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The urban–rural divide in educational outcomes: Evidence from Russia

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ABSTRACT

We employ the method of identification through heteroskedasticity to estimate an educational production function using data on Russian secondary school students from 2000 to 2009, drawn from the Programme for International Student Assessment (PISA) surveys. The chosen methodology credibly controls for the endogeneity of school resources and the results show a persistent positive gap between test scores of urban and rural students. The results of the Oaxaca–Blinder decomposition indicate that the better performance of larger settlements can be primarily explained by the differences in the socio-economic backgrounds of students. The regressions and the decomposition analysis indicate that an increase in school resources has no or only marginally positive impact on individual educational performance. Considering Russia's general demographic decline and the increasingly smaller number of school-aged children, which reduced school and class sizes, particularly in rural settlements, we point out severe inefficiencies plaguing the secondary education system in Russia. Our results also have rather general implications for the analysis of educational policies, which should take into account the evolving characteristics of the population they target.

1. Introduction

The economic literature has always recognised the importance of education in the formation of human capital and its significance for individual and economy-wide performance (Becker, 1964, 1975; Lucas, 1988, 1993; Azariadis and Drazen, 1990). Higher levels of human capital, as measured by the quantity and quality of education, tend to contribute to a more rapid economic growth and help the poorer economies to 'catch-up' with the richer ones (e.g. Barro and Sala-i-Martin, 2004). As such, human capital plays a key role in the economic development of low and middle-income countries. The relationship between growth and schooling is inherently dependent on the returns to education, which are often heterogeneous across different population groups (e.g. Schultz, 1975; Nelson and Phelps, 1966). Urban areas are likely to differ from rural ones in both the costs and benefits of schooling. This is because individuals from rural settlements tend to face a large number of geographic and institutional disadvantages, which are likely to affect their incentives to invest in human capital. For instance, in rural areas the effectiveness of job services and social service provision are often inefficient due to low population density and geographical remoteness. Urban residents are typically better positioned to access employment opportunities and social services and tend to have a greater geographic and occupational mobility (Donahue, 2002). These factors may explain why urban areas are often found to have higher return to education compared to rural ones (Kochar, 2004; Brasington, 2002). Differences in returns to education across settlements are also reflected in large disparities in educational outcome. Moreover, the urban–rural divide in education tends to be more pronounced in developing and emerging economies where it is closely related to a general gap between socio-economic development of rural and urban areas (e.g. Glewwe and Kremer, 2006). In fact, the recent findings indicate that locational disparities in both the quantity and quality of the education provided have increased (Stewart, 2000; UNICEF, 2007).

Russia makes an interesting case to compare the student performance in rural and urban areas, particularly in the dynamic setting, for several reasons. First, the market reforms in the country led to growing inequalities and regional disparities but the systematic empirical analysis of educational aspects of these changes is lacking in the literature.[1] Second, in spite of a significant

[1] For instance, Gerry et al. (2008) investigate poverty trends in Russia during 2000–2004 and find that urban poverty declined at twice the rate of rural poverty so that by 2004 poverty in Russia had become a largely rural phenomenon for the first time since transition began. Given that the link between education and poverty has been clearly demonstrated (Raffo et al., 2007), it seems particularly interesting to investigate whether the trends in educational outcomes follow a similar pattern to the poverty rate.

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urbanisation trend, about one quarter of Russian population still reside in rural areas. Hence, the issues we investigate are likely to contribute to inequality by disproportionately affecting large population groups. Third, our results shed light on the effect of lower aspirations of rural students for higher education, which is associated with their perception that higher education is less accessible for them. It is been reported that higher education in Russia is much more accessible in urban than in rural areas, 1.7 times so for urban residents, 1.14 times for graduates of urban schools, and 1.56 for the graduates of secondary vocational institutions (Dubin et al., 2004; Voznesenskaya et al., 2004). Forth, Russia's general demographic decline translated to an increasingly smaller number of school-aged children, considerably reducing school and class sizes over time (Berryman, 2000). Since the 1990s, the downward trend in school-age population has been particularly pronounced in rural areas. In response to this demographic change, the government initiated a process of closing or consolidating village schools.[2]

This paper uses a country-representative large dataset, the Programme for International Student Assessment (PISA), which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. The analysis addresses two research questions. First, the paper analyses the determinants of educational achievement, with a focus on the impact of school location on individual performance. To do this an education production function is estimated with an innovative instrumental variable technique that credibly controls for endogeneity of available school resources. Second, this study investigates what drives the urban–rural educational achievements gap. To that end, the Oaxaca–Blinder decomposition is employed to assess the contribution of both individual and school level characteristics to the urban–rural educational achievements gap.

This paper contributes to the existing literature in several ways. First, the literature on the Russian educational system is rather limited. The only systematic analysis of the quality of the Russian educational system is that of Amini and Commander (2012) that analyses Russian educational performance in a comparative light. Zakharov et al. (2014) estimate an educational production function to analyse what teaching practices can increase students' individual performance. Carnoy et al. (2015) explore the reasons of Russia's poor performance in PISA scores by comparing students of medium schools to their Latvian and Estonian counterparts. Our paper further investigates the determinants of Russian students' educational achievement and its contributions to the exiting literature are threefold. First, it is the only comprehensive study on both the extent and the determinants of the urban–rural education gap in Russia. Second, we add to the literature on the effects of school resources on educational outcomes by providing evidence based on an innovative empirical strategy. Estimating individual educational performance is notably challenging as schools inputs are far from being exogenous. In fact, they are likely to be influenced by both students and parents' behaviour. Given the difficulties in identifying truly exogenous instruments of school resources, the chosen methodology credibly control for endogeneity without relying on traditional exclusionary restrictions. Third, the results shed light on the effects of the rural schools reform initiated by the Russian government in the beginning of 2000s. Finally, the discussion adds to the development economics literature concerned with the disparities in socio-economic outcomes between urban and rural population.

The rest of the paper is organised as follows. Section 2 describes the Russian secondary education system and it also gives some background on the educational policies implemented since the transition process. The section also provides details on Russian regional differences, hence it motivates the interest in the urban–rural education gap. Sections 3 and 4 present the data and discuss the empirical strategy. Section 5 analyses some descriptive statistics, Sections 6 and 7 discuss the regressions and the decomposition results. The final part concludes and draws out the policy implications of our analysis.

2. Secondary education system in post-Soviet Russia

Russia has an 11-grade system of secondary education. It is compulsory up to the 9th year. The primary education lasts for 4 years, followed by 5 years to receive basic secondary education. There are several types of secondary schools in Russia. There are so-called *obscheobrazovatelnye* schools – secondary schools of general education. Another school type is the gymnasium, which focuses primarily on subjects within the humanities. Finally, lyceums are schools that tend to focus on studying technical and natural fields of study. Approximately 5% of Russian schools are lyceums and gymnasiums, while the share of non-state schools in total number of general education schools remains rather meagre – 1.4% (0.6% of students) (Russian Federal Statistical Service, 2011).

Although universal access to basic general education in Russia does exist in principle, various components of the system are often considered as increasingly inadequate. Education inequalities are rather significant across Russian regions, between rural and urban areas, and between different income groups (Konstantinovskiy, 2012). Nevertheless, in 2002 only 11% of Russians had a below secondary education, comparing to 26% OECD average, and 66% of Russians attained above upper secondary education level, comparing to 56% OECD average (OECD, 2012).

Any analysis of the secondary education developments in Russia is quite challenging because of the size and diversity of the country, the federal structure of the government, and the effects of major socio-economic changes that accompanied the country's transition from a planned to a market economy. The effective provision of secondary education has been complicated by the chaotic and often contradictory attempts to reform the system of education in the presence of stringent fiscal constraints, by significant population movements out of remote areas and urbanisation, by the migration of ethnic Russians and the labour migration of non-Russians from the former Soviet Union countries, as well as by major changes in the employment and further education opportunities for the secondary education graduates (Fretwell and Wheeler, 2001).

Despite a substantial increase from the level of 2.9% in 2000 and 2005, education expenditure still comprised only 5.5% of Russian GDP in 2009, comparing with the average expenditure of 6.3% in the OECD countries. Moreover, only 43% of total education expenditures were directed to primary and secondary education, which was lower than in any OECD or G20 country. Annual expenditures per student by secondary education institutions relative to GDP per capita were also lower in Russia – 23%, comparing to 27% OECD average. The expenditure per student in educational institutions at the primary, secondary and post-secondary non-tertiary levels increased by 58% in real terms between 2005 and 2009, albeit with a 12% decrease in the number of students (OECD, 2012).[3] Expenditures on general education also vary significantly between Russian regions with the level of total public expenditures as a share of GRP ranging from 0.3 to 13.6% (Nikolaev and Chugunov, 2012). In practice, regional differences could potentially be even greater because high-income regions

[2] The disturbing trend of school closings in rural areas, something that often accelerates the collapse of the villages they serve, was even described as 'Internal Decolonization' of Russia (Goble, 2010).

[3] A change of a similar magnitude was observed in the period 2000–2005, with an increase in total expenditures of 44% in real terms.