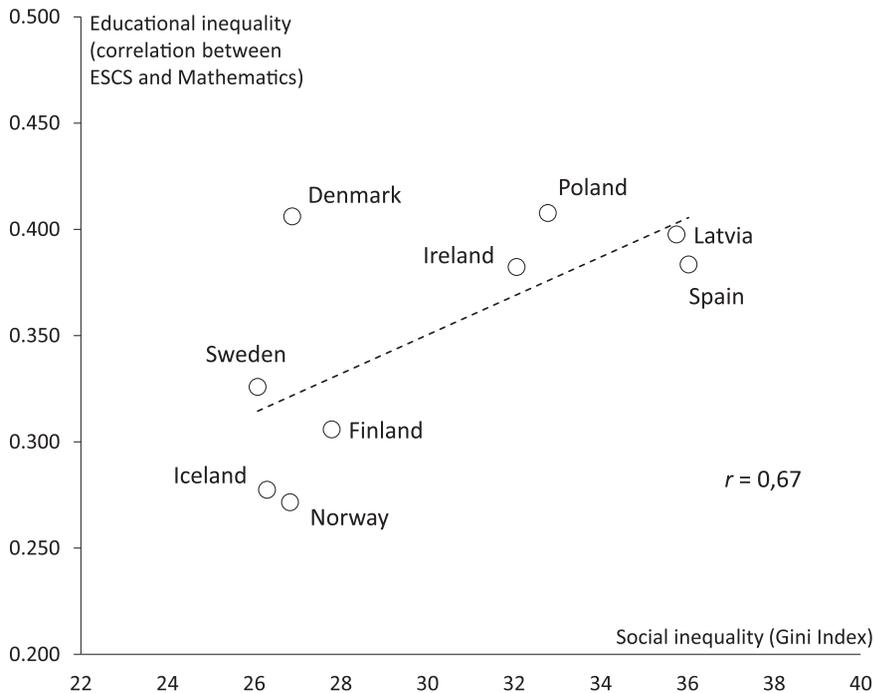


Figure 5. Social and educational inequalities.

it could also have been affected by other factors, which are not directly associated with the introduction of new lower secondary schools. One of these factors are external examinations. PISA reports do not provide very much information on the role of external examinations, though it was found that OECD countries using external examinations receive on average 16 points more, at least in reading (OECD, 2010, p. 46). The reading results of Polish students between the 2000 and 2003, when both lower secondary schools and external examinations were introduced, improved by a very similar value of 18 points (OECD, 2004). Moreover, it is not irrelevant that external examinations for 15-year-olds, from whom the PISA sample is taken, are organised about one month later after PISA. The Polish reform does not provide arguments to conclude that introducing

unified schools with a general curriculum leads to success.

This does not mean that educational inequalities cannot be reduced through reforms and interventions. However, it is noted with increasing frequency that activities implementing equal access to education should be limited to young people from lower social backgrounds. Youth from the upper social classes will always cope because they are supported by parents. A problem that needs to be resolved is whether school is able to bear the burden of this task. If weaker students have no chance in competing at school, then help should be provided directly to families, excluding the school, and separate programmes need to be developed to support the development of children from the lower social strata (Heckman and Kautz, 2014).

Conclusion

Research confirms that inequality in education is deeply rooted in social inequalities, so that many reforms and interventions show no visible effects on the equalisation of opportunities for children coming from lower social backgrounds. The hypotheses on the effects of educational reform in Poland were verified based on the PISA study. The analysis demonstrates that the reform has not reduced the impact of origin on performance in any of the PISA domains of mathematics, reading or science. The hypothesis concerning the role of social origin when choosing a school at the upper secondary level was also analysed. However, in this respect PISA did not allow us to decisively conclude whether the choices made at this transition were less influenced by social background when compared with the choices made before the reform.

The consequences of the gradually increasing differences in performance among lower secondary schools were also evaluated. PISA shows that schools tend to differentiate not only in Poland, but a similar process occurs in other countries. Even Finland, where the school system was very homogeneous in terms of school performance at the beginning of this century, is seeing its schools in recent years begin to divide into better and worse. However, when the differences between schools are increasing, this does not necessarily lead to an increase in educational inequality. The case of Norway demonstrates that even when the differences among schools rise, it is still possible to take effective actions to improve opportunities for students from disadvantaged backgrounds.

Literature

- Boudon, R. (1974). *Education, inequality, and social opportunity*. New York: Wiley.
- Brunello, G. and Checchi, D. (2006). *Does school tracking affect equality of opportunity? New international evidence*. IZA Discussion Paper No. 2348. Bonn: Institute for the Study of Labor.
- Coleman, J. S. et al. (1966). *Equality of educational opportunity*. Washington: U. S. Government Printing Office.
- Dolata, R., Jasińska, A. and Modzelewski, M. (2012). Wykorzystanie krajowych egzaminów jako instrumentu polityki oświatowej na przykładzie różnicowania się gimnazjów w dużych miastach. *Polityka Społeczna*, 1(Numer tematyczny), 41–46.
- Domański, H. and Tomescu-Dubrow, I. (forthcoming). Determinants of educational inequality before and after the systemic change. In I. Tomescu-Dubrow, K. M. Słomczyński, H. Domański, J. K. Dubrow, Z. Sawiński and D. Przybysz (eds.), *Dynamics of class and stratification in Poland*. Budapest: Central European University.
- Duncan, B. (1967). Education and social background. *American Journal of Sociology*, 72(4), 363–372.
- Erickson, R. and Rudolphi, F. (2010). Change in social selection to upper secondary school – primary and secondary effects in Sweden. *European Sociological Review*, 26(3), 291–305.
- Gamoran, A. (2009). *Tracking and inequality: new directions for research and practice*. WCER Working Paper No. 2009-6. Madison: University of Wisconsin-Madison, Wisconsin Center for Educational Research.
- Główny Urząd Statystyczny (2007). *Oświata i wychowanie w roku szkolnym 2006/2007*. Warszawa: Główny Urząd Statystyczny.
- Główny Urząd Statystyczny (2008). *Szkoły wyższe i ich finanse w 2008 roku*. Warszawa: Główny Urząd Statystyczny.
- Główny Urząd Statystyczny (2014). *Oświata i wychowanie w roku szkolnym 2013/2014*. Warszawa: Główny Urząd Statystyczny.
- Halsey, A. H., Heath, A. F. and Ridge, J. M. (1980). *Origins and destinations. Family, class, and education in modern Britain*. Oxford: Clarendon Press.
- Haman, J. (2008). Wpływ statusu społeczno-ekonomicznego na wyniki w testach PISA 2000 i 2003. In M. Federowicz (ed.), *Umiejętności polskich gimnazjalistów. Pomiar, wyniki, zadania testowe z komentarzami* (pp. 78–86). Warszawa: Wydawnictwo IFiS PAN.
- Hanushek, E. A. and Woessmann, L. (2006). Does educational tracking affect performance and inequality? Differences-in-differences evidence across countries. *The Economic Journal*, 116(510), C63–C76.
- Hauser, R. M. and Featherman, D. L. (1976). Equality of schooling: trends and prospects. *Sociology of Education*, 49(2), 99–120.

- Heath, A. F. and Clifford, P. (1990). Class inequalities in education in the twentieth century. *Journal of the Royal Statistical Society*, 153(Series A), 1–16.
- Heckman, J. J. and Kautz, T. (2014). Fostering and measuring skills: interventions that improve character and cognition. In J. J. Heckman, J. E. Humphries and T. Kautz (eds.), *The myth of achievement tests: the GED and the role of character in American life* (pp. 341–430). Chicago and London: The University of Chicago Press.
- Herczyński, J. and Sobotka, A. (2017). Organisational models of gymnasium in Poland. *Edukacja*, 141(2), 5–31.
- Holm, A., Jæger, M. M., Karlson, K. B. and Reimer, D. (2013). Incomplete equalization: the effect of tracking in secondary education on educational inequality. *Social Science Research*, 42(6), 1431–1442.
- Kendall, M. G. and Stuart, A. (1979). *The advanced theory of statistics* (vol. 2: *Inference and relationship*, 4th ed.). New York: Macmillan.
- Kerr, S. P., Pekkarinen, T. and Uusitalo, R. (2013). School tracking and development of cognitive skills. *Journal of Labor Economics*, 31(3), 577–602.
- Lucas, S. R. (2001). Effectively maintained inequality: education, transitions, track mobility, and social background effects. *American Journal of Sociology*, 106(6), 1643–1690.
- Ministerstwo Edukacji Narodowej (1998a). *Reforma systemu edukacji (projekt)*. Warszawa: Wydawnictwa Szkolne i Pedagogiczne.
- Ministerstwo Edukacji Narodowej (1998b). O sieci szkół. *Biblioteczka Reformy*, 2. Warszawa: Ministerstwo Edukacji Narodowej.
- OECD (2004). *Learning for tomorrow's world. First results from PISA 2003*. Paris: OECD Publishing.
- OECD (2010). *PISA 2009 Results: what makes a school successful? Resources, policies and practices* (vol. 4). Paris: OECD Publishing.
- OECD (2011). *Lessons from PISA for the United States. Strong performers and successful reformers in education*. Paris: OECD Publishing.
- OECD (2013). *PISA 2012 Results*. [Database.] DOI: <http://dx.doi.org/10.1787/888932964908>
- OECD (2014). *PISA 2012 technical Report*. Paris: OECD Publishing.
- Pekkarinen, T., Uusitalo, R. and Kerr, S. P. (2009). School tracking and international income mobility: evidence from the Finnish comprehensive school reform. *Journal of Public Economics*, 93(7–8), 965–973.
- Putkiewicz, E. and Zahorska, M. (eds.). (1998). *Uwagi i propozycje do projektu reformy systemu edukacji*. Warszawa: Instytut Spraw Publicznych.
- Raudenbush, S. and Bryk, A. S. (1986). A hierarchical model for studying school effects. *Sociology of Education*, 59(1), 1–17.
- Sawiński, Z. (forthcoming). Systemic changes and inequality in access to education, 1972–2008. In I. Tomescu-Dubrow, K. M. Słomczyński, H. Domański, J. K. Dubrow, Z. Sawiński and D. Przybysz (red.), *Dynamics of class and stratification in Poland*. Budapest: Central European University.
- Shavit, Y. and Blossfeld, H.-P. (eds.). (1993). *Persistent inequality: changing educational attainment in thirteen countries*. Boulder: Westview.
- Shavit, Y., Arum, R., Gamoran, A. and Menahem, G. (eds.). (2007). *Stratification in higher education: a comparative study*. Stanford: Stanford University Press
- Simkus, A. and Andorka, R. (1982). Inequalities in educational attainment in Hungary. *American Sociological Review*, 47(6), 740–751.
- Tieben, N. and Wolbers, M. (2010). Success and failure in secondary education: socio-economic background effects on secondary school outcome in the Netherlands, 1927–1998. *British Journal of Sociology of Education*, 31(3), 277–290.
- World Bank (2015). *The World Bank indicators: Gini index (World Bank estimate)*. Retrieved from <http://data.worldbank.org/indicator/SI.POV.GINI/countries?display=default>
- Zawistowska, A. (2012). *Horizontalne nierówności edukacyjne we współczesnej Polsce*. Warszawa: Scholar.

The article is based on data gathered in research carried out within the systemic project “Quality and effectiveness of education – strengthening of institutional research capabilities” implemented by the Educational Research Institute and co-financed by the European Social Fund (Human Capital Operational Programme 2007–2013, Priority III High quality of the education system). A preliminary version of this article was published in Polish in *Edukacja*, 135(4), 2015.

Appendix

Table A1

The correlation coefficients between performance in three domains and the ESCS Index. PISA 2000–2012, Poland

Test	PISA edition				
	2000	2003	2006	2009	2012
Reading					
Canonical correlation	0.362	0.391	0.357	0.381	0.366
Standard error	0.026	0.016	0.015	0.018	0.022
Lower limit of 95% confidence interval	0.311	0.359	0.328	0.346	0.324
Upper limit of 95% confidence interval	0.413	0.423	0.386	0.415	0.409
Sample size	3 622	4 383	5 534	4 903	4 560
Mathematics					
Canonical correlation	0.360	0.406	0.370	0.401	0.408
Standard error	0.029	0.015	0.014	0.016	0.020
Lower limit of 95% confidence interval	0.303	0.377	0.342	0.369	0.368
Upper limit of 95% confidence interval	0.418	0.434	0.398	0.433	0.448
Sample size	1 954	4 383	5 534	4 903	4 560
Science					
Canonical correlation	0.367	0.418	0.375	0.384	0.379
Standard error	0.031	0.016	0.015	0.016	0.022
Lower limit of 95% confidence interval	0.307	0.387	0.346	0.353	0.336
Upper limit of 95% confidence interval	0.426	0.449	0.404	0.415	0.423
Sample size	2 022	4 383	5 534	4 903	4 560

Own calculations made with regard to the five plausible values and replication weights. Raw PISA data from the OECD website (<http://www.oecd.org/pisa/pisaproducts/>).

Table A2

The coefficients of canonical correlation between parental education and the choice of type of secondary school after completing primary school (1999) or lower secondary school (2004–2011)

Year of starting secondary school	1999	2004	2005	2008	2011
Canonical correlation	0.453	0.406	0.427	0.398	0.409
Standard error	0.023	0.027	0.025	0.023	0.019
Lower limit of 95% confidence interval	0.409	0.354	0.378	0.353	0.372
Upper limit of 95% confidence interval	0.497	0.458	0.475	0.443	0.446
Sample size	3 384	2 222	2 170	5 102	3 692

Own calculations taking into account the replication weights. Schools of the secondary level are divided into three types: general secondary, vocational secondary and basic vocational.