UNVEILING THE PRIMARY SOURCE OF DECLINING EDUCATIONAL EQUITY IN SWEDEN FROM 1998 TO 2014

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ABSTRACT

In Sweden, educational equity has declined since the late 1980s. What the primary sources of this trend are, though, are unclear. In order to pinpoint potential causes of the shift, the current study looks into how educational fairness has evolved throughout the Swedish educational system. Three-level hierarchical models were used to analyze the academic performance of the cohorts of students who left obligatory school between 1998 and 2014, as well as the educational background of their families. The primary cause of the diminishing educational equity was determined to be increased segregation amongst schools in terms of student demographics and academic performance. In view of diversified learning opportunities resulting from recent school reforms in Sweden, the findings are discussed.

Key words: Equity in education status socioeconomic Reform in education School selection Three-tiered evaluation

I. INTRODUCTION

The impact of family education on student achievement in Sweden increased during the period between 1988 and 2014 (Gustafsson & Yang Hansen, 2018). Given that the relation between socioeconomic background and student achievement is considered to be one of the most important indicators of the degree of equity of the school system, this result suggests that inequity of schooling is increasing in Sweden. In order to be able to reverse such a trend a good understanding of the mechanisms of the increasing inequity is essential. However, this previous study did not aim to identify at what organizational level in the school system such observed changes occurred (Gustafsson & Yang Hansen, 2018). This rather is the aim of the present study, in which results from further analyses aiming to identify the sources of the increased impact of family background on student achievement are presented. The Swedish educational system has gone through a series of reforms during the past three decades, causing a previously highly centralized system to be transformed into one that is characterized by decentralization, deregulation, privatization, marketization, and autonomy (see e.g., Lundahl, 2002). In the late 1980s the municipalities were given the responsibility for organizing and running the schools. Introduction of free school choice along with a nationwide voucher system, which allowed private ("independent") schools to be run with public funding in a quasi-market system was another important change which was introduced in the early 1990s. Meanwhile, Swedish society and economy has undergone a restructuring, and particularly so during periods of economic crises in the early 1990s and the late 2000s. The level of ambition of the welfare system has been lowered, and society has become more polarized with increasing economic differences between households and segregated residential areas. Nevertheless, Sweden is still a comparatively egalitarian country with a relatively even distribution of income, resources and with a high standard of living (e.g., Skans & Åslund, 2009; Socialstyrelsen, 2010).

It has been observed that performance gaps between schools and municipalities have successively increased (see e.g., Gustafsson & Yang Hansen, 2011), and so has school segregation with respect to social and migration background (Yang Hansen & Gustafsson, 2016). There also are indications that the reforms have caused an increasing diversity between schools and municipalities with respect to educational resources and teaching methods (e.g., Holmlund et al., 2014; Skolverket, 2009; Yang Hansen & Gustafsson, 2016). The increasing segregation of students across schools may also be expected to lead to an increased sorting of teachers over different

schools (Hansson & Gustafsson, 2016; Holmlund et al., 2014). Given the nature of the reforms in the Swedish school system, and the development of the Swedish society, it is possible that these changes at different levels, including municipalities and schools, have brought about the increased relationship between family background and student achievement.

The aim of the current study thus is to examine the trend in inequality in Swedish compulsory education at individual, school and municipality levels between 1998 and 2014. Two aspects of educational inequality are focused upon, namely, inequality in learning outcomes, measured by variation in grades across schools and municipalities, and inequality of educational opportunity with respect to SES and migration background. These two aspects are "theoretically and empirically linked" (p. 408, Van de Werfhorst & Mijs, 2010), and will be investigated with register data for students in their last year of compulsory education in Sweden.

1.1. Relationship between SES and school achievement

The equity issue is one of the most important issues in educational research. As Sirin stated in his meta-analysis, "Socioeconomic status (SES) is probably the most widely used contextual variable in education research (Sirin, 2005, p. 417)". An increasing amount of research on school effectiveness takes into account differences in school contextual characteristics, such as SES, so that credible effect estimates of school-related factors can be obtained. However, in spite of the important role of SES in education, there is little consensus on the conceptualization and measurement of SES, which has caused great variation in estimates of the SES effect and ambiguity in interpretations of research results (e. g., Buchmann, 2002; Marks, 2013; Sirin, 2005; White, 1982).

A large number of studies have been conducted to investigate educational inequality in different school systems around the world. Hattie (2009) identified six areas of factors influencing

inequality, namely, the child, the home, the teacher, the approaches to teaching, the school, and the curricula, (p. 31) and these factors are measured at different levels in the school system. Socioeconomic status (SES) is one of the most important factors among the influences from the home. Typically, a student's SES is measured by parental education, parental occupational status, and family income, with appropriate adjustment for household or family composition (e.g., Duncan, Featherman, & Duncan, 1972), and parental education has been noted to be the most commonly used SES proxy (Sirin, 2005).

Examining the existing meta-analyses of the SES-achievement relationship, based upon 499 studies and 957 effect estimates, Hattie (2009) found a notable overall SES effect on student academic outcome ($d = .57$, p. 61). However, he also pointed out that different sub-components of SES and units of analysis do produce different effect size estimates of SES on academic outcomes. Considering the effect sizes of the typically used SES indicators, Sirin (2005) observed in his meta-analysis that the effect size between achievement and parental education was $d = 0.60$, for parental occupation it was $d = 0.56$, and for parental income it was $d = 0.58$. These effect size estimates thus are highly similar.

Measured in terms of correlations, the SES-achievement relationship generally is much higher at collective levels, such as the school- or municipality-levels than when the individual student is the unit of observation (e.g., Hattie, 2009; Sirin, 2005; White, 1982). The Coleman Report (Coleman et al., 1966) demonstrated that the socioeconomic composition of a school's student body has a stronger effect on its average achievement, independent of the student's own social background, than any other school factor. Using the same data, Jencks et al. (1972) found a strong effect of the socioeconomic composition of school peers on school outcomes, beyond the student's own SES and ethnic background.

Such a compositional school effect of SES is usually measured by the effect of the average SES of the school student body on school

achievement. In school effectiveness research, the compositional effect of SES is particularly important when the accountability of the school for the students' academic achievement is in focus, since the contextual effects of the students' socioeconomic and ethnic background have to be singled out. However, Opdenakker and Van Damme (2001) and Thrupp, Lauder, and Robinson (2002) suggested that the relationship between school composition characteristics and educational outcomes is more complex, because the school SES composition not only directly affects student achievement, but it also interacts with the instructional and management practices of the school and which, in turn, affect student achievement (e.g., Gustafsson, Nielsen, & Yang Hansen, 2018). Thus "school effectiveness may be limited by the nature of the school intake and by the way students interact with each other in that social context" (Televantou et al., 2015, p. 77; also Thrupp & Lupton, 2006).

There may thus be several mechanisms behind the compositional effects on achievement. In addition to peer effects which imply a direct effect of peers on one another, there may be compositional effects on the quality of instruction. For example, in a classroom where the majority of students are of high-SES background there is likely to be fewer interruptions and more concentration on the instructional tasks, then in a classroom where the majority of students are of low-SES background (Rjosk et al., 2014). An overall SES achievement relationship represents the combined effect of relationships at different levels of observation, such as the student-, school-, and municipal levels. It may, of course, be that there are differential trends of development at these different levels of observation, which are necessary to analyse in order to reveal the mechanisms behind changes in SES-achievement relationships.

1.2. Changes in the SES-achievement relationship

The reforms of the Swedish education system during the last three decades have reshaped the landscape of Swedish school world (e.g., SOU, 2014:5). The decentralization process changed the mechanisms of resource allocation from the state to the municipalities, and it has shifted the responsibilities for the management of schools from the state to municipalities, schools, school-leaders and teachers. The implementation of a voucher system with free school choice enacted since 1992 has facilitated a choice-competition model with intensified competition between schools for student recruitment and increasing choice practices among students and their families in a developing quasi-school market (e.g., Bunar, 2010; Fjellman, Yang Hansen, & Beach, 2018; Lundahl, Erixon Arreman, Holm, & Lundström, 2013). As a consequence, Swedish schools vary in the amount of resources available, depending on their attractiveness and their geographic location (e.g., Bunar, 2015). It has also been observed that Sweden has become more segregated with respect to the socioeconomic and ethnic distribution of inhabitants geographically and with respect to employment. These changes have been hypothesized to have negative consequences for equity in children's schooling, mental and physical health, and living conditions, as well as for their future careers (e.g., Skans & Åslund, 2009; Vinnerljung, Berlin, & Hjern, 2010; Östh, Amcoff, & Niedomysl, 2014).

Since the late 1990s it has been observed that the Swedish school uses forms of instruction that, to a larger extent, put the responsibility for learning on the students themselves by using investigative forms of teaching and different forms of "own work" (e.g., Håkansson & Sundberg, 2012; Skolverket, 2009). It has been hypothesized that such forms of self-regulated learning are better suited for students from high-SES homes than from low-SES homes, and that the increased use of them therefore accounts for at least a part of the increasing relationship between SES and achievement (Skolverket, 2009).

In sum, there are reasons to believe that the organizational changes in Swedish education system in the past decades have influenced educational equity negatively, causing increasing socioeconomic differences in achievement across schools and municipalities. There is also reason to believe that

demographic changes caused by increased immigration may have influenced that pattern of relations between SES and achievement. The main aim of the current study thus is to investigate changes in the SES-achievement relationship at individual, school and municipality levels, in order to examine at which levels change has occurred. It can be hypothesized that the increased achievement differences between Swedish schools and municipalities may have led to increasing SESachievement correlations at school and municipality levels.

II. METHOD

In this section, we describe the cohorts and variables involved in the analysis, along with the analytical method and process of data analysis.

2.1. Municipalities and cohorts

Municipalities are the local units of government in Sweden. They are, among other things, responsible for services, like schooling, childcare and care of the elderly. Currently, there are 290 municipalities, and according to the official statistics, these municipalities

Table 1
Number of Students, Schools and Municipalities for Each Cohort between 1998 and 2014 after excluding small schools

are divided into 9 categories, namely, big cities, suburban municipalities, large towns, medium-sized towns, industrial municipalities, rural municipalities, sparsely populated municipalities, other larger municipalities, and other smaller municipalities. These different categories of municipalities vary not only in size with respect to the number of inhabitants and geographical area covered, but also in their sociodemographic characteristics, such as the average educational level of the inhabitants. These differences between municipalities may possibly result in different attractiveness of the municipalities and their schools when recruiting teachers.

The current study relies upon register-data provided by Statistics Sweden. The so called Grade 9 register includes information about all students who have graduated from compulsory school and information about, among other things, their school grades and parental education level. The current study focusses on the cohorts leaving compulsory school, typically at age 16, between 1998 and 2014.

2.2. Variables

2.2.1. School grades

A criterion-referenced grading system was introduced in 1998 with four scale-steps. The scale-steps were assigned letter grades and numerical values according to the following rules: not passed (IG) = 0, passed (G) = 10, passed with distinction (VG) = 15 and passed with special distinction (MVG) = 20. In 2013 the grade scale was changed into a six-step scale (F-A). The not passed (grade F) yields 0 points while the lowest pass grade (E) yields 10 points. For each of the grades D to A an additional 2.5 points is earned, for a maximum of 20 points. An equally weighted sum of the 16 best grades is computed, the highest possible value thus being 320 for both the four- and six-step scales and the lowest is 0. This variable will be referred to as CritGrade. Gustafsson and Yang Hansen (2018) observed that the non-equidistant four-step CritGrade scale has poor measurement properties, leading to an underestimation of the relationship between family background and school achievement. A variation in grading practices also was observed across different schools, which resulted in grade inflation over time, particularly so during the first years after the introduction of the new grading system in 1998 (i.e., Cliffordson, 2004; Fredriksson & Vlachos, 2011; Vlachos, 2010). To partially eliminate the impact of the measurement problems in CritGrade, a percentile transformation was made for each student within each cohort (see e.g., Gustafsson & Yang Hansen, 2018) and this transformed grade (PercGrade) will be used in this study.

2.2.2. Parental education

The information on parental education is based on both the level and orientation of the

education that parents had when the child was 16 years of age. This information is classified into two, six and twelve categories (Svensson, Nielsen, & Berndtsson, 2007). Gustafsson and Yang Hansen (2018) showed that the two-category classification underestimates the relationship between school

Table 2
Mean and Standard Deviation of Percentile Transformed Grade and Parental Education level for Total Population, Immigrant Population and Swedish Population.

achievement and parental education and concluded that the six-category classification should be used instead. This variable (Educ6) distinguishes between compulsory education, upper secondary education with theoretical and vocational orientation, and two categories of tertiary education with different length. The information primarily concerned biological parents but when this information was not available information about step-parents was used.

Table 2 presents the mean and standard deviation of the variables used in the current study, both for the total population and separately for immigrant and non-immigrant students. PercGrade had for the total population each year a fixed mean of 50 and the standard deviation 28.9. The mean for the immigrant students was for all cohorts lower than the mean for the non-immigrant students. However, the mean for the immigrant students increased up to the 2008 cohort, after which it declined again. These changes are likely to be due to changes in the country of origins that the immigrant students were from. The Educ6 variable has an increasing mean trend in the Swedish group. For the immigrants it too increases up to the 2008 cohort, after which the mean decreases. However, the variation increased over time for the immigrant population and an opposite trend was observed for the Swedish population up to year 2011, and it increased in the last three cohorts in the study. This pattern supports the hypotheses of changes

in the countries where the immigrant students came from.

2.3. Three-level analysis

Our main aim is to estimate the relationship between parental education and school achievement at the student-, school- and municipality-levels. We used a three-level modeling technique to estimate the amount of covariance between grades and parental education simultaneously at the three levels (see e.g., Raudenbush & Bryk, 2002). A student's grade can in a three-level unconditional model be expressed:

$$PercGrade_{ism} = \gamma_{000} + u_{00m} + r_{0sm} + e_{ism}$$

where the subscripts i, s, and m denote individuals, schools and municipalities respectively. 000 is the grand mean of PercGrade; u00m is the random effect of municipalities capturing the deviations of municipality means from the grand mean, r0sm is the random school effect that expresses the deviation of school means from municipality means, and eism is the random individual effect that expresses the deviation of each student's grade from the school mean. The three random effects are assumed to be normally distributed with a mean of zero and standard deviations u, r and 2 respectively.

According to Eq. (1), the total variance in PercGrade can thus be decomposed into three sources of variance that are attributed to the differences among students ( )2 , schools (r), and municipalities ( )u . The Intraclass Correlation Coefficient (ICC, ρ) captures the proportion of variance at each collective level to the total variance of the variable in focus, measuring the amount of between-school and between-municipality differences in, for example, grades. The ICCs can be calculated as:

$$\rho_s = \frac{\tau}{\sigma^2 + \tau_u + \tau}, \text{ the proportion of variance across different schools}$$

$$\rho_m = \frac{\varsigma}{\sigma^2 + \tau_u + \tau}, \text{ the proportion of variance across different municipalities}$$

The ICC at school level can be interpreted as the proportion of variance due to the school belongingness within municipality, while the ICC at municipality level represents the proportion of variation due to differences across municipalities. Based on these variance

partitions, the covariances between parental education and student grades were estimated at the three levels separately for each cohort between 1998 and 2014. Since the covariance estimate at each level is additive, the sum of the covariances at individual,

school and municipality levels equals the covariance of the overall parental education and school grade association estimated by a single level analysis. The covariance estimates in the three-level model therefore capture the changes of the association over time, revealing a detailed picture of the levels at which the relationship between SES and achievement increases or decreases. It is, of course, also possible to standardize the estimated covariance for the three levels into correlations. These may be compared across levels, but it must be observed that they do not sum into the ordinary observed correlation. Both the ICCs and the covariance across collective levels are used as indicators of educational inequality (e.g., Van de Werfhorst & Mijs, 2010).

The three-level analysis was carried out with the statistical modelling program Mplus (Muthén & Muthén, 1998–2017). Since population data was used in the analysis, the proportion bivariate data coverage typically is around 0.98 for all cohorts. The coverage is somewhat lower for the immigrant student population, the lowest proportion being .95. Mplus provides treatment of missing data through a full information maximum likelihood modelling technique (Muthén & Muthén, 1998–2017). In order to investigate the impact of the demographic changes related to the successively increasing proportion of students with immigrant background, analyses have been conducted both for the total set of data, and separately for non-immigrant and immigrant students. Results from the two sets of analyses were compared and differences between the patterns of changes in the association between parental education and school grade over time were discussed.

III. RESULTS

The results presented in this section follow the analysis steps that were designed to answer the

research question about changes in the relationship between parental education and student achievement at individual, school and municipality levels.

3.1. School grades and parental education across schools and municipalities

Fig. 1, presents the ICC measures for Educ6 and PercGrade from 1998 to 2014, estimated for the total population of students. The ICCs for PercGrade at school-level have more than doubled from about 0.04 in 1998 to about 0.10 in 2014. At the municipality level, the PercGrade ICCs were more than doubled, being between 0.01 in year 1998 and 0.02 in 2014. For Parental education, the between-school and between-municipality differences were quite stable over time, even though a slight increase could be observed for the school-level from about 0.07 to about .08. For the municipality ICCs the level was at around .03. School-level ICCs for Educ6 computed separately for immigrant and non-immigrant students also were quite stable over time (Fig. 2) and for both populations they were between 0.06 and .07. The fact that the ICCs were lower for both sub-populations than for the total population suggests that there was a mean difference with respect to Educ6 for immigrant and non-immigrant students, which is also seen in Table 2. The municipality-level ICCs were somewhat higher for non-immigrant students than for immigrant students (Fig. 2).

The school-level ICCs for PercGrade were considerably higher for the sub-population of immigrant students than for non-immigrant students, but both increased dramatically (Fig. 3). For the immigrant group the ICC doubled from 0.06 in 1998 to 0.13 in 2014, and for the non-immigrant group it more than doubled from 0.03 in 1998 to 0.08 in 2014. The municipality level ICCs also were higher for the immigrant group than for the non-immigrant group, and the proportion of grade variation due to municipality belongingness more than doubled from 1998 to 2014 for both groups. We thus see stronger segregation with respect to school achievement for immigrant students than for non-immigrant students across schools

and municipalities, with an increasing trend for both sub-populations.

In sum, the increased differences in average school grade and parental education level observed across schools and municipalities indicated an intensified educational inequality between 1998 and 2014.
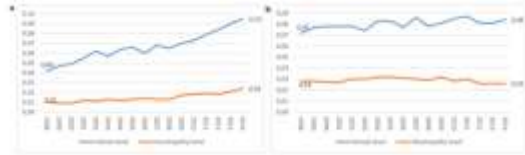

Fig. 1. Intraclass Correlation Coefficients of Percentile Transformed School Grade and Parental Education at School- and Municipality-Levels between 1998 and 2014 for Total Populations. a. Percentile Transformed School Grade b. Parental Education Level.
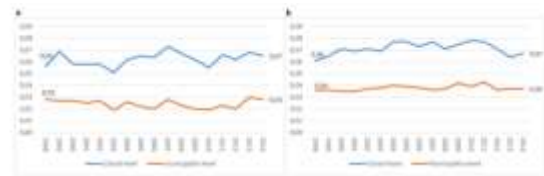

Fig. 2. Intraclass Correlation Coefficients of Parental Education at School- and Municipality-levels between 1998 and 2014 in Immigrant Population vs. Swedish Population. a. Immigrant population. b. Swedish population.
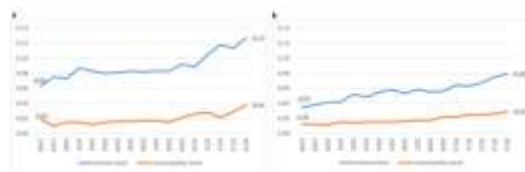

Fig. 3. Intraclass Correlation Coefficients of School Grade at School- and Municipality-Levels between 1998 and 2014 in Immigrant Population vs. Swedish Population. a. Immigrant Populations. b. Swedish Populations.

3.2. Relations between parental education and grades

Relations between parental education and grades for the total population over the period between 1998 and 2014 are presented in Fig. 4, both in the form of correlations (Fig. 4a) and

covariance estimates (Fig. 4b). Looking first at the correlations it may be observed that the overall estimate determined in a one-level model increased from 0.38 in 1998 and 0.40 in 2014, as has also previously been reported by Gustafsson and Yang Hansen (2018). The student-level correlation estimated with the three-level model was relatively close to the total correlation, but it showed a relative stable trend over time from 0.35 to .34. In contrast the school-level correlation increased linearly from 0.73 in 1998 to 0.85 in 2014, while the municipal-level correlation increased from 0.63 to .85.
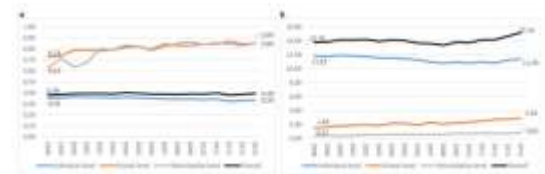
Fig. 4. Relationship between Parental Education and Percentile Transformed School Grade for Total Population. a. Estimated correlation at individual- school- and municipality-level. b. Estimated covariance at individual- school- and municipality-level.

The covariances present a similar pattern of results, but here the additive nature of the covariance is clearly seen. The largest contribution to the total covariance comes from the student-level component, which is decreasing slightly over time. The second largest contribution is from the school-level component, which has doubled from 1998 to 2014. In 1998 the school-component accounted for 10.6% of the total covariance, but in 2014 it accounted for 19.2%. The third largest component was the municipal-level component, which also doubled from 1998 to 2014. In 1998 this component accounted for 2.7% of the total covariance, and in 2014 for 5.5%. Thus, the contributions to the total covariance from the aggregate levels increased from 13.3% to 24.8%.

A more differentiated pattern appears when the two sub-populations are considered. The total covariance estimates for the nonimmigrant group were essentially stable from 1998 to 2014 while they were rising steeply for the immigrant group (see Fig. 5). The lack of change for the

non-immigrant group is due to the fact that the student-level relationship decreased over time, while the school- and municipality relationships approximately doubled over time. These opposite trends in the non-immigrant group cancelled each other out, so that the total covariance remained unchanged at around 13.2. For the immigrant group, however, the relations at all three levels increased almost linearly over time, causing the total covariance to increase from 11.0 in 1998 to 15.9 in 2014. For this group the school-level covariance more than doubled, while the municipality-level covariance became three times as large. The correlations (see Fig. 6) provide a similar pattern of results. The overall correlation increased slightly from 0.38 to 0.39 for the non-immigrant group, while it increased substantially from 0.28 to 0.34 for the immigrant group. For both groups the aggregate-level correlations were lower than 0.70 in 1998, while they were above 0.80 for both groups in 2014. The student-level correlation decreased from 0.36 to 0.33 for the non-immigrant group, while it increased from 0.25 to 0.28 for the immigrant group.

In summary, the results show that for all groups investigated the strength of relationship between parental education and school achievement at the school- and municipality-levels has increased substantially between 1998 and 2014, while at the student-level the correlation decreased for the non-immigrant group and increased for the immigrant group of students.

Fig. 5. Covariance Estimates between Parental Education and Percentile Transformed School Grade, Comparing Swedish and Immigrant Populations. a. Immigrant Populations. b.Swedish Populations.
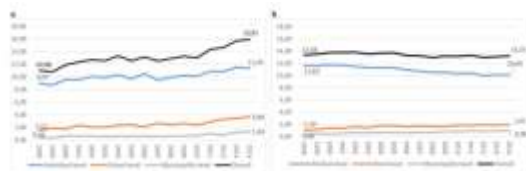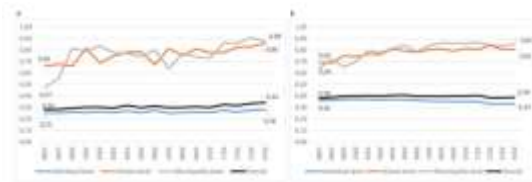

Fig. 6. Correlation Estimates between Parental Education and Percentile Transformed School Grade, Comparing Swedish and Immigrant Populations. a. Immigrant Populations. b. Swedish Populations.

IV. DISCUSSION AND CONCLUSIONS

In searching for a more detailed picture of the declining trend in educational inequality in Sweden, the current study examined the SES-achievement relationship simultaneously at individual-, school- and municipality-levels. Two types of inequality measures were focused upon, namely segregation with respect to school achievement and parental education, and the relationship between parental education and school achievement

We found that achievement differences increased over time both between schools and between municipalities for the total population of students. Separate analyses of immigrant and non-immigrant groups showed that school-level differences were considerably larger for the immigrant students than for non-immigrant students. However, both increased dramatically. The municipality differences also were larger for the immigrant group than for the non-immigrant group, and both were more than doubled from 1998 to 2014. We thus see stronger segregation with respect to school achievement for immigrant students than for non-immigrant students, but with a strongly increasing trend for both sub-populations. However, school segregation with respect to parental education remained quite stable over time. There were only small differences between the sub-populations, with a slightly higher segregation being observed for the non-immigrant group between municipalities.

Given that the overall trend in educational equity when described with covariance between parental education level and student's school achievement, is a simple additive function of the trend at the three levels, their respective

contributions are easily identified. The overall SES-achievement relationship increased slightly, indicating that the socioeconomic equality in school outcomes in Sweden deteriorated between 1998 and 2014 (see also, Gustafsson & Yang Hansen, 2018). The current three-level analysis showed that the main contribution to the overall deterioration of the socioeconomic inequality of school outcomes was from the school-level and municipality-level, when the total population was in focus. When comparing the results obtained with the two sub-populations a striking similarity was seen in that for both sub-populations the SES – achievement relationships increased dramatically at both the school-level and the municipality-level, though to a much higher extent for the immigrant population. However, there was also a striking difference in that for immigrant students the individual SES – achievement relation increased strongly, while it decreased for the non-immigrant group of students.

The results from the three-level decomposition of covariance showed that for both immigrant and non-immigrant groups the SES – achievement relation increased linearly at both municipal and school levels. However, it may well be that the mechanisms behind these descriptively similar developments are different. Gustafsson and Yang Hansen (2011) conducted municipal-level analyses of determinants of changes in school achievement measured with grades and found that achievement improvements were partly explained by increases in parental level of education. However, it also was found that over and above these improvements related to demographic factors, there were achievement improvements in municipalities in the metropolitan areas. One hypothesis to account for this is that these municipalities managed to offer education of a higher quality than the other municipalities. The higher level of quality may, in turn, be due to factors such as availability of more experienced and more highly educated teachers, better systems for evaluation and improvement of education, a higher level of funding, and more ambitious schemes for compensatory resource allocation.

Given that the level of education is higher in the metropolitan areas, this generates an increased covariance between parental education and level of achievement at the municipality level. We thus propose two explanations to account for the successively increasing SES - achievement relationship at the municipal level; (1) demographic changes which result in increasingly differentiated levels of education between municipalities; and (2) increasing differences in the quality of education offered by different municipalities, and particularly so between municipalities in the metropolitan areas on the one hand and the other municipalities on the other hand.

Given that the changes in the amount of segregation with respect to parental education are limited, it seems likely that the increased covariance at the school-level is affected by quality changes. It has been observed that in Sweden there is an anti-compensatory allocation of teacher competence across schools, the more experienced and well-educated teachers being over-represented in high-SES schools (Hansson & Gustafsson, 2016; OECD, 2012, 2013). Such a sorting of teachers is reasonable to be expected from the market-driven Swedish educational system, where both students and teachers are expected to choose schools according to quality. However, given that teacher relocations take time, and that there are delays until any effects are seen in the student grades, the impact on the SES – achievement relation is likely to be slow and successive. While there also may be other quality differences among schools which are related to SES, there is considerable agreement that teacher competence is the most powerful resource factor in influencing student achievement.

One of the most interesting findings in this study is the differential trends in the relationship between family educational background and student's school outcome between the immigrant and non-immigrant sub-populations. For the immigrant group, the educational level of the family plays an increasingly important role for their children's school outcome. One reason for this may be that the Swedish school is not so able to cater for the

needs of the immigrant students, and that the impact of parental education therefore becomes stronger. The language and culture of the country of origin are also likely to be important factors influencing these relations. For the non-immigrant group, however, the role that family educational background plays in their children's school outcome declined. It may be that expansion of higher education in Sweden in the past decades has reduced the differences in family educational background, thus weakening educational inequality (e.g., Breen & Jonsson, 2007). However, families have different assets and incentives for making a rational choice, which may be beyond their educational level. Not only the family SES background determines student's school achievement (i.e. the primary effect, Boudon, 1974), achievement and attainment also depends on the educational choices of the family (i.e., the secondary effect). Thus, one should be cautious to interpret the declining trend of SESachievement correlation for the non-immigrant sub-population as indicating increased educational equality.

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