

# Is School Network Optimization An Opportunity for Education in Transition Countries?

Tom Coupé, KEI  
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*After the fall of the Soviet Union, transition countries have faced an unprecedented demographic shock, with increasing mortality and emigration, but also with a serious drop in fertility. This negative shock to fertility has translated in an increasingly smaller number of school-aged children, considerably reducing school size and class size over time (Berryman, 2000). In addition, given that this drop in children of school age did not go together with a decline of the number of schools, teachers or classes, student-teacher ratios have decreased substantially. As a consequence, transition countries are now in the situation where they have a disproportionately large number of schools, teachers and classes. This oversized system does not appear to have led to great results in terms of the quality of education.*

Many transition governments now in a situation where they need to tackle the issue of oversized systems, often characterized by a multitude of very small schools and very small classes. To reduce costs, many governments would like to merge small schools as the cost of one big school with many students is typically smaller than the cost of having a network of many small schools with few students each. Hence, consolidating schools appears as an attractive option to generate savings that could, at least partially, be reinvested in increasing the skills and performance of the remaining schools, classes and teachers, presumably leading to quality improvements in the educational system.

In several transition countries, this network consolidation movement is already ongoing. Kuddo (2009) describes the process in Armenia, Kallai and Manui (2004) in Romania, Herrmann (2005) in Hungary, the World Bank (2010) in Bulgaria, McGuinness et al (2001) in Estonia, Hazans (2010) in Latvia, and Berdashkevich and Vlasov (2010) in Russia. In Ukraine, the optimization of the

school network is also among the key steps for reforms in the education sector according to the Presidential Economic Reforms Program for 2010-2014 'Prosperous society, competitive economy, effective government'.

Plans to close schools and relocate students to different schools often meet strong resistance within the local community. Different arguments are used by opponents of school closures. Some argue that closing a village school will mean the end of the village, not only because parents will prefer to move to villages with schools, but also because schools often serve as the cultural center of the village. Others argue that the extra transportation cost to reach schools outside the village will mean that some children will drop out. Yet others argue that small village schools are often good schools that can offer better education than the big centrally-located schools.

To shed light on this last argument, in Coupé et al (2011), we study what the impact of school size and class size are on the performance of schools in Ukraine, using data

on educational performance from Ukraine's Independent External Test and data on educational inputs from the Ukrainian Ministry of Education, Youth, Sports and Science. By using a comprehensive set of other possible explanatory variables (see also Coupe et al (2010)) we are able to isolate the effect of school size and class size on performance. However, we cannot completely exclude the possibility that the correlation between school size and performance, which we find, comes from the fact that better students self-select into bigger schools. Still, such selection effect is likely to be minor in the rural areas, where there is typically only one school in each village.

Our results show that bigger schools tend to have higher participation ratios and tend to have higher mean test scores. They also have more students among the top students in Ukraine and fewer students among the bottom students in Ukraine. This is especially true for urban schools, where the difference between a school of about 300 student (the 25<sup>th</sup> percentile of the school size distribution) and a school with about 600 students (the 75<sup>th</sup> percentile of the school size distribution) is about 4 test score points and about 7 percentage points in terms of participation ratio. For the rural schools, the effect of moving from a school with about 100 students (the 25<sup>th</sup> percentile the 25<sup>th</sup> percentile) and a school about 200 students (the 75<sup>th</sup> percentile of the school size distribution) is substantially smaller, at roughly half the values found for urban schools.

Since increasing the size of schools in practice often would result in an increase in the size of classes, we also checked how that could affect performance. We find that the effect of class size is small relative to the effect of school size – often we find no significant negative effect of class size, and sometimes the estimated effect of class size is even positive.

Our estimates also imply that there seems to be an 'optimal' size, a point after which further increases of school size goes together with lower mean scores. However, our estimates of

that point (which varies from about 400 for rural schools to over 1000 for urban schools), show that few Ukrainian schools have reached that point. Our estimated optimal point is also substantially higher than 100 students. This suggests that the 100-student cut-off point used by the Ukrainian government in the Budget Declaration 2011 for ordering the optimization of complete schools (levels I-III), may be very conservative, especially for urban schools. Almost none of the urban schools are below this threshold and for which the estimated optimal point is often over 1000. This suggests there is a lot of room for consolidation.

From a policy point of view, our findings suggest that consolidating the network of schools through a downsizing in the number of small schools and a transfer process of students in those schools to neighboring ones is unlikely to harm school performance on the EIT. If anything it may even increase educational outcomes. Of course, this can only be true if the organization of the transfer of students from the closed schools to the remaining schools is organized efficiently.

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## Tom Coupé

Kyiv Economics Institute (KEI)  
at Kyiv School of Economics

T.Coupe@kse.org.ua

<http://www.kei.org.ua/en/>



Tom Coupé joined KEI in 2005. He was KEI Academic Director till June 2010 and now holds the position of KEI Senior Research Fellow and Associate Professor at Kyiv School of Economics.

Coupé obtained his Ph.D. from the Free University of Brussels (ULB) in 2002. His research interests include economics of education, labor economics and political economics.

Coupé regularly writes columns for newspapers and magazines and has done consultancy work for the European Economic Association, Routledge, UNESCO and the World Bank.