Regional Variation in School Resources and Educational Outcomes in Russia

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During the last ten years a number of significant reforms have been implemented in the system of general education in Russia. There were changes in schools financing, governance and curricula. These reforms included such widely discussed measures as implementation of per-student budget financing of schools (instead of the cost-based financing) and incentive-based teacher remuneration along with an attempts to raise average teacher salary to the level of average regional wages.

The major part of finances come to schools from the regional and municipal budgets. Due to its vast territory Russia is characterized by significant variation in economic and social conditions at the regional level. Eighty-three Russian regions vary a lot both in school resources and in educational outcomes. The purpose of our study is to find out how economic and social differences between regions are related to the differences in financial resources available to schools and how they jointly affect educational outcomes.

To answer these questions we compile the regional-level data on all regions of Russia for the period of 2006-2013. The data on regional-level budget expenditures on general education is taken from the Russian Treasury statistics. The data on regional social and economic characteristics including school system indicators come from Rosstat (Federal State Statistics Service) and Russian Ministry of Education. We also use individual-level data from several rounds of PISA and TIMSS international studies. We estimate the effects of regional characteristics on educational outcomes measured by these tests. Another measure of educational outcomes that we use is the average regional scores of the Unified State Examination (USE) which has been a mandatory test for all school graduates in Russia since 2009. In addition we analyze relationship of regional characteristics with propensity of students to complete high school[[1]](#footnote-1).

There is a long-standing debate in the literature on whether and how various school inputs including school financing affect students’ educational outcomes. Empirical studies trying to answer these questions include cross-countries comparisons as well as within-country studies exploiting variation across regions or across time. In a recent survey Hanushek and Woessmann (2010) state that international evidence on the effect of school expenditures on student outcomes is weak. More robust cross-national evidence pertains to the positive effects of teacher quality and to the institutional features of school system that affect incentives. Within-country studies also show mixed picture. For example, Woesmann (2007) finds no significant effect of school spending on student performance in Germany while Jackson at al. (2015) utilize quasi-experimental setting in US to show robust positive effects of increased school spending. They find that positive effect was much more pronounced for children from low income families. There have been a number of studies estimating the effects of different factors on schooling outcomes in Russia. For instance, Amini and Commander (2012) used PISA and TIMSS data for this purpose. They found that test results are significantly affected by the family characteristics as well as institutional factors such as student-teacher ratios and indicators of school autonomy. However none of these studies looked at the effect of schools financing from regional budget as well as other regional characteristics on educational outcomes. We are trying to fill this gap using all available data.

As Pic.1 shows, in Russia the amount of budget financing of the general education system has grown during 2006-2013. The average regional budget financing per student (adjusted for the differences in the cost of living between regions) has increased by 40%. Most of this growth has happened in 2012. The same time regions significantly vary in the amount of financing and this variation has not decreased during this period. Amount of school financing is also significantly correlated with the gross regional product per capita, i.e. with the level of economic development of the region.

Pic.2 shows the dynamics of the average regional teacher salary relative to the average regional wage in the economy. We see that this indicator has been growing starting since 2008. Again there is a significant variation between regions which declined a little at the end of the period. It is important to look at the relative teacher salary as the level of pay for teachers relative to other jobs in a region affects the type of self-selection into teacher jobs: whether teachers will be positively or negatively self-selected, i.e. it affects the quality of teachers. While salaries constitute the major part (around 80%) of budget expenditures for schools, relative teacher wages are only weakly correlated to school financing that comes from regional budget. Hence these indicators may have differential effects on outcome variables.

In our study we do analysis of regional level data and individual level data. We apply OLS and panel fixed effects models. We test how educational outcomes are affected by the number of regional characteristics including budget financing, teacher salaries, gross regional product per capita, region size and level of urbanization, level of regional poverty and income inequality.

Our preliminary results show that the level of budget spending on schools per se doesn’t appear to affect educational outcomes. However it is positively related to the regional USE scores when the teacher salaries relative to regional wages are high, i.e. joint effect of these two variables is positive. Controlling for the level of school financing and GDP per capita, regional poverty level shows some negative effects on USE and PISA scores. In addition, regional poverty and within-region income inequality have a negative effect on the proportion of students that complete high school (10-11th grades). Thus it appears that given the same level of economic development and school budget financing in the regions higher inequality of income distribution within region has detrimental effect on the equality of opportunity for the students.

Picture1. Regional school budget financing per student adjusted for the regional cost of living, roubles

Picture 2. Regional school wages relative to regional average wage, percent

References

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1. Compulsory general education in Russia includes 9 grades. After finishing the 9th grade students can choose to complete two more years of high school (10th and 11th grades) or to go to vocational school. The share of students that choose high school was around 60 percent in the mid-2000s but it has been steadily falling since that time. [↑](#footnote-ref-1)