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A Review of the Bulgaria School Autonomy Reforms

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**EUROPE AND CENTRAL ASIA REGION
HUMAN DEVELOPMENT DEPARTMENT**



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ABBREVIATIONS

BGN	Bulgarian Leva (Monetary currency)
CKOKO	Center for Control and Assessment of the Quality of Education
DPL	Development Policy Loan (Administered by the World Bank)
DSBS	Delegated School Budget
Edstats	Education Statistics (Compiled by the World Bank)
Eurostat	European Office for Statistics (Compiled by the EU)
MEYS	Ministry of Education, Youth, and Science
MF	Ministry of Finance
NER	Net Enrollment Rate
NSI	National Statistical Institute
OECD	Organization for Economic Cooperation and Development
PISA	Program for International Student Assessment
REI	Regional Education Inspectorates
SBM	School-based management
SRC	Student Report Card
TIMSS	Trends in International Mathematics and Science Study
UPSCS	Unified per Student Cost Standard
USD	United States Dollars (Monetary currency)

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Executive Summary

As Bulgaria builds a skilled labor force, and attempts to change the educational model from resource-oriented to results-focused, strengthening the existing model of school autonomy and revisiting the accountability framework, in light of the delegated budgets policy, may be needed. In 2007, Bulgaria joined the European Union. To catch up with EU members, Bulgaria needs to improve productivity growth. One important step is to improve the quality and relevance of the education system.

The sweeping decentralization reform of the education system introduced by the Government in 2007 to promote greater school autonomy and more efficient spending produced impressive efficiency gains and set the foundation for better adjustment to local needs. Despite initial successes, lingering concerns remain about the accountability of schools to the local community. Thus, as a part of a continued engagement with the Government of Bulgaria, this study records the achievements of the reforms and highlights outstanding challenges.

The objectives of the Bulgaria School Autonomy Reform study are to assess the progress in the functioning of the model of delegated financing and governance in the education sector. The study aims to identify where the model could be strengthened to further improve the achievement of the objectives of the reform. The study focuses on four questions:

- (1) To what extent are the reforms leading to a more efficient system?
- (2) Is there any evidence that the quality of education had been impacted by these reforms?
- (3) What is the equity impact of the school closures?
- (4) How are accountability mechanisms affecting the role of the major stakeholders?

To what extent are the reforms leading to a more efficient system?

Bulgaria began the decentralization of financial decision-making to the school in 1998, but the more radical reforms did not take place almost a decade later. A comprehensive fiscal decentralization and municipal finance reform was launched in 2001 and within two years, revamped the environment in which local governments performed their public service duties. The transfer system resulted in a transparent mechanism for the calculation and allocation of subsidies across municipalities, and the introduction of the “unified” per student cost standards (UPSCS) for education in 2007 set the stage for significant gains in efficiency of schools. The delegated school budget system introduced in all Bulgarian schools in 2008 further improved transparency of funds allocation, ensuring that resources for education were passed on to schools. These measures were coupled with substantial delegation of decision-making authority to school principals. Per-student financing reform embodied by the introduction of UPSCS and the delegated school budget system was a central part of the reform and a critical enabler of meaningful school-based management policies that followed as it introduced transparency and clarity in school financing, which guided the decision-making process of school principals.

The considerable decrease in population and the expected change in age composition constitute a significant challenge. The school age population decreased by 30 percent from 2000 to 2009. The primary school aged population decreased by 26 percent, while the

secondary school age population decreased by 31 percent. Therefore, the education system faced diminishing demand and an urgent need to implement structural changes in order to remain efficient. In 2007, municipalities began to optimize the number of schools. School closures reached its peak in 2008 with 340 schools closed, from 111 in 2007, before declining sharply to 44 in 2009.

The reform generated considerable efficiency savings. If the Government of Bulgaria had not implemented the reforms and consolidated the schools in 2007 and 2008, the projected total budget in 2008 would have been 4 percent higher than the observed budget. During the 2007-2008 period total savings accrued to reform amounted to more than 100 million BGN. The reform allowed the government to save a considerable amount of resources that allowed for the increase of wages in the education sector by 46 percent between 2006 and 2008 and the reallocation of more resources for capital investment within the sector.

How could the system become more efficient?

Population shifts provide opportunity for further efficiency savings. Despite the reforms and the progress made so far, there is still room for improving the allocation of resources in order to increase the efficiency of the system. Despite the increases, the pupil: teacher ratio is still low, 18:1 in primary and 11:1 in secondary in 2009, suggesting that further consolidation is possible.

The decrease in the school age population is leading to reduced demand for education. A possible solution would be to optimize the number of schools within each jurisdiction, with due concern for equity and inclusion issues. It may also help to stimulate even higher student teacher ratios in the larger cities where optimization will be less painful (to the extent this does not harm the learning and teaching conditions).

Small municipalities in groups 3 and 4 took the brunt of the school optimization, with the largest cases of school closures. To avoid further increases in school dropouts in small municipalities, more schools designated as protected schools could serve as a buffer.

There is a need to review the funding formula in order to ensure sustainability and promote equity, and ensure that the formula aligns with school's real costs. An option would be to consider reviewing municipality groupings with additional criteria which take into account different weights for specific populations, including, for example, the Roma.

Is there any evidence that the quality of education had been impacted by these reforms?

There is yet no conclusive evidence that reforms improved learning outcomes. That is, up to 2006, there is no correlation evidence that the school-based management reforms – greater autonomy and local participation in various school decisions – improve learning outcomes. It may be too early to see the effects of the initial reforms; therefore, international and national assessments may be useful to provide a baseline for future rounds and insights into the quality impact of the reforms.

However, small schools, which are more likely to have been closed as a result of the reforms, are associated with significantly lower scores. Over time, the reduction in the number of small schools could result in higher overall test scores, although at the expense of possible undesirable impacts in equity. This is because linguistic minority students (as used

in the PISA assessment, referring to National Minorities languages and dialects), who although have lower overall scores, tend to perform better in small schools than in larger schools (controlling for socioeconomic conditions).

Even though measuring the impacts of the reforms on education quality is important, a national standardized test for this purpose does not exist. The national external examinations are not designed to measure progress in student learning overtime. The national examinations assess grades 4, 5, 6, 7 and 12, but are not comparable over time and the most important ones – grades 7 and 12 – are for selection into higher levels of schooling.

Within the context of the autonomy reforms, how can the quality of education be improved?

Bulgaria has witnessed a sharp decline in mathematics achievement in both international assessments over the years. To remain competitive, the country needs to consider improvements in school quality. International assessments provide a baseline for future evaluations of the reform efforts.

It is too early to see conclusive evidence that autonomy and participation reforms improved learning outcomes. Therefore, the international assessments provide a baseline for future rounds in assessing progress.

Small schools are associated with lower test scores. Thus it is advisable that authorities monitor learning outcomes in small schools and target programs for quality improvements in low performing schools.

Linguistic minority students have lower scores but tend to perform better in small schools than in larger schools (controlling for socioeconomic conditions). This suggests that efforts be made to target linguistic minorities, implement second-language learning programs (bilingual education), and investigate the reasons for the small school relationship.

A national standardized test could be used for measuring the impacts of the reforms on quality. This may require improvements in the national tests to ensure comparability over time and publication of results. An alternative would be to create a separate national standardized test for this purpose. In either case the results should be public, disseminated, analyzed, used for policy and strategy, and comparable over time and grade. The strengthened assessment system should be aligned with the accountability and autonomy framework. National assessments are needed to measure progress, school value-added, and to determine the ability of parents and local authorities to hold principals accountable. Existing national assessments could be made more suitable for monitoring changes in quality resulting from the reform. It may be necessary to revise the national examinations for this purpose or to create a separate national standardized test. While international assessments are useful for this purpose, they may not be aligned with the Bulgarian curriculum or education objectives, while a national assessment would be. Additionally, international assessments are sample-based. A census-based assessment that is comparable across time is necessary for providing local stakeholders, including parents and municipal officials, with information about performance of individual schools. In order to use assessment data to parse out what component of his or her achievement is due to the efforts of the school or teacher and what component is due to the student's household or background, information about the student's background is required. The results could be analyzed and publicly disseminated for policy

and strategic planning.

Reinforcing the integrity and credibility of the external assessment process is central to assure the reliability of results for grades 4 to 7. Strengthening the procedures and organization of assessment tests (as is the case for the *matura*) may reduce the opportunities of supervisors, often teachers from the same school and municipality, to help students in answering the test questions.

Less than one-half of Bulgarian 15-year-old students are able to reach the OECD's critical threshold of reading literacy and math competency. This requires specific actions to target improvements over time using PISA, for example, by reducing the number of students scoring below level 2 in the OECD PISA scale. Specific measures to improve quality might include:

- Strengthening accountability and autonomy of schools (see below)
- Incentives for performance—such as PISA targets or similar using national assessments

A next step is the improvement of the quality of education. While the latest rounds of PISA and TIMSS precede the reforms, they nevertheless provide a baseline for future rounds and insights into the equity and quality impacts of on-going and future reforms. In fact, it could be useful to set specific targets for future rounds of international assessments. At present, Bulgaria's score in math is 413 and 53 percent of students score below the second proficiency level. A useful target might be to reduce the number of students at this level. Reducing the proportion of students below level two by 50 percent would imply a score of 443 points in 2012, which would put Bulgaria on par with Chile and above Russia. Other countries use such policy targeting, including Brazil, Mexico and New Zealand.

- Extending compulsory, comprehensive schooling to age 16

What is the equity impact of the reform of the school closures?

Evidence suggests that school consolidations may have exacerbated school dropout rates. Given population declines, dwindling budgets, demands for teacher salary increases, the need to close down some inefficient schools became necessary. Thus, one of the main efficiency enhancing measures was the optimization of the school network. Results of a rigorous impact evaluation study suggest that school closures and consequent consolidations contributed to a small but significant increase in school dropout rates. Primary school dropout rates in schools that were closed were more than two times higher than in schools that remained open in 2007 and 2008. The average dropout rate was 14.9 percent in schools that closed, compared to 6.2 percent among schools that were not closed in 2007 or 2008. In the summer of 2008, around 300 schools were closed. Among these schools, 11.3 percent of students dropped out on average, compared to 4.9 percent in schools that did not close.

Problems integrating with other pupils and distance are the two main factors discouraging Roma attendance at consolidated schools. School consolidations occurred primarily in rural areas, including locations where Roma are over-represented. Evidence from qualitative research indicates that Roma children are not always integrating easily into consolidated schools. Much of decline in overall enrollments may be due to the experience of Roma students with consolidation. The main problems that Roma parents cited as discouraging attendance are deficiencies in local arrangements for implementation of specific programs including transportation, school canteens and the semi-boarding facilities.

How can equity be improved?

Specific measures are required to address the needs of students from linguistic minorities and those from less wealthy families due to the fact that they perform worse in academic achievement tests. There is a need to focus on integrating dropouts and preventing more from occurring. Some of the accountability measures will help but more specific actions, such as improving transportation arrangements and semi-boarding facilities, may be needed to mitigate further negative impacts for Roma and in poorer areas where drop outs are more likely to occur. International assessments provide a baseline for future evaluations and insights into the equity impact of the reforms.

School closures and consolidations contributed to a small but significant increase in school dropout rates. Also, the primary school (grades 1-4) net enrollment rate dropped from 100 percent in 2006 to 93 percent in 2009. There is an urgent need to reverse this trend by, among other things, encouraging recent dropouts to return to school, as well as preventing more dropouts, through the design and implementation of targeted demand-side interventions, such as:

- Conditional cash transfer programs and adequate supervision of effective implementation: Financial measures may be needed, but also ensuring that the monthly child benefit program which was made conditional on attendance in school in 2006 is adequately monitored, and conditionality is enforced. Non-financial measures may include public campaigns and incentives for increased community involvement in integration efforts overall and particularly in protected and consolidated schools.
 - More community involvement in integration efforts
 - Better coordination between municipalities and consolidated schools with regard to transportation of students, expanded use of transportation facilities to cover extracurricular activities and specific measures to address the needs of students from linguistic minorities, particularly Roma, and their integration with other pupils in consolidated schools through, for example:
 - Expanding and continuing to support ECD programs
 - Introducing textbooks in mother tongue for Romani language minority groups
 - Protected schools if likelihood of Roma dropout is high in future consolidations
 - Semi-boarding schools for Roma if cost-effective
 - Extra-curricular activities for Roma children to make new schools more attractive.
- The main problems that Roma parents cited as discouraging their children's attendance are deficiencies in the local arrangements for implementing specific programs including the bus transportation, school canteens and the semi-boarding facilities. These represent clear and specific opportunities to extend suitably tailored support services to Roma students. Encouraging voice of Roma parents in order to facilitate their children's integration into the school, Roma parental participation and increased say over design, management, funding of programs: This might include also greater interaction in parent-teacher meetings. There could also be a case for incentives for effective representation in school boards/councils. Roma integration is a priority and one mechanism for attempting to better integrate them is to more actively increase their voice. Giving Roma parents an increased say over the design, management and funding of school programs is a general policy option that may help remedy the deficiencies exposed during the qualitative research.

Linguistic minority students tend to underperform in academic achievement tests. International assessments provide a baseline for future rounds and insights into the equity impact of the reforms.

How are the accountability mechanisms affecting the role of the major stakeholders?

Decentralized decision-making in schools empowers principals and parents. At the school level, the principals are empowered to manage budgets, hire and fire teachers, make pedagogical decisions, and manage the relations with the Ministry of Education, the school council, the municipality and parents. School principals are satisfied with the reforms and parents are able to choose schools and obtain information about their child's school performance.

However, even with information and school choice, the level of participation of parents and the community did not increase with the reforms. Parents do not have a formal say on school matters and do not influence the principal's decisions on budgetary issues. Though some would argue that parents have little interest in or knowledge on such matters, the fact remains that they have little incentive in participating. Also, parents have no formal ways to hold school principals accountable for learning outcomes; which would be ineffective in any case since they do not receive information on the academic performance of other schools.

Policymakers need more and better instruments to hold principals accountable. There is a weakened sense of municipality ownership over the school network as a result of the transfer of responsibilities (from municipalities) to school principals and the inability to hold school principals accountable for their performance, even though municipalities are responsible for compulsory education. The lines of accountability for the municipalities in a system of self-managing schools are not sufficiently developed.

How can the accountability mechanisms be strengthened?

There is a need to further strengthen the accountability measures, and align them to the existing and future autonomy measures, as well as to the assessment system. Using the latest PISA data, for a pre-reform year, more autonomous schools do not perform any better than other schools. Rather than interpret this as a causal relationship, it is more likely due to: (a) too short a time period to assess reforms, and that (b) the school autonomy and accountability reforms have yet to be operationalized. If the proposed changes in the education act (see Box) are implemented, piloted and assessed, then the results of the analysis of PISA 2006 become a baseline from which to analyze future outcomes, supplemented with impact evaluations. Bulgaria has made great strides in promoting school autonomy. However, in order to improve the model, and hopefully contribute to improving learning outcomes, the accountability framework needs to be strengthened. The main challenges are: low levels of parental participation; lack of accountability for increases in learning; less than effective use of delegated budgets; weak sense of municipality ownership over school network; and the need for monitoring of the reform efforts. The accountability model can be strengthened to address each of these concerns by:

- (1) Increasing the participation of parents and the community by:
 - Empowering school councils and creating incentives for their active participation in school decision-making processes

- Providing more public information on school outcomes to inform parental decisions about enrollment
 - Establishing clear rules and guidelines for the operation of school councils so that all stakeholders have clarity about their role and to see consequences to their participation
 - Considering making school councils mandatory in the proposed Education Law to avoid a conflict in the rule that establishes financial penalties for schools that do not have one, while their existence is voluntary as established by the proposed law (currently 25 percent of schools in Bulgaria currently do not have school councils).
- (2) Making schools accountable for increases in learning by providing more and better instruments such as:
- A legally recognized and empowered school council, provided with adequate capacity, to increase the participation of parents and the community.
 - Stronger channels to hold principals accountable for increases in learning outcomes, such as a greater role for the municipality, greater monitoring by parents and the school council, and real consequences for poor performance.
 - Reconsideration of municipality-principal relationship, and the employment relationship between principals and the Regional Education Inspectorates.
 - Publication, dissemination, analysis and use of comparable school assessment information, available to schools, parents and the general public.
 - Independent evaluation system – in the Bulgarian context, this might mean a separate standardized test in addition to the existing examinations system – for producing comparable and public school level results.
- (3) Enhancing the effective use of delegated budgets by:
- Increasing the capacity of staff and parents (and school councils) to hold school principals accountable for school-level decisions pertaining staff management, financial expenditures, and progress in learning outcomes.
- (4) Strengthening the sense of ownership of municipalities over school networks, and further develop the lines of accountability for municipalities in a system of self-managing schools:
- Reconsider establishing a role for municipalities in the process of hiring school principals; now under the purview of the MOE (through REI)
 - Clearer mechanisms of accountability that enable municipalities to hold principals accountable for the use of financial resources are needed. In particular, performance could be measured by the added value of schools, in particular improvements in school conditions or learning outcomes. The plans for school councils outlined in the draft law are a useful first step; however, more needs to be done. The accountability relationship between municipalities and school principals must be addressed; perhaps by re-visiting the employment relationship. There are therefore three different options:
 - Keep the current distribution of responsibilities and create incentives for municipalities to exercise their discretion over the allocation of 20 percent of school funding by institutionalizing other functions that would re-establish their sense of ownership over the school network;
 - Follow other decentralized systems and empower the council of the school boards to appoint the school principal; and

- Strengthen the municipal sense of ownership over the school network by empowering the municipal council to select and the mayor of the municipality to appoint the school principals.

Proposed Education Reforms

The Government of Bulgaria is currently in the process of drafting a new School Education Act. Based on the version released for stakeholders' review and discussion in April 2010, the proposed revisions relevant to this report include:

- The right of the parents to receive a copy of the school budget is recognized (article 141)
- A new structure – the National Inspectorate on Education – is established to review education policies on municipal, regional and national level, to prepare analytical reports, analyses, projections, diagnosis
- School boards retain their legal status of voluntary organizations registered under the Non-profit Organizations Act; but schools without boards will receive less funding for recurrent costs. School boards will include a Council of Trustees to endorse the school development strategy and plan, and endorse the school budget (articles 161, 167, 168)
- The consolidated schools and the protected schools are now part of the new School education Act. The draft law defines the entitlement of these two types of schools to additional funding on top of unified per student cost standards (article 175)
- The draft law defines a separate stream of funds (as per legal act of the Government) for incentivizing higher quality of education and student performance (article 176)
- The principals' full authority to determine the number of staff and its authority to determine class sizes and individual teacher pay within a centrally set framework are now part of the law (article 179)
- Legal requirement for schools to publicize their budgets (on their web sites or otherwise as to ensure access of community to this information) and for municipalities to publicize allocation of education funds across schools (on their web sites or otherwise).

Strong school leadership provided by highly-qualified principals is central to guaranteeing the conditions to promote accountability for quality in learning. School principals should be appointed from a pool of highly qualified individuals with the capacity to manage teaching and support staff, implement professional development policies, and make optimal use of financial resources irrespective of which institution is in charge of hiring school principals or which are the instruments to hold them accountable for results. Establishing a robust principal certification process is the first step to upgrade the qualifications of school principals and attract highly-qualified individuals to the profession.

Establishing a quality assurance institution can reinforce the process of strengthening relationships of accountability between government authorities and schools for quality improvements. The draft law proposes the establishment of the National Inspectorate on Education to review education policies at the municipal, regional and national level, and to prepare analytical reports and diagnosis. Lessons from international experience suggest that there are certain principles that must be followed by quality assurance agencies in order to ensure their effectiveness:

- (1) Agencies that oversee the implementation and quality of schools must be independent from those organizations defining education policies
- (2) Coordination between agencies in charge of the common objective of monitoring and assuring the quality of education is critical to ensure that each institution concentrates in

a particular and clearly defined set of functions (policy-definition versus oversight) and ensure relative independence between their functions and daily operations

- (3) The importance of consultation with different stakeholders in the definition of functions for institutions that are in charge of assuring quality in the system.

Further reforms to the Bulgarian education system aiming at addressing the outstanding challenges should focus on strengthening the relationships of accountability between stakeholders. This can be achieved by, first, increasing the ability of parents and community members to monitor the management of schools and an efficient use of resources by school principals. Clear and enforceable guidelines for school councils, with the ability to participate in the school decision-making process and greater parental and community participation could be implemented, based on a menu of policy options derived from international experience. Second, policymaker could provide the instruments (for example, the use of assessment results) through which municipalities and REIs could hold schools accountable for improvements in learning.

Ongoing reforms to the school autonomy reform should aim to further improve the accountability framework and the ability of school principals to create the conditions for optimal academic performance. Monitoring on a regular basis the progress in implementation and results associated with the schooling reforms is imperative. As a part of a continued engagement with the Government of Bulgaria, it is proposed that regular evaluation of the results of the current and future school reforms (with PISA 2006 as a baseline to analyze future results using subsequent rounds, starting with PISA 2009, supplemented with impact evaluations) be undertaken.

Introduction: A Short History of Bulgaria's Education Reforms

1. **Sweeping decentralization reforms introduced in 2007 by the Government of Bulgaria to promote greater school autonomy and more efficient public spending in the education system produced impressive efficiency gains and set the foundation for better adjustment to local education needs.** The implementation of these reforms had the anticipated impact of helping revamp the financing and governance systems for primary and secondary education. The rationalization of school networks led to consolidation of schools to improve efficiencies leading to larger schools with opportunities to pool education resources. Delegated school budgets helped improve transparency for allocation of resources by ensuring that the unified standard is passed on to the schools, and the delegation of decision-making to the principals helped in allocation of the funds toward the specific needs of the schools.

2. **Despite these initial successes, lingering concerns remain about the accountability of schools to the local community.** Parents have few avenues open to them to participate in the school decision-making process and lack the formal ability to hold principals accountable for school expenditures and results in learning outcomes. Policy makers at all levels have not yet put in place the appropriate tools to hold principals and local authorities accountable for improvements in student performance. In that sense, improving relationships of accountability between parents, the community, school principals and policy-makers is central to improving the quality of education in Bulgaria (World Bank 2009). Moreover, some preliminary evidence from a recent evaluation of the impact of these reforms suggests that students from the schools that were closed down are more likely to drop out of school. In addition, there is some suggestion that the Roma students may be affected more by such school closures (Sondergaard 2009).

3. **This study records the achievements of the reforms and highlights outstanding challenges.** The objective of this study is to assess the progress in the functioning of the model of delegated financing and governance in the education sector in Bulgaria. The study aims to identify where the model could be strengthened to further achieve the objectives of the reform. Four areas have been identified as being of interest: efficiency, quality, equity and accountability. The study describes the expected results chain of such reforms and this framework will be used to assess the extent to which desired outcomes have been met.

Background to the Current Reforms

4. **Bulgaria began reform efforts through decentralized financial decision-making to the school level in 1998 with a small pilot of the Delegated School Budget System (DSBS) to 100 schools in four municipalities.** The majority of schools in Bulgaria are funded by municipalities, which receive subsidies from the state budget to cover costs. The exception to this rule is that a number of specialized and vocational schools, and schools of regional or national significance, for which funding is provided by the Ministry of Education, Youth and Science and other sectoral ministries. The main objective was to optimize the flow of funds from the municipal budgets to the schools by providing incentives for better management of resources, mobilizing more funds for schools, and creating space for efficiency savings at the school level. Through the DSBS, participating schools receive lump-sum budgets for maintenance costs through a formula-based funding arrangement, driven predominantly by the number of students, while school principals were given greater discretion in spending decisions. School principals receive school budgets and manage these themselves. Each school maintains a bank account and is required to use the services of an accountant. The DSBS schools were allowed to reallocate budgets across categories, and to retain budget

savings, together with any additional funds that they were able to mobilize. The schools running a delegated budget were given the status of a “second level budget spending unit,” the first level being the funding authority (the municipality). All schools participating in the DSBS pilot project were granted the power to manage their property under the supervision of the funding authority, to rent unused facilities, and to keep the rental income as revenue. Furthermore, schools were allowed to perform fee-based activities and provide services to external clients (endorsed by the local governments or municipalities). However, the design of the DSBS was in practice severely constrained by the lack of control by school principals and municipalities over the conditions of employment of teacher and non-teacher staff. With class size, staff-class ratios and teacher compensation defined in detail by national regulations, discretion over expenditures by either schools or municipalities was largely limited to the budget for non-personnel expenditures. Moreover, the DSBS pilot was implemented in the context of a highly unstable municipal finance framework and an opaque intergovernmental transfer system that systematically provided less funding for public services than actual expenditure needs. The weight of education in the general subsidy municipalities received from the central budget to cover education costs did not correspond either to the national average municipal expenditure on education or the wide dispersion of municipal percentages spent on education. Moreover, this subsidy was based on the historical number of classes in municipalities and not on the number of students, which provided no incentives for rationalizing municipal school network and school expenditures.

5. The introduction of DSBS as innovative approach to school financing was not coupled with measures addressing the weak accountability framework in schools. Devolved responsibility to school principals was not coupled with formal mechanisms to hold them accountable to parents and municipal authorities for efficient financial management and increased learning outcomes. Existing school councils are voluntary bodies and have no legal authority to participate in the school decision-making process, thus reducing incentives for parental participation.

6. Despite the shortcomings of the existing legal and financial framework for school education, opportunities for the implementation of the DSBS system were expanded to all municipalities and schools. In a bid to make an exit from the pilot phase of the DSBS and to provide the legal base for a nation-wide dissemination of the delegated budgets, the Government adopted Decree 91/2000 (amending and supplementing the original decree for introduction of the DSBS in the four pilot municipalities) to expand the scope of implementation to all municipalities and schools. The initiative to introduce the DSBS to the schools, however, was left to municipalities and the majority of municipalities were unwilling to reduce the scope of their authority over budget spending and management and did not want to transfer this power to school principals. Until 2006, only 22 additional municipalities had adopted the DSBS, making the total number of municipalities implementing the system 46 out of 264. The overwhelming majority of municipalities preferred to control the financial reins themselves since they could not hold school principals accountable for spending decisions. This was because school principals were hired by and reported to the Regional Education Inspectorates (REIs) or territorial units of the Ministry of Education, Youth and Science (MEYS) that are tasked with the supervision of the educational process and outcomes. Since the REIs are managed by and report to the government, the reforms resulted in limited local autonomy both for municipalities, the majority of whom did not adopt the DSBS, as well as school principals, who were not delegated authority from municipalities to plan and manage school budgets. Since the reforms focused mainly on the financial aspects of school-based decision-making, without adding measures to improve accountability, they have yet to have an impact on school quality.

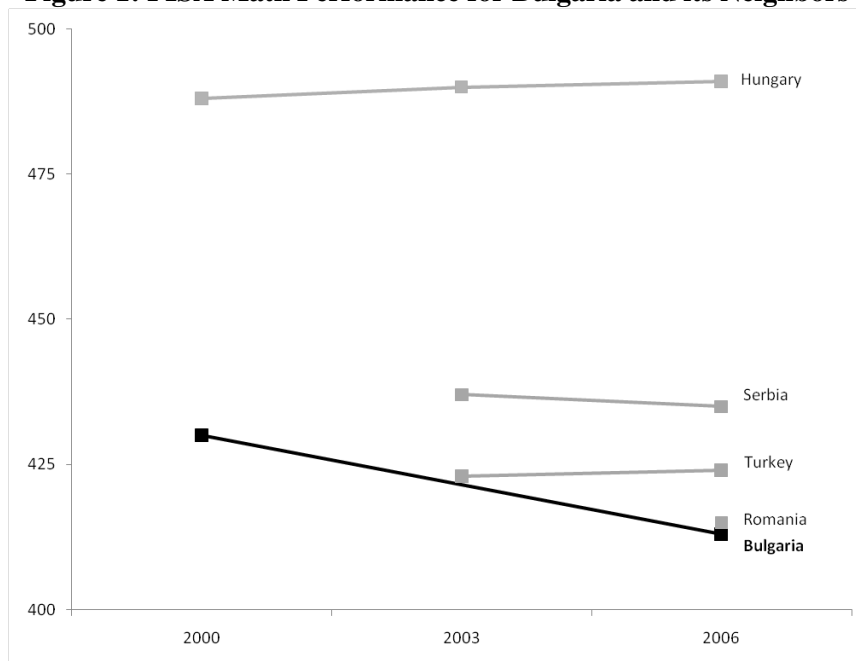
7. **A comprehensive fiscal decentralization and municipal finance reform was launched in 2001 that, within two years, revamped the environment in which local governments performed their public service duties, particularly the financing mechanisms of school education.** A new intergovernmental transfer system came into effect that centralized public services such as safety net payments and privatized hospital care. These two sectors had taken the lion's share of municipal funds before 2003. In addition, the new intergovernmental transfer system was based on clearer, predictable and more equitable mechanism for allocation of subsidies across municipalities. Education became funded in a more transparent manner in 2003 with the introduction of three key elements of financing: (1) the establishment of a new *per student service cost standard for non-staff operating costs*. The allocation of funds across municipalities based on this standard was driven by a formula that provided incentives for increasing the average class sizes in municipalities. However, the non-staff operating costs represented only about 25 per cent of municipal expenditure on schools. (2) A new per student cost standard *for school staffing* was introduced, which although worded as "per student," was actually designed to align with the historical number of classes and average class sizes in municipalities. In fact, the allocation formula of the school staffing standard was calibrated so as to only affect municipalities with average classroom sizes below 16 or above 22. While the formula for calculating staff costs prevented abrupt cuts in revenues for most municipalities, it also decreased the incentives to reduce staff in under-enrolled schools. Under the new formula, only municipalities with average classroom sizes of under 16 had a financial incentive to reduce staffing. Since staff costs represented nearly 75 percent of municipal expenditure on education, the built-in disincentive to improve efficiency in the staffing standard vastly neutralized the incentives embedded in the per-student non-staff operating costs standard. (3) In a bid to expand transparency of allocation of education funds to the school level in 2005 MEYS introduced a mechanism that defined how municipalities were to allocate funds *for non-staff running costs* to schools. That is, 80 percent of the funds municipalities received through the *per student service cost standard for non-staff operating costs* had to be allocated across schools by the number of students in each school and the remaining 20 percent on factors agreed by local stakeholders—including municipal administration and principals. This allocation mechanism had to be applied in all municipalities, even in those that did not formally adopt the DSBS, but actual implementation at the local level was weak. However, the 80:20 percent allocation rule was subsequently used in 2008 reforms as a model for defining the transfer of funds for all current expenditures (including staff) across schools.

8. **The transfer system resulted in a transparent mechanism for the calculation and allocation of subsidies across municipalities.** It ensured more equal distribution of funds in schools and reduced variances in education expenditures across municipalities. The nearly earmarked nature of the two per student costs standards coupled with the 80:20 rule helped retain funding for education and prevented municipalities from diverting funds to other projects. However, municipalities were only able to allocate funds across schools of the same type and not permitted to transfer funds from schools of one type to another (for example, from general schools to sports schools). On municipal level, this resulted in the generation of surpluses in some types of schools and deficits in others. As a whole, these reforms have not been sufficient to decentralize financial authority to lower tiers of governance so that local autonomy can be translated into decisions that can make up for inequity and quality deficiencies (World Bank 2009). In fact, quality of education continued to deteriorate as evidenced by the results of international student assessments in which Bulgaria took part.

9. **Less than one-half of Bulgarian students are able to reach the OECD critical threshold of reading literacy and math competency.** Most students made it to the second level of the Organization for Economic Cooperation and Development's (OECD) 2006

Program for International Student Assessment (PISA) assessment of 15-year-old students, the highest being the 5th level (Figure 1). PISA is a worldwide evaluation of 15-year-old students' academic performance, first conducted in 2000 and repeated every three years, and coordinated by the OECD. The PISA results also reveal a large variation in scores across schools, rather than within schools, which is the case for most OECD countries. It suggests that the quality of education is different across schools, and across municipalities, and that addressing only the financing component of decentralization and school-based management (SBM) is not adequately contributing to achieving the goals of improving education quality and equity.

Figure 1: PISA Math Performance for Bulgaria and its Neighbors



Source: PISA 2000, 2003, 2006. Note: Bulgaria did not participate in PISA 2003

10. **Given the substantial challenges to the education sector, the government adopted a comprehensive strategy in 2006.** *The National Program for Development of School Education and Preschool Education* addresses the long neglected aspects of efficiency, quality and accountability in education and targets such improvements over the next nine years. The program recognizes key problems and challenges confronting the education system and addressed these in reforms undertaken in 2007-2008. These include: over-centralization and a school financing system not conducive to high performance; low pay and social status of teachers; un-optimized municipal school network and a large number of undersized and mixed classes; a large number of un-enrolled children and school dropouts; inequality across schools; differential funding for municipalities; lack of a national external assessment system; and an inefficient internal system for assessment of education quality.

11. **The first measures undertaken in implementing the National Program addressed the deficiencies of the education finance and governance reforms in Bulgaria implemented so far.** In 2007 the Government embarked on an ambitious reform agenda that produced in just two years a new mechanism for allocation of funds to municipalities to fund their school networks (known as the *unified per student cost standard (UPSCS)*, in effect from 2007), relaxed norms and regulations on staffing, teachers workload and class sizes (in effect from 2007), differentiated payment of teachers according to their performance and achievements (2007), rationalization of the school network by closing inefficient schools, thus reducing the teaching and non-teaching staff and matching it to the steeply negative trend in enrollments (since 2007), increase of teachers' salaries (2007), making the implementation of

the DSBS mandatory for all municipalities and schools in Bulgaria (2008) and launching an external students' assessment system (2008). These reforms aimed to transform the school education system from one in which central government managed inputs and lacked measures of outcomes to one where the Ministry of Education set strategic goals for the education system and focused on the attainment of objectively measured student outcomes, while promoting efficiency in the use of resources through an adequate funding system.

12. **The Unified per Student Cost Standard (UPSCS) enforced in 2007 merged the previously applied separate per student standards *for staffing of schools and for their non-staff operating costs* into a single per student amount.** This move eliminated the disincentives for school network rationalization built into the former staffing costs standard. In addition, the criteria used for allocation of funds across municipalities were completely changed. The local governments were divided into 4 groups based on objective factors contributing to the different levels of expenditure needs of schools– the density of population and the dispersion of settlements on the territory of the local government as well as its geographical location, putting a special focus on municipalities located in mountainous and border areas, which also account for the largest share of specific populations with regard to ethnicity and level of poverty. Per-student financing reform embodied by the introduction of UPSCS was a central part of the reform and a critical enabler of meaningful school-based management policies that followed as it introduced transparency and clarity in school financing, which guided the decision-making process of school principals.

13. **After a decade of slow progress in expanding the application of the DSBS, in 2008 the delegated budgets were made mandatory for all municipalities.** Under the new arrangement municipalities allocate a minimum of 80 percent of the total annual municipal budget for school education (received through the UPSCS) based on the number of students enrolled in each school, while the remaining 20 percent are allocated through a set of factors agreed between the schools and the municipality. This measure was coupled with decentralization of authority to all schools where the school principal is responsible for the management of the school budget including staffing levels, individual remuneration and its differentiation based on performance, the number of students in groups and classes, among other decisions. To enhance decision making at school level, the regulations on staffing, class sizes and teachers workload were substantially relaxed. While these measures have significantly improved the financial and governance framework for school education, the mechanisms for translating the improved efficiency into higher quality and equity of school education are still missing.

1. Framework for Analysis of School-Based Management Reforms

14. **The argument that supports school-based management reforms (SBM) is to empower *stakeholders at the local level* with greater decision-making authority and more flexible financing as a way to involve them as partners in heightening the quality and relevance of education.** Another central idea behind SBM is to increase the participation of parents and the community in decision-making at the school level since both groups have clear incentives to demand an efficient use of resources that will lead to positive education outcomes (Barrera et al. 2009).

15. **The relationship between a vision for improved performance and measurable outcomes depends on a careful balance between three policy instruments at policymakers' disposal to influence the behavior of local managers.** The three policy instruments that can be managed through SBM policies are:

- (1) Greater autonomy at the local level;
- (2) Enforcing relationships of accountability; and
- (3) Effective assessment systems (World Bank 2010a).

These are most effective when combined with flexible and smart financing and incentives (World Bank 2010e).

16. The balancing of these policy instruments, namely, autonomy, accountability and assessment, or **the 3As, and flexible financing and incentives**, is likely to have a positive impact on education outcomes. Autonomy, allows freedom and flexibility for schools to innovate and respond quickly to local demand. Strong relationships of accountability contribute to quality by involving parents and the community and by setting clear goals for the system. At the same time, local governments can enforce compliance with regulations to ensure that schools fulfill expected education outcomes in a cost-effective way. Information on learning outcomes is essential in environments with greater autonomy and accountability mechanisms to ensure governments can assess the value-added of schools, encourage public debate using results, and provide useful feedback to principals and teachers to analyze the effectiveness of reforms overtime (World Bank 2010a). Flexible and smarter financing such as contract-based or performance-based block-grants (as opposed to line-item/input-based financing); per-student financing; and financing outcomes (not inputs); are smart financing reforms that help translate a vision for improved results into measurable goals and enable the effective implementation of the 3As.

17. This section presents a framework that describes how relationships of accountability are strengthened through school-based management policies; and establishes a results chain that translates increased autonomy, accountability, and better assessment systems into improved outcomes. Section Five will present an analysis of the current challenges of the Bulgarian reform within this framework for school-based management.

Relationships of Accountability in School-Based Management Reforms

18. **Increased autonomy granted to stakeholders at the school level is not sufficient to translate resources into more effective education outcomes.** Greater decision-making powers can only translate into improved efficiencies and learning if parents and the community can guarantee a closer match between school policies and needs. Moreover, greater autonomy

should be balanced by strong relationships of accountability between policymakers and school principals to create incentives for optimal financial management of the school's budget and effective service delivery.

The Autonomy-Participation-Accountability Nexus

19. **In SBM reforms, decision-making can be devolved from policymakers to one or a combination of the different stakeholders involved in education delivery: the *school principal, parents and the community*, and teachers.** Typically, in SBM reforms, **policymakers** devolve administrative powers to **school principals** in order to increase administrative efficiencies, such as expenses of teaching staff and other recurrent costs. This model emphasizes the accountability of school principals to education authorities regarding both academic and financial areas. Decision-making can also be devolved to **school councils** that embody the voice and power/influence of parents and the community, and thus balance and strengthen the relationship of accountability between educational authorities and school principals. Parental participation can generate a better response to local needs and preferences, in particular when it comes to education quality, by influencing school decisions in favor of increased learning. **Teachers** can also participate in the decision-making process by using their knowledge and experience to help guide and improve teaching and learning (Barrera et al. 2009).

20. **There are four models that typify the various arrangements that have been included in SBM reforms.** Administrative and professional control models tend to display higher levels of autonomy while community models are stronger in terms of participation:

Administrative control SBM - Authority is devolved to the principal

Professional control SBM - Decision-making authority lies with teachers

Community control SBM - Parents have the major decision-making authority

Balanced control SBM - Decision-making authority is shared by parents and teachers

21. **A conceptual framework for SBM defines four main relationships of accountability that establish linkages between policies that grant greater autonomy at the school-level with increased outcomes and efficiencies as follows (Barrera et al. 2009):**

- a. *Parents and community members* hold *school principals* accountable for the provision of quality education services and optimal use of resources.
- b. *Policymakers* hold *school principals* accountable for increases in learning outcomes and for efficient use of resources.
- c. *Parents and community members* hold *policymakers* accountable for their responsibility to guarantee the provision of education (through the power of vote).
- d. *School principals* hold *teachers* accountable for effective service delivery and that enables them to develop internal policies specific to the school and support to the work of teachers.

22. **SBM reforms lead to improved service delivery by shortening the route of accountability between *parents and community members* and *school principals*** by allowing the former to voice their needs, while at the same time monitoring the work and performance of schools (Barrera et al. 2009; Levacic 2008). In contrast, a long route of accountability means the state retains centralized control over school decisions and acts as an intermediary between parents and schools. Through *school councils*, parents and the community acquire the authority to assume part of the management and decision-making responsibilities along with school principals, and the ability to influence decisions made at the school level. School principals

make internal “policies specific to the organization” concerning resource management and pedagogical aspects; while policymakers (different levels of government) set a vision for education and enforce the rules of the game for all stakeholders involved in service delivery (Barrera et al. 2009).

Transforming SBM into Measurable Results

23. **Policy reforms that focus on Autonomy, Accountability, and Assessment (the 3As) will help improve the quality of education and learning outcomes, which will in turn, make other policy actions more effective.** The 3As need to be linked through an integrated system of incentives, sanctions, and rewards in order to lead to improved performance in the system (World Bank 2010a).

24. The following four policy instruments have the potential to promote a greater integration of the 3As and strengthen relationships of accountability between stakeholders within SBM reforms. They are useful tools to link increased autonomy and standardized financing with changes in the behaviors of stakeholders and processes at the local level (intermediate outcomes) toward making decisions that eventually lead to improved quality of learning. The four policy instruments are the following:

- a. *Increased understanding of the rules of the game* by which all stakeholders (central, local, and school-level) participate and interact in the education system;
- b. *Incentives for high-performance at the school-level, and consequences for schools* who are non-compliant with rules and regulations;
- c. *Strong assessment tools* for local policymakers (municipalities) and school principals to evaluate value-added and manage learning outcomes; and
- d. *Formal channels of participation for parents and community members* (school councils) to support the processes of decision making at the school.

Intermediate Outcomes

25. The theory of school-based management emphasizes that there are two main ways in which these types of reforms may help translate policy changes into **behavior and process changes** amongst stakeholders at the school level (Barrera et al. 2009). Changes in the behavior of stakeholders and processes at the local and school-level are denominated as **intermediate outcomes** as they are the channels by which policies at the national level can be translated into better learning outcomes and cost-effective financial management. A way to determine whether national policies result in changes at the local level is to track the following:

- a. The participation of stakeholders in certain areas of decision-making;
- b. Changes in decisions made by the respective stakeholder to whom the main responsibility is devolved; and
- c. The frequency of decisions made (Table 1.1).

Table 1.1 Intermediate Outcomes resulting from SBM reforms

Intermediate Outcomes	School Principal	School Council
Decisions about personnel (hiring, firing, rotation time, teacher training)	√	
Key decisions about spending	√	
Changes in the educational process	√	
Resource mobilization	√	
Channels of direct involvement		√
Links between parental involvement and decisions at the school		√
Changes in accounting		√
Changes in school climate		√

Source: Adapted from Barrera et al. 2009

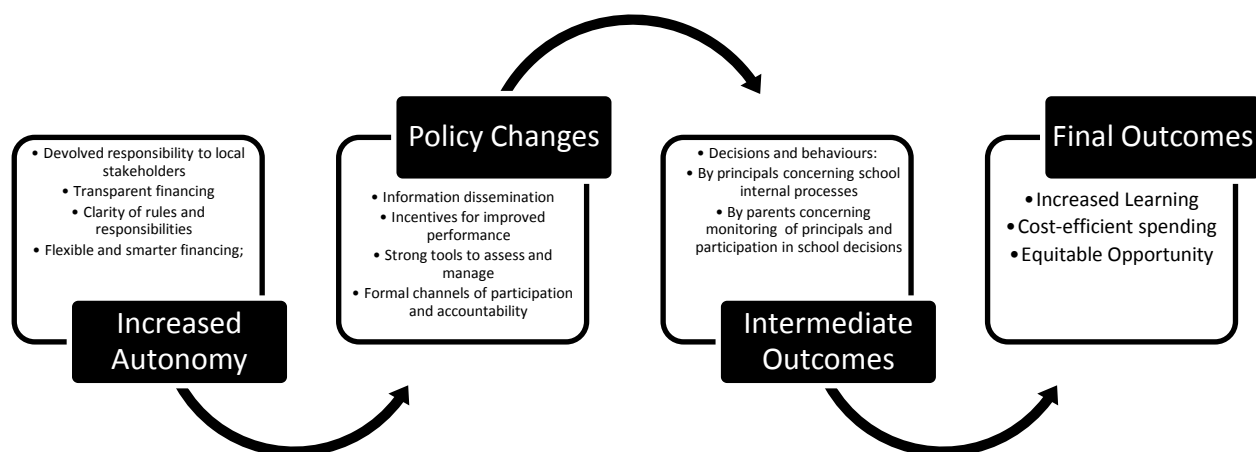
26. The **decisions regarding the school management** (by the responsible stakeholder) and the **frequency** with which these are taken (as reflected in the table above) can be tracked as follows:

- a. Key decisions about personnel (hiring, firing, rotation time and teacher training): Which aspects have been devolved to the school level? Who makes these decisions and the frequency with which are taken? And, how do parents influence these decisions?
- b. Key decisions about spending: Track which stakeholders make decisions about expenditures in infrastructure, administration and staff; how parents and the community influence budget allocations; and, the frequency of the decisions made in this area.
- c. Changes in the Educational Process: Track changes in educational methods, allocation of teacher's time in the classroom and in administrative tasks, absenteeism rates, and meetings with parents.
- d. Resource Mobilization: Track the flow of private donations and grants resulting from active engagement of school principal and/or parents.

27. How school-based management policies promote **active involvement of parents and communities** (through school councils) in school decisions and the extent to which their influence can be tracked:

- a) Channels of Direct Involvement of parents and community in the school: Determine the type of formal mechanisms that enable school councils to participate in school decisions, the frequency of the meetings, and the issues discussed.
- b) Links between Parental Involvement and Decisions at the School level: Uncover the extent to which parental suggestions or complaints voiced through school councils are translated into actual decisions.
- c) Changes in Accounting: Ascertain the extent to which increased parental participation translates into more transparent and enhanced information systems that track students' academic progress and the use of financial resources.
- d) Changes in School Climate: Track the extent to which increased parental involvement influences the attitudes of teachers and students positively or negatively.

Table 1.2 Transforming School-Based Management into Measurable Results



Source: Author's contribution and World Bank 2010e

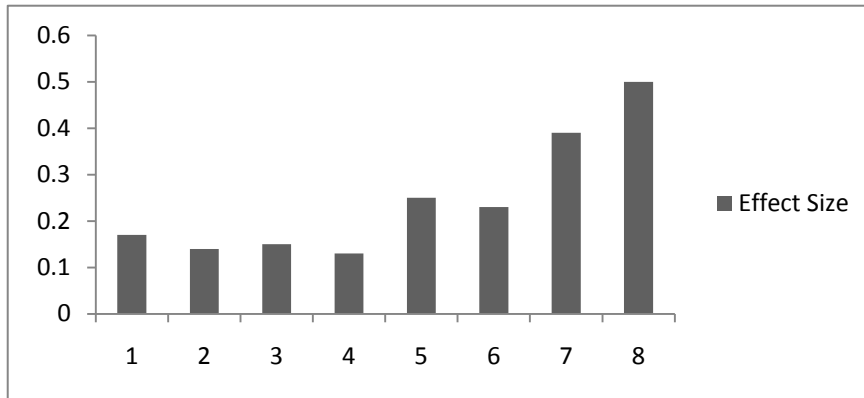
28. **Relationship between school-based management and efficiency, quality, equity, and accountability.** The way increased autonomy at the school level translates into greater efficiency lies in the idea that those who work in the school building and are involved in the day-to-day operation of the school have greater knowledge and management control of the needs of the school, therefore have a better ability to make decisions that are productive in terms of academic results and efficient spending (Barrera et al. 2009). The idea behind involving parents and community members in decisions at the school level is justified on the idea that the parents of children enrolled in the school have the ability to improve their children's education, and that this demand pressure is likely to drive improvements in student achievement. Also, this demand pressure ensures that the unique needs of the local community are addressed by the school, for example, meeting the particular learning needs of minority groups. Another channel through which school-based management reforms can lead to quality improvements is through the ability of higher levels of government to keep accountable school principals for attaining results given financing transferred to the school level. For this, flexible and smarter financing (World Bank 2010e) and precise and transparent information on student learning through reliable assessment systems are central elements that enable an effective implementation of reforms that devolve authority to the school level.

Relationship between years of implementation and effect size

29. **The timing of school-based management reforms is an important factor to be considered as this kind of reform takes years to produce expected results.** This is because the system goes through an adjustment period in which relationships of accountability change, new rules about different roles in management and participation are communicated, and the first changes in school decisions are introduced (Box 1.1). The speed with which the reform is introduced is also likely to affect the short term effects of the reform as stakeholders may or not be clear about their new roles and responsibilities or may lack adequate capacity to exercise it effectively. Thus, SBM reforms in the short term are more likely to improve attendance rates, as measured by the number of days a student goes to school, reduce repetition, and failure. In the longer term, higher attendance rates are likely to improve average enrollment rates, reduce dropouts, and improve test scores (Barrera et al. 2009).

Box 1.1 Relationship between years of implementation and effect size in SBM Reforms

Experience with 800 school-based management models and 29 evaluations in the United States suggest that the number of years of implementation is a statistically significant predictor of student achievement effect size (Borman et al. 2002 cited in Barrera et al. 2009). Graph 1.1 shows that it takes about five years to generate fundamental changes in the school, and that only after eight years of implementation do reforms start to deliver results. While these results are informative and intuitively applicable to a variety of contexts, it is important to consider that the effect of school-based management reforms largely depends on the local context, the incentives that stakeholders have to execute their functions effectively, the clarity in the distribution of functions, and the effectiveness of the implementation of the reform.

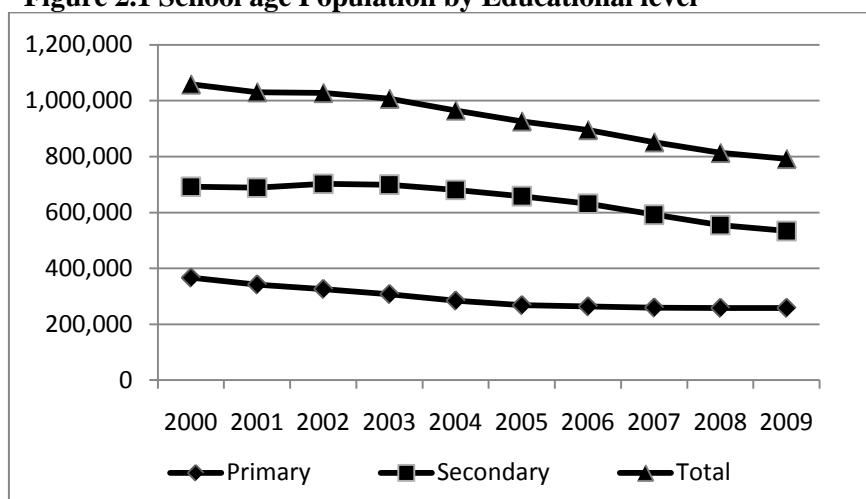


Source: Borman et al. 2002 cited in Barrera et al. 2009

2. Gains in Efficiency

30. **The considerable decrease in population estimates and expected change in the age composition of the Bulgarian population constitute a significant challenge to the country that it needs to face, particularly in the education sector.** As shown in Figure 2.1, during the period 2000-2009, the Bulgarian school age population (7 to 17 year olds) decreased by 30 percent (326,729 students). The total population that demanded primary education decreased by 94,266 (26 percent) while the secondary school age population decreased by 232,463 (31 percent). The education system is facing a diminishing demand and needs to implement structural changes in order to remain efficient. In 2007, as part of the third phase of the education reforms, municipalities started to optimize the number of schools within each jurisdiction. In that year, the total number of closed schools reached 111 – roughly equal to the number of schools closed in the preceding four years. In 2008, this trend reached its peak with 340 school closures before declining sharply to just 44 municipal schools closed in 2009.

Figure 2.1 School age Population by Educational level



Source: World Bank EdStats, April 2010

31. **The diminishing demand of the school age population had a negative impact on school enrollments.** During the 2000-2009 period, primary and secondary school enrollments decreased by 240,191 students (28 percent). As shown in Table 2.1 below, at the primary (grades 1-4) and lower secondary (grades 5-8) levels, enrollments decreased by 29 percent and 38 percent, while upper secondary (grades 9-13) enrollments increased by two percent.

Table 2.1 Student Enrollment and Net Enrollment Rates (2000-09)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Student Enrollment										
All Grades	867,354	839,518	825,668	795,919	758,029	725,545	700,757	672,160	644,779	627,163
Primary education (I-IV grade, ISCED-1)	366,421	341,963	325,885	307,691	284,292	268,123	263,857	259,544	258,419	258,340
Lower secondary education (V-VIII grade, ISCED-2A)	355,918	348,974	338,912	321,233	303,255	286,960	268,912	249,566	229,382	220,196
Upper secondary education (IX-XIII grade, ISCED-3A, 3C)	145,015	148,581	160,871	166,995	170,482	170,462	167,988	163,050	156,978	148,627
Net Enrollment Rates										
Primary education (I-IV grade, ISCED-1)	96.3	98.5	99.8	100.3	99.7	99.5	98.5	97.8	94.6	93.4
Lower secondary education (V-VIII grade, ISCED-2A)	82.4	83.1	83.9	84.2	84.2	84.9	85.1	83.7	82.0	82.4
Upper secondary education (IX-XIII grade, ISCED-3A, 3C)	64.7	68.3	74.9	77.1	77.3	78.0	78.0	78.3	78.3	78.6

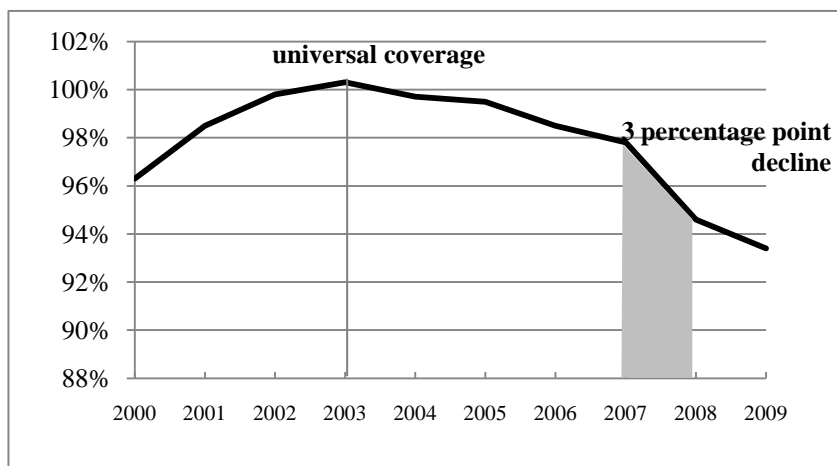
Source: National Statistical Institute (NSI), May 2010

Note: Group rates are calculated in per cents of number of enrolments by levels in age groups 7 - 10, 11 - 14, 15 - 18 and 19 - 20 years to number of population in the same age groups. Numbers of enrolments and population are calculated to 31.12. of the corresponding year.

32. **The Net Enrollment Rate (NER) for lower secondary stayed the same while the NER in primary and upper secondary shifted in different directions: The country improved its upper secondary educational coverage by 13.9 percentage points as its primary coverage decreased by 2.9 percentage points.** Nevertheless, it is important to point out that Bulgaria improved its primary education coverage during the first three years of the mentioned period, even reaching universal coverage by 2003. However, since 2004, the country has gradually decreased its NER in primary, experiencing the biggest decline in education coverage in 2008 with a three-percentage point decline (see Figure 2.2). According to the information gathered in the focus groups and interviews conducted for this study (for more information about the focus groups and interviews, see Section 4), the decrease in primary coverage could be related to school closures. Respondents mentioned that some families refused to change schools. Evidence from qualitative research suggests that this phenomenon affected primarily rural areas and could have a negative impact on the educational coverage of Roma students. This will be discussed further in Section 4.

33. **Another possible explanation for the decrease in the primary NER could be the stricter control over the administrative data collected at school level, including enrollment data.** This stricter control became even more important in 2008 since under the delegated budgets system, every enrolled student meant extra money, so the control was focused on ensuring that enrollment data did not contain students enrolled only on paper (to increase school budget), while actually not attending school. In fact, this stricter control made it possible to reveal the real picture of enrollment rates.

Figure 2.2 Net Enrollment Rate, Primary (2000-09)



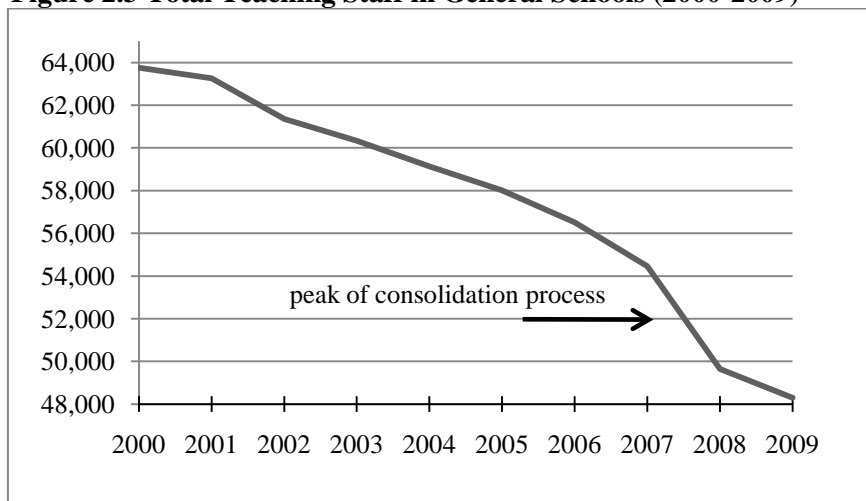
Source: NSI, May 2010

34. **Evidence also suggests that school consolidations may have exacerbated school dropout rates.** Results of a rigorous impact evaluation study suggest that school closures and consequent consolidations contributed to a small but significant increase in school dropout rates (Schady et al. 2009). Primary school dropout rates in schools that were closed were more than two times higher than in schools that remained open in 2007 and 2008. The average dropout rate was 14.9 percent in schools that closed, compared to 6.2 percent among schools that were not closed in 2007 or 2008. In the summer of 2008, around 300 schools were closed. Among these schools, 11.3 percent of students dropped out on average, compared to 4.9 percent in schools that did not close. The impact of the reform on school dropout rates will be discussed further in Section 4.

35. **The third phase (since 2007) of education reforms took into consideration the changes in population estimates and implemented structural changes in order to remain**

efficient. As part of the reform, schools were consolidated and teachers were laid off or encouraged to retire. During the 2000-2009 period, the number of teachers and principals with teaching responsibilities was reduced by 15,549 (24 percent). In 2008, when the consolidation process reached its peak (See Figure 2.3) with 340 school closures, 4,807 teachers were laid off; this is equivalent to 33 percent of the total teaching force laid off during the mentioned period.

Figure 2.3 Total Teaching Staff in General Schools (2000-2009)



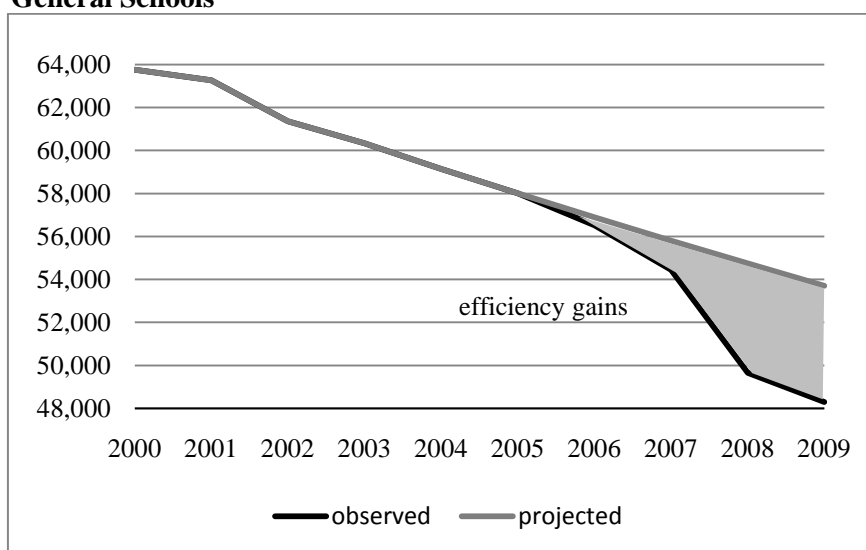
Source: NSI, May 2010

36. **As a result of the above, the education system became more efficient.** Since the total of amount of teachers was reduced by 24 percent and total enrollments decreased by 28 percent, the pupil-teacher ratio for primary and secondary combined decreased slightly from 14 students per teacher in 2000 to 13 in 2009. The student teacher ratio decreased in secondary from 12 to 11, but increased in primary from 17 to 18. An economic system is more efficient than another (in relative terms) if it can provide more goods and services for society without using more resources. In this sense, increasing the pupil-teacher ratio is a desirable goal because a government can provide the same educational coverage with fewer teachers, resulting in savings in salaries, training, supervision and other investments. Some might argue that raising the pupil-teacher ratio could deteriorate the quality of education because a teacher that has more students per classroom has less time to spend helping each student meet their individual needs. However, it is important to point out that there is no consistent evidence about this effect, and there are some countries that are able to provide high quality education with higher pupil-teacher ratios compared to Bulgaria. For example, Korea in 2006 had a pupil-teacher ratio of 18 in secondary and had a mean math score in PISA of 547 while Bulgaria scored 413 with a pupil-teacher ratio of 11, that is, more than 1 standard deviation below Korea (EdStats, May 2010). In the remainder of this section, we will analyze efficiency gains assuming that the quality of education will remain the same with an increase in the pupil-teacher ratio.

37. **Efficiency gains are apparent when taking projected trends into consideration.** As mentioned before, the pupil-teacher ratio decreased in general education (primary and secondary) during the 2000-2009 period because the enrollment figures declined more than the total number of teachers. However, by using the growth rates during the 2000-2006 period (before the consolidation process) to project the amount of teachers for the 2007-2009 period and comparing this result with the observed number of teachers, it is possible to estimate the efficiency gains of the reform (see Figure 2.4). As a result of the reforms, the total teaching

staff in 2009 was 4,923 lower than expected if Bulgaria had continued with the same declining rates observed in the 2000-2006 period. If the reforms had not taken place, the projected pupil-teacher ratio in 2009 would have been 12 instead of 13 or one student less per teacher.

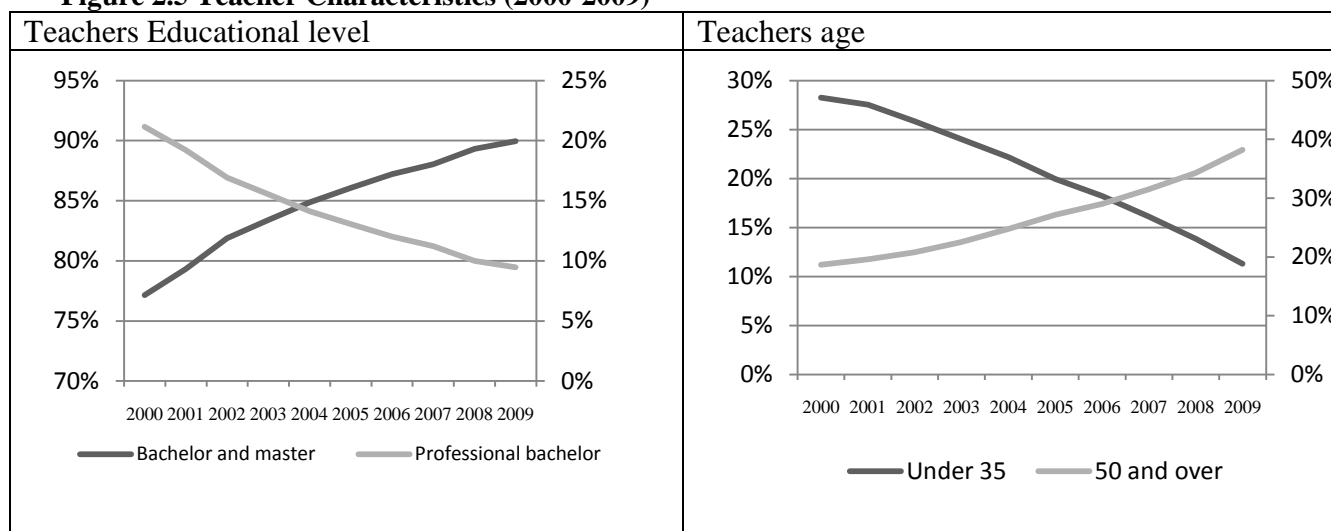
Figure 2.4 Impact of the Reform on the Total Teaching Staff in General Schools



Source: World Bank estimations using data from NSI

38. **The teaching labor force became more qualified.** The academic profile of teachers improved considerably during the 2000-2009 period; the proportion of teachers with tertiary Bachelors or Master degrees rose from 77 percent in 2000 to 90 percent in 2009. Inversely, the proportion of teachers with only a tertiary professional Bachelors degree decreased from 21 percent in 2000 to nine percent in 2009. Such gain in academic training may be reflected in the aging of teachers; the proportion of teachers younger than age 35 diminished from 28 percent to 11 percent while more experienced teachers (age 50 or older) rose from 19 percent to 38 percent. As shown in Figure 2.5, these trends continued after the implementation of the reforms and consolidation of schools.

Figure 2.5 Teacher Characteristics (2000-2009)



Source: NSI, May 2010

39. **The development and strengthening of the education sector is one of the main priorities of the Government of Bulgaria, and this choice is reflected in consecutive budget increases during the 2001-2008 period.** As shown in Table 2.2, during this period,

the education budget more than doubled, from 924 million BGN in 2001 to 2.17 billion BGN in 2008. However, the share as a percentage of GDP remained the same (3 percent).

Table 2.2 Total Education Budget

Year	Total Education Budget		Total Salaries	
	BGN thousands	As share of GDP	BGN thousands	As share of total education budget
2001	924,614	3%	448,906	49%
2002	1,042,226	3%	509,565	49%
2003	1,148,302	3%	547,345	48%
2004	1,272,739	3%	587,853	46%
2005	1,410,503	3%	607,412	43%
2006	1,488,940	3%	669,067	45%
2007	1,684,218	3%	731,424	43%
2008	2,171,059	3%	934,930	43%

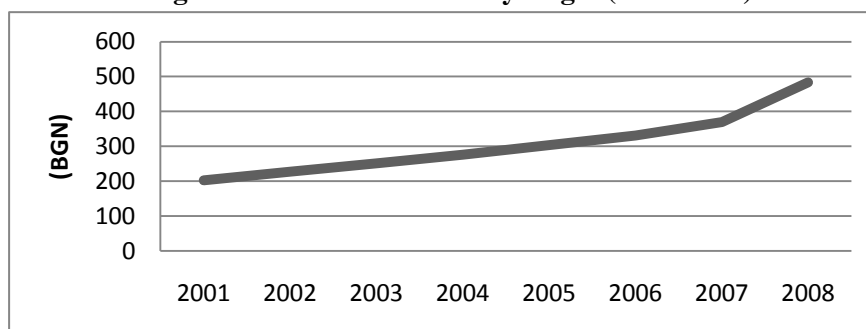
Note: These figures do not include public funds for tertiary education

Source: Consolidated Budget Report (CBR), Ministry of Finance

40. **The share of the total education budget allocated to salaries has decreased over time, thus increasing the share of funds available for capital investments.** As a result of the education reforms, the funds available for capital investments, as well as non-salary, quality-enhancing inputs such as teaching and learning materials, have risen as a share of the total education budget during the 2001-2008 period, from 51 percent in 2001 to 57 percent in 2008.

41. **Nevertheless, the salaries of teachers rose because of the increase in available funding and reductions in the total number of teachers.** As shown in Figure 2.6, monthly wages in the education sector rose at a higher rate since the third phase of the reform. During the 2006-2008 period, monthly wages in the education sector rose from 370 BGN in 2006 to 483 BGN in 2008, equivalent to a 46 percent increase. This increase was slightly higher than the increase in wages for the entire public sector. However, an analysis of the period between 2001 and 2008 shows that wages in the education sector increased by more than 20 percentage points than the average increase in public sector wages. This trend shows that education sector wages have consistently been favored over the wages in the rest of the public sector. Moreover, this trend indicates a strong Government commitment to improving conditions in the education system (see Annex 1).

Figure 2.6 Teachers' monthly wages (2001-2008)



Source: NSI, May 2010

42. **The reform generated considerable efficiency savings.** If the Government of Bulgaria had not implemented the reforms and consolidated the schools, the projected total budget in 2008 would have been 4 percent higher than the observed budget. During the 2007-2008 period total savings accrued to reform amounted to more than 100 million BGN. As shown in Figure 2.4, the reform allowed the government to save a considerable amount of resources that allowed for the increase of teacher wages and the reallocation of more resources for capital investment.

43. **Despite the savings generated by the reform, it is important to point out that per pupil spending rose considerably.** As a result of the declining enrollments and the increasing education budget, per-pupil spending more than doubled during the 2001-2008 period. As shown in Table 2.3, more than 55 percent of the total increase occurred during the 2007-2008 period.

Table 2.3: Per Pupil Spending

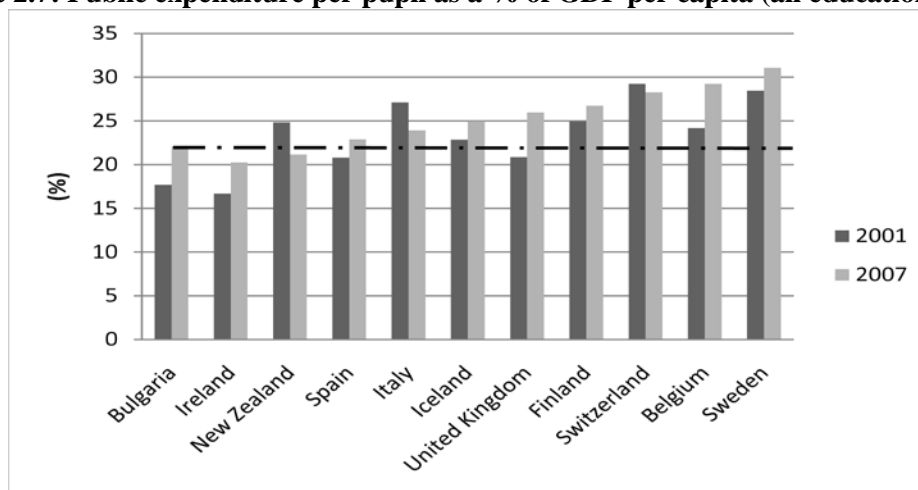
Year	Constant BGN	% of increase	
		previous year	since 2001
2001	1,108		
2002	1,271	15%	7%
2003	1,453	14%	8%
2004	1,692	16%	10%
2005	1,960	16%	12%
2006	2,143	9%	8%
2007	2,529	18%	17%
2008	3,402	35%	38%

Note: These figures do not include tertiary education

Source: NSI and CBR, May 2010

44. **Despite the remarkable increase in the education budget, per pupil spending remains low compared to other EU countries.** As shown in Figure 2.7, Bulgaria's public expenditure per pupil as a percentage of GDP per capita remains low compared to other EU countries. In 2007, Bulgaria's public expenditure per pupil as a percentage of GDP per capita reached 22 percent. This is 4.4 percentage points higher than the figure observed in 2001. During the 2001-2007 period, Bulgaria experienced rapid growth in this indicator.

Figure 2.7: Public expenditure per pupil as a % of GDP per capita (all education levels)



Note: These figures include tertiary education

Source: EdStats, June 2010

45. **The investments that the Government of Bulgaria implemented as a result of the efficiency savings has not yet triggered improvements in learning outcomes.** There is no

correlational evidence that the school-based management reforms – greater autonomy and local participation in various school decisions – improve learning outcomes. It may be too early to see the effects of the initial reforms. Therefore, international and national assessments may be useful to provide a baseline for future rounds and insights into the quality impact of the reforms. The pending challenges on school quality are discussed in the following section.

46. **The reform also improved transparency and accountability.** As part of the reform the government introduced in 2007 a unified per student standard (UPSCS) of funding in all 264 municipalities making clear the way that educational resources will be distributed across municipalities and schools. The unified standard consisted on a single per student amount for students of all ages (apart from special needs which receive additional funding) with different weights for four groups of municipalities, based on historical costs weighted by indicators of population density. Municipalities are placed in the four groups according to number of residents, population density and mountainous terrain, as shown in Table 2.4.

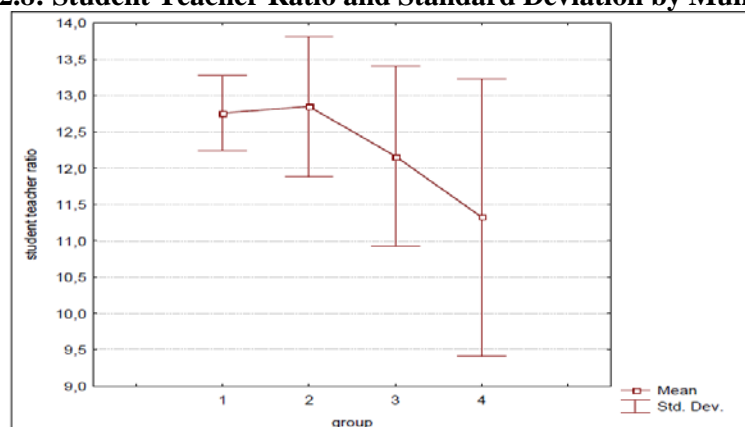
Table 2.4: Unified Standard: Municipal Groups and Weights

Groups	Number of municipalities	Criteria	UPSCS in BGN*			
			2007 (weight)	2008 (weight)	2009 (weight)	2010 (weight)
1	15	70,000 or more residents in municipal centre	796 (1)	980 (1)	1,233 (1)	1,175 (1)
2	40	Less than 70,000 residents in municipal centre Population density more than 65 per sq km	849 (1.07)	1,051 (1.07)	1,324 (1.07)	1,261 (1.07)
3	139	Less than 70,000 residents in municipal centre Population density less than 65 per sq km	894 (1.12)	1,105 (1.13)	1,409 (1.14)	1,342 (1.14)
4	70	Mountainous; more than 3 settlements; less than 10,000 residents in municipal centre	958 (1.2)	1,184 (1.21)	1,519 (1.23)	1,450 (1.23)

Source: Resolutions of the Council of Ministers

47. **Wide variation in class size is likely to generate large inequalities in school funding.** In principle, the UPSCS should produce similar allocations per class, since the formula was supposed to compensate for smaller class sizes in the less populated areas, such as municipalities belonging to Groups three and four. The problem lies in the fact that Groups three and four in Table 2.4 have extremely wide variations in class size, as shown in Figure 2.8, where the standard deviation for class size in less populated areas is far larger than in more densely populated areas. This wide variation in class size in certain areas opens the door to potential inequities in the per class allocations to each school. As a result, more effort should be made to develop more appropriate cost structures for schools located in those regions.

Figure 2.8: Student Teacher Ratio and Standard Deviation by Municipality



Source: Herczyński and Herbst 2008

48. **Changes in the financial arrangements created incentives for improving efficiency.** Some municipalities lost funding as a result of the implementation of the unified standard. According to World Bank estimates (World Bank 2008) in 2007, 88 municipalities received fewer resources per student in 2007 than in 2006. To compensate, and to allow for a period of adjustment, the Government created a compensatory fund to which losing municipalities could apply for additional financial resources, provided they supplied detailed budgets in their application, as well as plans for school rationalization. This policy gave municipalities incentives to improve efficiency while assisting schools during the adjustment process.

49. **There is a need to review the funding formula in order to ensure sustainability and promote equity.** More research is needed to properly evaluate the impact of the reform on the school participation and dropout rates of students from different social and ethnic backgrounds. Evidence presented in Section 4 suggests that Roma population might have been negatively affected by the school closures. The working group that is currently working on refining the unified standard could consider reviewing the municipality groupings with additional criteria which take into account different weights for specific populations, including for example the Roma, in order to ensure that there is a correct balance between putting pressure on municipalities to create more efficient school networks and promoting a school system that guarantees access and quality education for all.

Conclusions

50. According to population projections made by Eurostat (<http://europa.eu/rapid/pressReleasesAction.do?reference=STAT/08/119>), **Bulgaria will experience the sharpest population decline of the EU27 community during the 2008-2060 period.** In these 52 years, the total population of Bulgaria is expected to decrease by 28 percent from a total population of 7.6 million in 2008 to 6.6 million in 2035 and 5.4 million in 2060. The Bulgarian population is also expected to become considerably older by 2060 and is projected to have the highest old age dependency ratio of the EU27. In 2060, the population aged 65 and older divided by the working population will be 60 percent.

51. **The demographic change and declining age cohorts provide an opportunity to improve the efficiency of public education spending** and to ensure it is spent effectively on improving the quality of education and training as well as increasing coverage to the shrinking age cohorts of students (World Bank 2006). Despite the reforms and the progress made so far, there is still room for improving the allocation of resources in order to increase the efficiency of the system while expanding access to education. The low pupil-teacher ratio suggests that

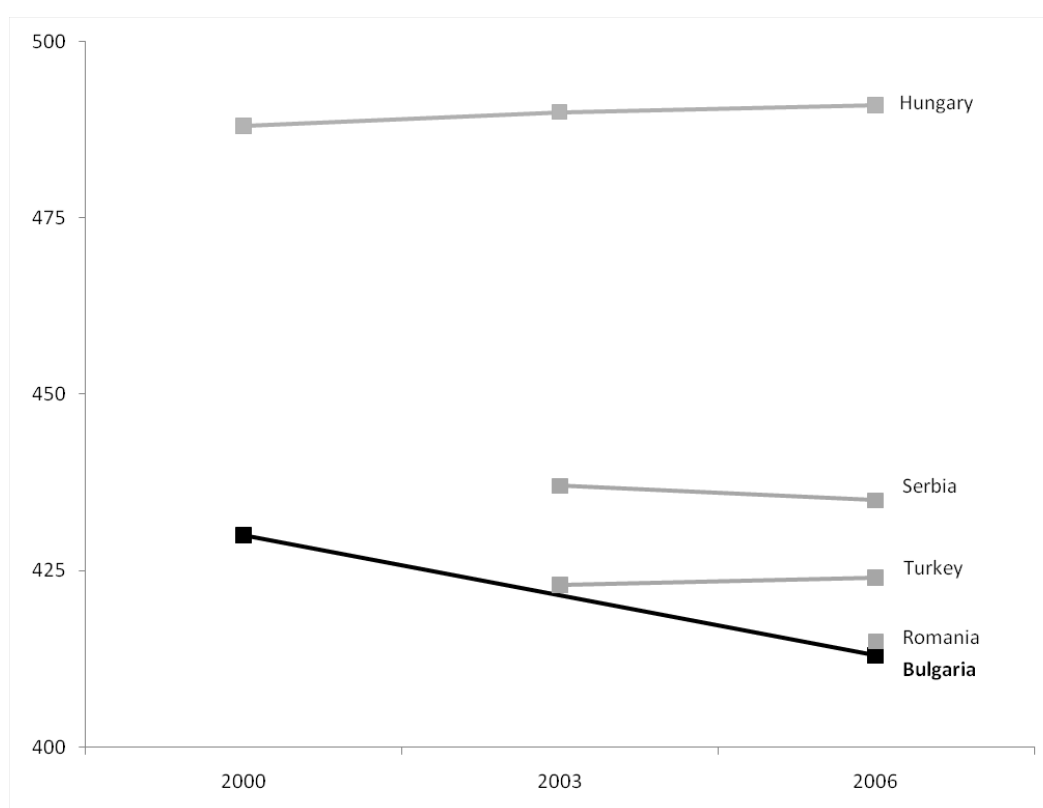
further consolidation is possible, as long as it does not adversely affect disadvantaged populations. The Government could focus further optimization efforts in big cities where the expected effects will be less painful and where transportation infrastructure could facilitate student mobilization. Further, school optimization in the big cities may include closure of segregated Roma schools, anecdotal for their poor quality of education, and incentivizing inclusion of Roma students into mainstream schools. Such moves should be preceded by careful analysis of possible secondary segregation effects on the receiving schools and how the knowledge and skills gap between students from segregated schools and their peers in the receiving mainstream schools could be bridged. Optimization efforts should continue in smaller municipalities to ensure that the objective for gradual elimination of multigrade education, set in the national program for development of school education is consistently implemented, with due care and balance between the efforts for optimization and the interest to ensure access to education. Additionally, declining school populations may create a mismatch between the per student funding received and its average costs; this can be addressed by ensuring that the school funding formula better reflects the true cost structure of schools, while preserving the incentives for optimization embedded in the current design of the UPSCS. One possible approach to this end is refining the criteria for grouping of municipalities; alternatively the government may consider a national program with adequate resources which addresses the need for extra funding in disadvantaged locations. Eligibility for such a program should not be based on a competitive approach; it should be targeted to all schools and municipalities, thus ensuring positive impact in all locations where intervention is needed, not just in the locations where the local capacity for preparing good applications for national programs is greater.

3. Quality of Education

Introduction

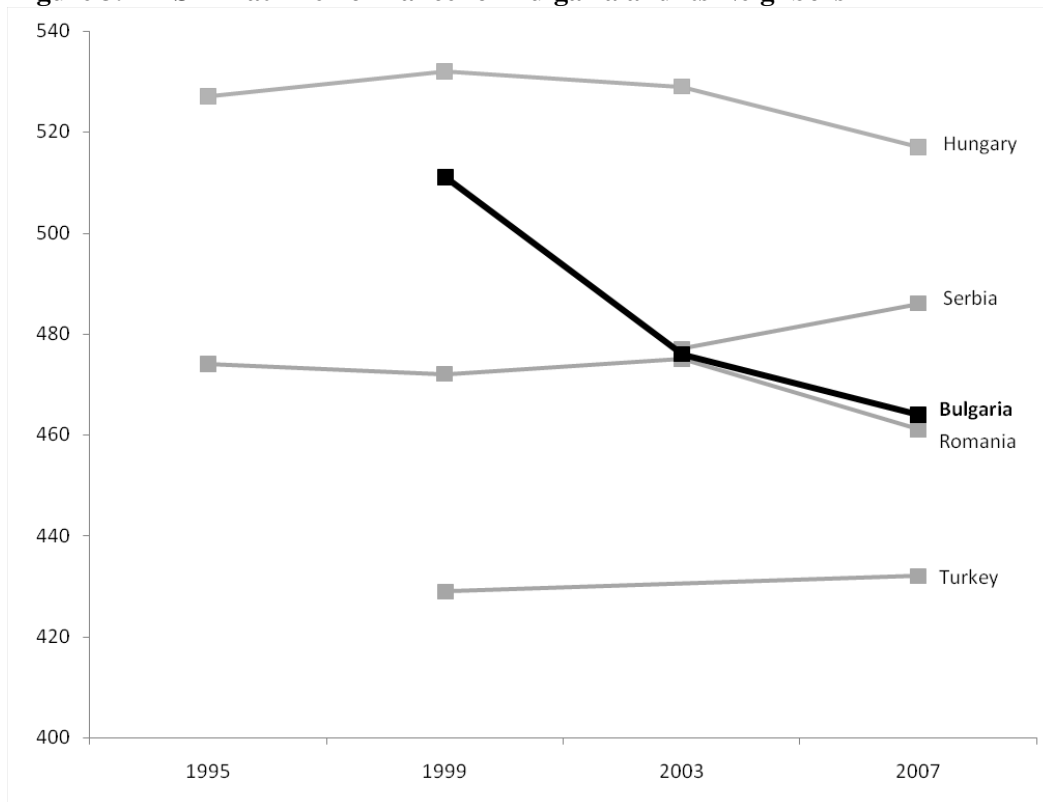
52. **Bulgaria has witnessed a sharp decline in mathematics achievement in both international assessments over the years.** Bulgaria participated in the three rounds of the Trends in International Mathematics and Science Study (TIMSS) from 1999 to 2007, and it also participated in two rounds of the Organization for Economic Cooperation and Development (OECD) Program for International Student Assessment (PISA) in 2000 and 2006. Figure 3.1 presents the performance of Bulgaria and neighboring countries in TIMSS mathematics from 1999 to 2007. Bulgaria's mean performance has declined sharply from 1999 to 2003 and less so from 2003 to 2007. A similar decline in PISA math from 2000 to 2006 is presented in Figure 3.2. Figure 3.3 presents how the distribution of math achievement has changed over time in PISA from 2000 to 2006. This figure suggests that the distribution of math achievement in 2006 has narrowed with most of the decline occurring at the top end of the distribution. As described in Figure 3.4, more than half of Bulgarian students are below the OECD's second proficiency level which is widely accepted as a minimum level.

Figure 3.1 TIMSS Math Performance for Bulgaria and its Neighbors



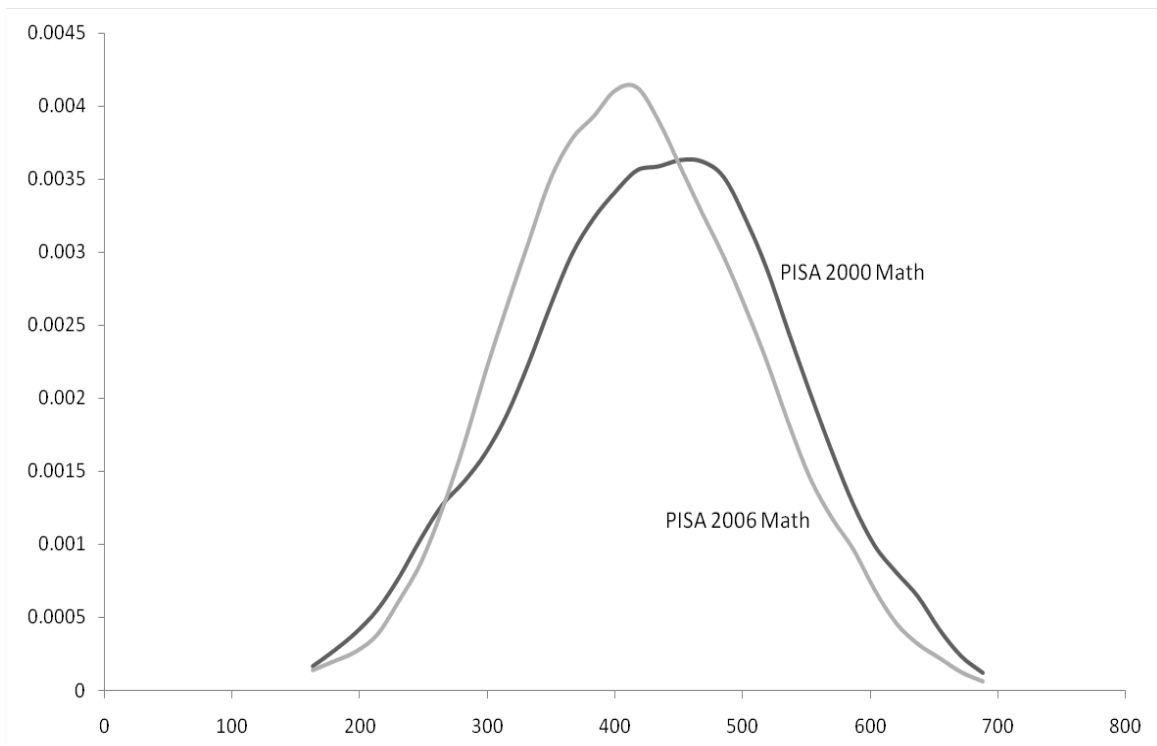
Source: TIMSS 1995, 1999, 2003, and 2007

Figure 3.2 PISA Math Performance for Bulgaria and its Neighbors



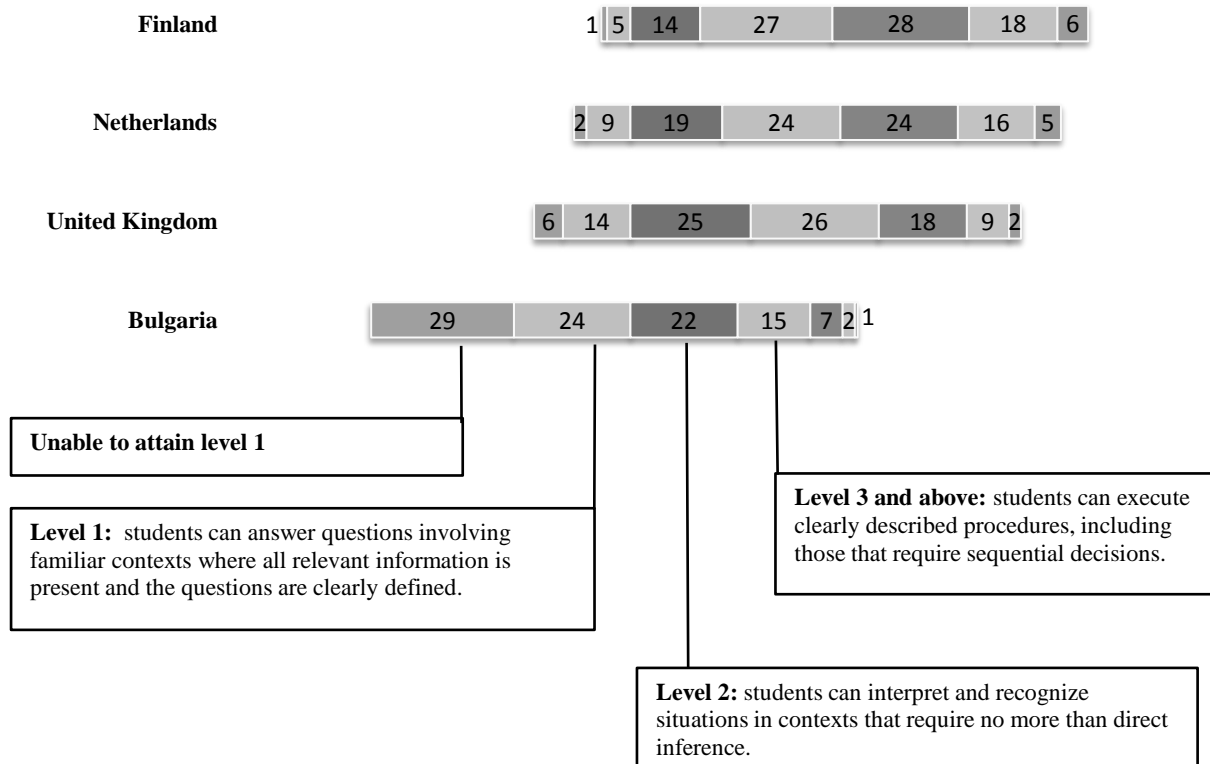
Source: PISA 2000, 2003, 2006. Note: Bulgaria did not participate in PISA 2003

Figure 3.3 Distribution of PISA Math Achievement Score: 2000 to 2006



Source: PISA 2000, 2006 Bulgaria Samples

Figure 3.4 Percent of Students by PISA Math Proficiency Level 2006



Source: OECD 2007a

53. **Measuring the impacts of the reforms on education quality is important, but Bulgaria’s external examinations are not designed to measure this.** Bulgaria has five external examinations occurring at the end of grades 4, 5, 6, and 7 as well as the *matura* that occurs at the end of secondary. These exams test Bulgarian language and literature as well as mathematics and other subjects. The chief problem with these exams is that they are not comparable over time nor designed to be used to assess the system. Also, the difficulty level of the exams has reportedly changed each year. It is not possible to identify the same student in each exam, so setting up a panel over time is not possible either.

54. **While the latest round of both international assessments precedes the reforms, they still provide a baseline for future rounds and insights into the equity impact of the reform on quality.** Looking at the relationship between school autonomy and achievement as well as school size and achievement prior to the reforms, and how these relationships differ for linguistic minorities and for the poor will help expose issues relating to both the effectiveness of the reforms and equity of the reforms in terms of education quality. Accordingly, this section explores the PISA 2006 Bulgaria data and utilizes information on the students’ home language to identify linguistic minorities and information on the students’ home possessions to identify the poor in order to better understand the equity impacts of the reforms’ consequent closure of small schools and the increased role of school-level stakeholders in school decision-making. Note that PISA does not identify specifically Roma languages, specifying only Bulgarian, “National Minorities languages and Bulgarian dialects,” and “Other languages.” (Presumably this includes Roma, Turkish and other linguistic minorities.) The following rounds of PISA, especially PISA 2009, and TIMSS,

however, will provide data with which to assess whether the reforms have had any impact on the quality of schooling in Bulgaria.

55. The majority of students perform worse in small schools relative to their household characteristics such as socio-economic status, but linguistic minority students perform better. This is the chief finding that can be drawn from the PISA data. This does not identify the causal impact of a linguistic minority being in a small school, but it does suggest that linguistic minorities benefit from being in small schools and that the consolidation of small schools, while likely benefiting the Bulgarian-speaking majority, may have a negative impact on linguistic minorities. For the poorest segment of students, whether or not they performed better in small schools relative to their household characteristics is not statistically clear; the poorest students in the PISA sample did perform better, but it cannot be ruled out that the poorest students in the whole population performed worse. As for schools that exhibited autonomy in 2006, no conclusive relationship can be found between their autonomy or involvement of parents in school decisions prior to the reforms and achievement except for the case when schools are able to control the selection of students. Similarly, no evidence that pre-reform school autonomy or parent involvement benefits linguistic minority students or students from poor households can be found.

Equity in Learning Achievement

56. Linguistic minorities and the poor perform worse than other Bulgarians. Equity with respect to linguistic minorities and the poor can be examined in PISA using information on the language spoken at the student’s home and PISA’s wealth index. This latter measure is based on the student’s responses to questions about home possessions. Table 3.1 shows that 10.5 percent of 15 year-olds enrolled in school spoke a language other than Bulgarian in 2006. The PISA wealth index, based on students’ household possessions, is used to identify the bottom quartile, but due to many wealth index values being tied, only the bottom 25.7 percent can be identified and is defined as “poor” for this analysis. Table 3.1 also shows that 54.1 percent of linguistic minority students were also defined as poor and that 22.3 percent of the poor were students of linguistic minorities.

Table 3.1 Linguistic Minorities and the Poor

Estimated percentage of 15 year-old students who are a linguistic minority	10.5
among the poorest 25% (approx.)	25.7
Percent of linguistic minority 15 year-olds students among the poorest	54.1
Percent of poorest 15 year-old students who are linguistic minorities	22.3

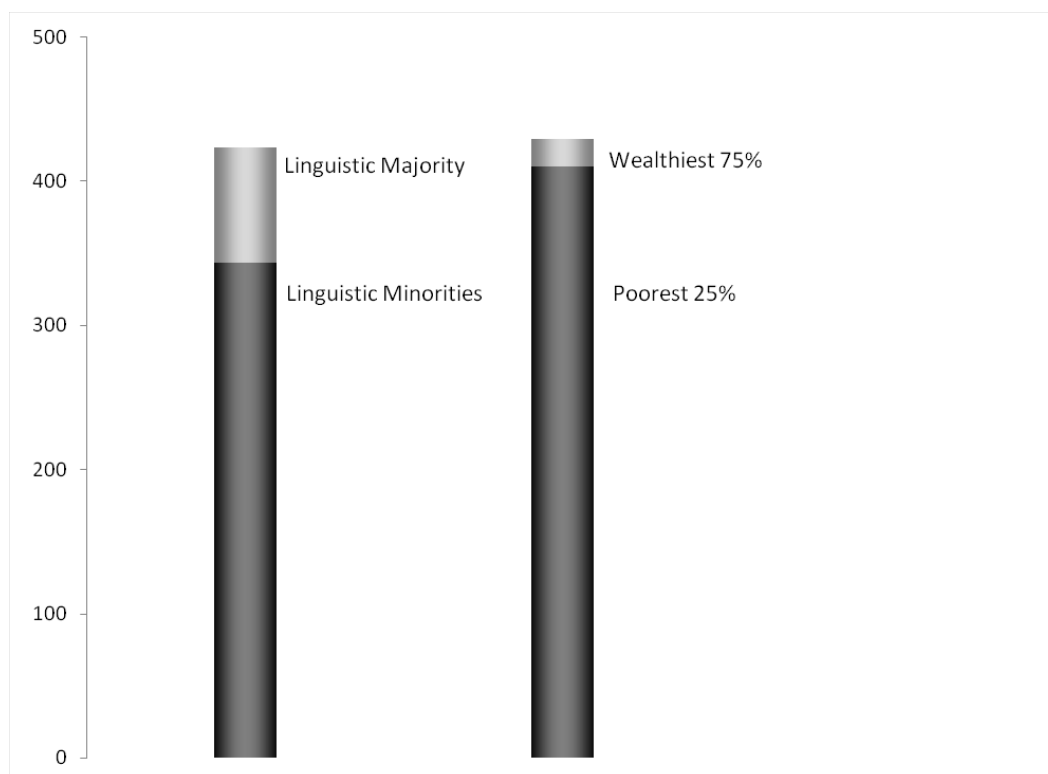
Source: Author's calculations using PISA 2006 Bulgaria

Note: The languages that can be identified in PISA are “Bulgarian,” “National Minorities languages and Bulgarian dialects,” and “Other languages.”

57. Linguistic minority students performed 0.8 standard deviations lower in PISA 2006 Math; the poorest 25 percent performed 0.56 standard deviations lower. Figure 3.5 is based on Annex 2, Table 2a and presents differences in PISA mathematics achievement between the linguistic majority and minority as well as the poorest 25 percent and wealthiest 75 percent. Linguistic minority students performed 80 points lower than the majority in 2006 or 0.8 standard deviations. When controlling for household socio-economic characteristics the difference drops to 19 points. This suggests that roughly 75 percent of the 80 point difference in performance can be explained by differences in household factors while the

remainder owes to differences in the quality of education received. A similar pattern holds for the performance difference between the wealthiest 75 percent and poorest 25. In this case, the difference in mathematics achievement was 56 points, but when the same household socioeconomic characteristics, excluding wealth, are controlled for, the difference declines to 15 points. Similarly, most of the difference is explained by lower levels of household inputs into learning and smaller portion due to other factors including school quality, etc. However, according to the OECD's PISA 2006 Science results, Bulgaria had the highest between school variance of all countries that participated in PISA (OECD 2007a). This suggests that school differences do play a large role in a child's achievement.

Figure 3.5 PISA 2006 Math Achievement by Sub-group



Source: PISA 2006 Bulgaria Sample

Pre-Reform Small Schools and Learning Achievement

58. **One of the major consequences of the reforms in Bulgaria is the consolidation and closure of small schools.** PISA data can be used to look at the pre-reform relationship between achievement and small schools. While the latest PISA data immediately precedes the reforms, this data still reveals who was in small schools prior to the reforms, how well students performed in small schools compared to large schools, and how small schools and equity for linguistic minority and poor students were related. Small schools are defined by the average number of students per grade calculated by dividing the total enrolment of the school by the number of grades taught at the school; schools with less than 35 students per grade, or approximately one class per grade, are defined as small for this analysis. Annex 2, Table 2b shows that 10.1 percent of students were in schools defined as small in 2006. Linguistic minorities accounted for 28.7 percent of students in small schools while 53.7 percent of small school students were in the poorest quartile. Additionally, 27.3 percent of linguistic minority, 15 year-old students were in small schools while only 20.4 percent of the poorest quartile was in small schools.

59. **In 2006, students in small schools performed 0.73 standard deviations lower in mathematics.** This is shown in Annex 3, Model 1. However, when controlling for student characteristics in Model 2, this difference is only 0.21 standard deviations; in other words, the household characteristics including socio-economic status are explaining a bulk of the difference, other factors including school quality explain a smaller proportion.

60. **Linguistic minorities and Bulgarian speaking students both performed worse in small schools.** The estimated relationship between being a linguistic minority in a small school and achievement are presented in Model 3 of Annex 2, Table 2c. Bulgarian speaking students performed 0.78 standard deviations lower in small schools compared with those in larger schools. In larger schools, linguistic minority students performed 0.83 standard deviations lower than Bulgarian-speaking students. The interaction between being in a small school and a linguistic minority is 0.65 standard deviations; this means that the gap between being in a small school and a larger school for linguistic minorities is much smaller than that for Bulgarian speaking students, at 0.13 standard deviations, and that the gap between Bulgarian speaking and linguistic minority students is much smaller in small schools, at 0.18 standard deviations. Since the standard error on these latter two figures is quite large, it can neither be ruled out that linguistic minority students actually performed better in small schools in 2006, nor that linguistic minority students outperformed Bulgarian speaking students in small schools in 2006.

61. **Relative to student socio-economic status, however, linguistic minority students performed better in small schools, prior to the reforms.** When controlling for the background characteristics of the students, however, a different picture emerges. In Annex 2, Table 2d, Model 4, it can be seen that linguistic minority students performed 0.30 standard deviations better in small schools than in large schools. It also can be ruled out at the 5 percent significance level that the population of linguistic minority 15 year-old students performed on average worse or the same in small schools. (The 5 percent significance level indicates that if the population of linguistic minority students performed the same as the others, then there is less than a 5 percent chance of observing that linguistic minorities in the randomly drawn PISA sample would perform 0.34 standard deviations less than the others in the sample.) Similarly, linguistic minority students performed on average 0.34 standard deviations higher than Bulgarian speaking students within small schools. Models 5 and 6 in Annex 2, Table 2d show the analogous results for the poorest quartile of 15 year-old students. When controlling for student background characteristics, poorer students perform 0.06 standard deviations better in small schools although it cannot be statistically ruled out that they perform worse. Within small schools, poorer students, when controlling for household characteristics related to learning, perform on average 0.28 standard deviations better than the others, and this is statistically significant.

Pre-Reform School-Based Management and Learning Achievement

62. **Evaluations of school autonomy reforms show that a positive impact on student achievement is possible; however, this may take many years.** For example, in a compilation of evidence on school based management reforms by Barrera et al. (2009), research on reforms in the United States “suggests that, in general, a [school based management] reform must have been in operation for about 5 years before any fundamental changes are seen at the school level; only after 8 years of implementation can changes be seen in more difficult-to-modify indicators, such as test scores” (Barrera et al. 2009:40). A study of a reform in Mexico (Lopez-Calva and Espinosa 2006 in Barrera et al. 2009:41)

showed impact on test scores 8 years after implementation while a study of a reform in Nicaragua (Parker 2005 in Barrera et al. 2009:41) showed a lag of 11 years.

63. **Up to the 2006 baseline, there is no correlational evidence that school-based management improves learning outcomes in Bulgaria.** The PISA school questionnaire asks several questions about which stakeholders, including teachers, principals, sub-national education authority and national education authority, have “considerable influence” over various school-level decisions. For this analysis, a school has autonomy over a particular decision if no other stakeholder besides principals or teachers were reported to have “considerable responsibility” for the task. The school questionnaire also asks what issues these stakeholders as well as parents have a direct influence over with regard to various decisions. Annex 2, Table 2d presents the percent of students at schools with autonomy over various decisions and where parents are involved in various decisions. For example, according to the responses of principals to the school questionnaires, 92.9 percent of students are at schools where authorities outside the school do not have considerable responsibility in hiring or firing teachers. Also, only 9.2 percent of students are at schools with autonomy over course content or courses offered. The table also reports that 6.1 percent of students are in schools where parents have a direct influence over staffing.

64. **No conclusive relationship between achievement and autonomy over or participation in various school decisions exists in the PISA 2006 data for Bulgaria.** Annex 2, Table 2e presents regression model estimates showing the differences in math achievement between schools with and without the various types of autonomy. For all types of autonomy, only autonomy over student admission yields a statistically significant result where students at such schools perform 0.6 standard deviations lower. Annex 2, Table 2f shows similar results for the various areas where parents exert direct influence. There is no statistically significant difference in the performance of students at schools with or without parental involvement in all four of these areas. Annex 2, Table 2g examines the interaction of various types of school autonomy with being a linguistic minority student. In all cases, whether being at a school with the various types of autonomy is associated with positive or negative differences in the achievement gap for linguistic minorities cannot be statistically established. This also holds for all types of parental involvement as presented in Annex 2, Table 2h. (Quantile regressions and over time analysis did not reveal any conclusive evidence either. There was no difference in the change in score over time in schools that exhibited more autonomy or more parent involvement nor was there a difference for the high and low achievers except for autonomy over course content.)

Policy Options

65. **Bulgaria has witnessed a sharp decline in mathematics achievement in international assessments in recent years.** Nevertheless, the latest rounds of the major international assessments precede the reforms. Thus, they provide a baseline for future rounds and insights into the equity and quality impacts of the ongoing and future reforms. It would be useful to set specific targets for future rounds of international assessments such as PISA. At present, Bulgaria’s score in math is 413 and 53.3 percent of students score in the bottom two achievement levels. A useful target would be to reduce the number of students at these lower levels. If 50 percent of students below level two were to perform as well as the average student in level two, then this would imply a score of 443 points in 2012, which would put Bulgaria on par with Chile and above Russia. Other countries use such policy targeting in a number of important indicators, including education such as, Brazil, Mexico, Tunisia, and New Zealand. (For Brazil, it is the *Instituto de Estudos do Trabalho e*

Soceidade benchmarking initiative; Tunisia's *Programme d'éducation prioritaire*; Mexico's *Oportunidades* and *Consejo Nacional de Fomento Educativo*; and New Zealand's *Ahead*.)

66. **Linguistic minority students and students from less wealthy families perform worse in international assessments.** This suggests that specific measures are required to address the needs of linguistic minorities and students from poor backgrounds. The proceeding section addresses this issue more rigorously based on the findings of interviews of Roma parents. In general, such groups may need more access to school accountability tools, such as greater interaction in parent-teacher meetings, and effective representations in future school councils.

67. **There is yet no evidence that school-based management improves learning outcomes. More autonomous schools do not perform better than other schools.** Rather than interpret this as a causal relationship, it is more likely due to: (a) real reforms had not taken place by the time of the data collection; that is, effectively designed school autonomy and accountability reforms have yet to be operationalized; and (b) if the proposed changes in the National Program for Education, described in the Introduction, and the recommendations presented below are implemented, piloted, and assessed, then the results of the analysis of PISA 2006 will become a baseline from which to analyze future outcomes, starting with PISA 2009.

68. **National assessments do not exist that are suited to monitoring changes in education quality resulting from the reforms.** While international assessments are useful for this purpose, they may not be aligned with the Bulgarian curriculum or education objectives. A national assessment would be. Additionally, international assessments are sample-based. A census-based assessment that is comparable across time is necessary for providing local stakeholders, including parents and municipal officials, with information about performance of individual schools. It may be sufficient to streamline the existing assessment system, for example restricting testing to only grade 4 and grade 7, as well as the *matura*, and focusing on improving the test for a few key subjects. In order to use assessment data to parse out what component of his or her achievement is due to the efforts of the school or teacher and what component is due to the student's household or background, information about the student's background is required. Ethnic background, gender, and income data would also be necessary to look at various equity issues. This is a key requirement for the accountability needed to produce success given the increase in autonomy to schools.

4. Equity Impact of the Reforms

69. **One of the main components of the reforms in Bulgaria was the optimization of the school network.** With a declining population and demands for teacher salary increases, communities and the Ministry of Education, Youth, and Science (MEYS) responded by closing down small schools. School closures are occurring primarily in rural areas, and according to the Roma Education Fund, many of these are schools attended mainly by Roma children. The MEYS reports that the number of “Roma schools” has declined from 105 to 64 and this has occurred mainly in rural areas (REF 2010) due to desegregation efforts but also, and increasingly, school consolidation as a result of the reforms. Since school closures occurred primarily in rural areas where Roma people are over-represented, there is a natural equity consequence to these reforms. This section examines how the closure of small schools impacted dropout rates and what precise factors link school closures to dropouts.

70. **School consolidations exacerbated school dropout rates.** The dropout rate of students who attended schools that closed appears to have approximately doubled due to the closure and consolidation of their schools. Since school consolidations occurred primarily in rural areas where the Roma are over-represented, this negative consequence of the reform had an unequal impact on rural areas and the Roma. Roma students from closed schools experienced difficulties integrating with students in consolidated schools as well as difficulties related to their ability to travel to their consolidated schools. Parents cited these two factors as the main reasons for their decreased attendance and success.

The Impact of School Closures on Dropout Rates

71. **Dropout rates of students attending schools that closed appear to have increased.** Establishing the impact of school closures on dropout rates is relevant because many schools have been closed, especially in rural areas with high concentrations of Roma people. (The findings of this section of the report are taken from an impact evaluation study on the impact of school closures on dropout rates in 2009 conducted by the World Bank and the Task Force on Impact Evaluation; Schady et al. 2009.) The number of schools in Bulgaria has been declining steadily for the last decade and more schools have been consolidated in recent years due to school network optimization encouraged by the education reforms. In 2007, 111 schools providing general education were closed down while 340 (around 15 percent of all schools) were closed in 2008. In contrast, only 44 schools were closed in 2009, which may be in part due to the establishment of “protected schools.” Currently, there are 90 protected schools in Bulgaria.

72. **A rigorous impact evaluation study documents that dropout rates increased as a result of school closures.** The objective of the impact evaluation study was to evaluate the impact of school closures on dropout rates among students in grades 1 through 8 in “normal” public schools. Most results presented focus on primary schools (grades 1-4), basic schools (grades 1-8), and lower secondary schools (grades 5-8). These schools were chosen because they cover the years of mandatory schooling (grades 1-8), and also are where the bulk of school closures have occurred. While comprehensive schools (grade 1-12 or 13?) also cover the mandatory school age, only one school of this type closed in 2007 and two in 2008. Data for this analysis originated from the MEYS’s Education Management Information System, which provided school and class level data of all students in Bulgaria. The study excluded non full-time students in “normal” schools, which includes adult students doing part-time

studies and young students studying at “special” schools e.g. private schools, hospitals, and prisons.

73. **While it is easily ascertained that dropout rates are higher for students from closed schools, the impact evaluation study shows why such a simple comparison is not useful.** By counting the number of students from a closed school that were found in another school the following school year, the dropout rate from a closed school can be estimated. Table 4.1 presents dropout rates for schools that were closed and not closed for both 2007 and 2008. Dropout rates in schools that were closed were more than two times higher than in schools that remained open in 2007 and 2008. In the summer of 2007 (end of the 2006-2007 school year) around 100 schools providing general education were closed down. The average dropout rate was 14.9 percent in schools that closed, compared to 6.2 percent among schools that were not closed in 2007 or 2008. In the summer of 2008, around 300 schools were closed. Among these schools, 11.3 percent of students dropped out on average, compared to 4.9 percent in schools that did not close. However, schools that closed were not typical schools based on observed characteristics presented in Table 4.1. Compared to schools that did not close, closed schools were characterized by fewer students, lower student teacher ratios, a higher likelihood of being located in rural areas, municipalities with higher poverty rates, and municipalities with a lower population density. It is possible that these characteristics could explain the higher dropout rate among closed schools; hence, comparing the dropout rates for closed schools with the national average dropout rate would be a false estimate of the impact of school closures.

Table 4.1 Average School Dropout Rates in Schools that closed and remained open 2006-2008

Year	Schools not closed	School closed in 2007	School closed in 2008
2007	6.2%	14.9%	8.3%
2008	4.9%		11.3%

Source: MEYS and authors’ calculations.

Notes: The dropout rate for closed schools can be estimated by counting the number of students that were found in another school the following school year. The dropout rate is for daytime students in grade 1 to 7 in public schools.

74. **To isolate the impact of school closures, the dropout rates from closed schools can be compared to that of similar schools that remained open.** Several statistical methods and techniques exist to do this. One method is *propensity score matching* that first identifies other schools that have similar observed characteristics and then compares the dropout rates in these schools to those that closed. Another kind of method is regression based analysis where observed characteristics are used to control for each characteristic’s impact on dropout rates. This method isolates the impact that can be attributed to the school closure as opposed to any other factor. A caveat to all methods is that the true impact of school closures can only be estimated to the extent that there are similar schools to compare them with and that the only difference related to dropout rates is whether they closed down or not. Furthermore, these schools need to be identified using observed characteristics. If, for instance, a characteristic not included in the dataset such as, the physical condition of the school is an important factor for dropout rates and for closing one school over another, then the effect of the school closure on the dropout rate cannot be distinguished from the affect of the school’s physical condition on the dropout rate.

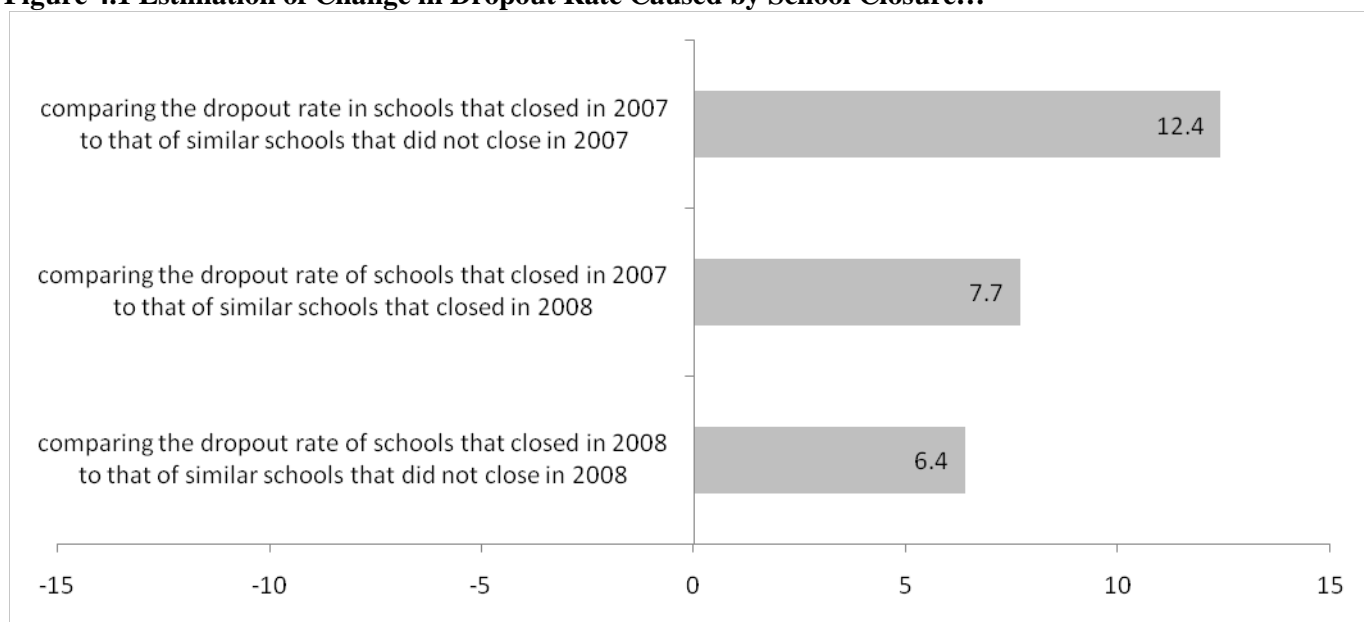
75. **For 2007, the impact of school closures on dropout rates was estimated using two types of comparator schools.** The first type are open schools that have the same

characteristics as schools that were closed down, and the second type are open schools that were closed the following year. This latter comparison is based on the idea that schools that were closed are similar both in the characteristics included in the data and characteristics that were not included. Annex 3, Table 3a shows that schools that closed in 2008 were generally located in similar areas as those that closed in 2007, but they were larger than those that closed in 2007.

76. **For 2008, the availability of two consecutive years allows comparison of dropout rates before and after school closures.** Since the data contains dropout rates for 2007 and 2008, the dropout rates for schools that closed in 2008 can be observed both before and after closures. The difference between dropout rates in 2007 and 2008 provides an estimate of the impact of school closures. This mitigates the challenge of finding appropriate schools for comparison because unobserved characteristics that have not changed over time are implicitly controlled. Characteristics such as, skills of the principals and teachers, physical quality of school, and background of students and parents, etc. are unlikely to have changed dramatically between the two years in the same schools. This *difference-in-differences* method applies the same types of methods described above using the change in dropout rates between the two years in order to estimate the impact of school consolidation.

77. **The estimated impact of school closures is a two-fold increase in the dropout rate.** Annex 3, Tables 3b and 3c, summarized in Figure 4.1, present the estimated impact of school closures based on the different methods and comparisons. For all methods of choosing comparator schools, school consolidation caused an increase in dropout rates of approximately eight to twelve percentage points or an increase of approximately two times twice the size or double. As both tables reveal, this finding is robust for all types of methodologies discussed. Also, since these impacts are measured by comparing schools either of the same year or across years, the problem of the reliability of the dropout data increasing overtime, as discussed in the previous section, because of the reform, is avoided.

Figure 4.1 Estimation of Change in Dropout Rate Caused by School Closure...



Note: Results estimate the impact of school closures on dropout rates using propensity score matching. See further results in Annex 3, Table 3b

Understanding the Impact of School Closures

78. **Interviews with Roma parents reveal that problems integrating with other pupils and problems related to distance are the main factors discouraging their children's attendance at consolidated schools.** Financial reasons, regardless of the fact that most parents are unemployed, were less important. Official statistics, research, and impact evaluation studies provide a compelling story, but the voice both of parents and school principals help explain this impact and expose policy recommendations better. (Interviews for this report were organized by consultant Toni Tashev and conducted in Northeastern Bulgaria in April 2010.)

79. **All interviewed parents spoke of aggression and conflicts between pupils in the consolidated schools.** A few parents stated that this was the reason their child did not attend school. In most cases, the existing conflicts are between students from different villages not interethnic. In the parents' opinion, conflicts occur more frequently between Roma children from different villages than between Roma and non-Roma children.

80. **Interviewed principals of consolidated schools acknowledged that there is no transportation available to allow students traveling from villages to take part in extracurricular activities.** All interviewed parents noted that their child does not take part in any extracurricular activity and some believe that this has had a negative impact on their child's desire to attend school. The lack of access to extracurricular activities excludes children from closed rural schools from engaging in the life of the whole school community and adds more challenges to helping them feel accepted and easing the transition to the new school.

81. **Interviewed parents noted a lack of enclosed shelters where their children can wait for the school bus in winter and consequently, do not allow them to attend school on cold days.** Also, most consolidated schools do not have a special room or shelter where children from the closed rural schools can wait for the bus to take them back to their villages. The wait may be as long as one to two hours. Parents feel this is a serious problem on cold days because they are worried their children will get ill. They do assert, however, that buses generally are on schedule.

82. **Semi-boarding facilities allow students from villages to have additional afternoon classes but interviewed school principals say their schools are unable to implement these facilities due to a lack of adequate canteen equipment.** Students from closed rural schools seem to face serious knowledge gaps when they join the larger consolidated schools and require additional schooling. In order to address this, consolidated schools can set up semi-boarding facilities. The semi-boarding groups have additional afternoon classes in addition to their morning classes, after the two hours of supplementary preparation ends at 2pm. Such measures have been launched and supported by the MEYS. They aim to provide a smooth transition for children from closed schools to new ones, improving student learning outcomes, and preventing dropouts. In practice, according to a statement given by all interviewed school principals, a serious obstacle to the implementation of this measure is the lack of canteens at the consolidated schools as well as, the lack of relevant equipment for preparing food in schools. The research team observed that in most of the schools they visited, schools improvised on this measure by allowing two hours of self-preparation of meals, which starts immediately after the end of the obligatory lessons and ends before 2pm. In rare cases, where the semi-boarding system is implemented, the children's lunch is in the form of sandwiches prepared out of school or the children "simply run over to the closest fast

food place for lunch.” Additionally, the semi-boarding set-up is only organized at the primary level (grades 1-4) despite the acute need for them at the secondary level.

83. **Existing semi-boarding groups also lack adequate staffing.** The research team found that most parents do not feel that the single teacher that typically staffs afternoon classes can pay attention to the needs of most or all of the students both in their classes as well as during the two hours of supplementary preparation. All school principals and parents unanimously agree that extra help is needed. They are both in favor of the addition of one teacher assistant/tutor to help teachers in each classroom and during meals as well as, to provide assistance to those parents whose children are transitioning from closed schools.

84. **While financial considerations are less important, school consolidation seems to have hurt the poorest Roma families.** According to these parents, they do not send their child to school because of their extreme poverty including a lack of funds for education costs or because of frequent trips to find employment. In most cases, these are very poor and marginalized families where the parents themselves are either completely or almost illiterate. During the study, a few of these parents shared that while they may fail to send their children to school now, they did not do this before the local school closures. Some of this may be due to new costs associated with transportation, for example according to one parent, "In other schools, there is free transportation in both directions, but we pay \$1 (1.50 Leva) for the way home." In other words, the educational reforms seem to have negatively affected their ability to send their children to school to get formally educated.

Policy Options

85. **Linguistic minority students and students from less wealthy families perform worse in academic achievement tests.** The majority of students perform worse in small schools relative to their household characteristics such as socio-economic status; but, linguistic minority students perform better. This suggests that specific measures are required to address the needs of linguistic minorities and students from poor backgrounds. In addition, such groups need more access to school accountability tools, such as greater interaction in parent-teacher meetings, and effective representations in future school boards/councils.

86. **Giving Roma parents an increased voice over the design, management and funding of school programs may help remedy the deficiencies exposed in the interviews as well as other problems and reduce dropouts.** The main problems that Roma parents cite as discouraging their children’s attendance are deficiencies in local arrangements for implementation of specific programs including school bus transportation, canteens and semi-boarding facilities. These present clear and specific policy recommendations, however, a more general policy recommendation would be to strengthen the representation of Roma parents in the design of such programs in order to solve not only these specific problems, but also ones that were not captured by these few case studies and ones that may arise in the future.

87. **There is a need to focus on integrating dropouts and preventing more from occurring in general.** Some of the accountability measures will help, but more specific actions may be needed. Since dropouts are more likely to be from poorer areas, then specific measures may be needed, both financial and non-financial, such as conditional cash transfers in some cases, which have been shown to work effectively in other countries (see, for example, Schultz 2004), more community involvement in integration efforts in others. Other demand-side efforts (Patrinos and Ariasingam 1997) may be needed, such as improved and

expanded transportation services to consolidated schools. Extra effort should be made to ensure that an adequate supervision of CCT implementation to ensure maximum attendance of beneficiary students. This would include monitoring and enforcement. Monitoring is both an information systems challenge and a behavioral challenge. The information systems challenge includes school attendance monitoring itself, linking school attendance monitoring to actual beneficiaries, and institutional arrangements, technical aspects for information flows and timeliness. Enforcement practice varies by country, with some having very automatic penalties (that is, as in Mexico, if one misses school they face loss of some benefits). Others have gradual enforcement penalties, beginning with a warning, visits by social workers, before non-compliance leads to losses of benefits.

88. **The ability to identify Roma and other students in school data will expose inequities.** A major limitation of the impact evaluation was its inability to identify whether the impact of the school closures had an unequal effect on Roma students versus other students. This is due to not having information about ethnicity or language. For this reason, except from parent interviews, it remains a challenge to measure how the reforms have affected the Roma.

5. Analysis of the Relationships of Accountability

89. **The government of Bulgaria sought to balance autonomy, accountability, assessment (3As) and financing instruments in the education system to influence the behavior of local policy-makers and school principals.** By transferring the decision-making power to the school-level, the reforms expanded the autonomy of principals who are in a better position to innovate and determine courses for high-performance (Osborne and Gaebler 1992; Barrera et al. 2009). By financing schools through UPSCS on a per-student basis and delegating the management of the budget to the school level, principals have better incentives to pool resources and adjust to school needs. This helps set the stage for greater efficiencies and more transparency in the use of resources (Levacic 2008; Barrera et al. 2009). The reforms also improved the national capacity for collecting, analyzing, and disseminating information on student attainment and school performance by establishing the Center for Control and Assessment of the Quality of Education (CKOKO) in 2007.

90. **The education reforms in Bulgaria expanded the decision-making powers of school principals to include managing all funds allocated to the school.** These functions include, determining individual teachers' remuneration, teachers' workload, and the number of students in each class within relaxed norms established in 2008 (World Bank 2008b). School principals were also given the ability to retain savings from one year to the next and flexibility to reallocate funds from staff to non-staff expenditures (World Bank 2009). Municipal authorities were required to delegate the management of school budgets to principals as a result of the 2008 Budget Act, and to allocate 80 percent of school resources based on the number of students (Levacic 2008). Differentiated expenditure standards between four types of municipalities were established by introducing weights in the per student funding formula that take into consideration structural cost differences and the density of the population (Levacic 2008). Municipalities retained the responsibility to allocate 20 percent of school resources based on criteria agreed upon in consultation with school principals and local knowledge in order to compensate for differences between schools and student groups. Table 5.1 outlines the current distribution of responsibilities amongst stakeholders in the Bulgarian education system resulting from the education reforms initiated in 2007:

Table 5.1 Distribution of Responsibilities within SBM in the Bulgarian Education System

Stakeholder	Responsibilities	Limitations
Ministry of Education, Youth, and Science (MEYS) <i>(Sectoral Affiliation)</i>	Implements the national education policy Plans, organizes development of education Develops long-term strategies, programs, and operational projects Funds special schools and schools of national importance	MEYS still involved in operational management of centrally funded schools instead of focusing on national education policy
Ministry of Finance	Develops budgetary framework for education, defines transfers from state budget for education (in consultation with MEYS, National Association of Municipalities) Monitors transfers for education and budgets	Education expenditure standards not based on the expenditure needs for achieving specific educational objectives and outcomes
Municipalities <i>(Territorial Affiliation)</i>	Administrative and funding functions Develops and implements municipal education policy Control over education expenditures	Disconnect between funding and management functions
Center for Control and Assessment of Education Quality (CKOKO) –	Organizing and overall management of the external assessment of education outcomes Developing standardized tests for external assessments Analyzing results from external assessment tests Coordinating Bulgaria’s participation in PISA, TIMSS and other international assessments	Assessment data not comparable over time <i>(Levels of difficulty of external assessment tests for each education stage have been changed every year)</i> Insufficient integrity and credibility of external assessment process (except for the Matura tests) <i>(Procedures and organization of assessment tests do not completely assure reliability of results (e.g. supervisors, usually teachers from the same school and municipality, may have incentives to help students in answering the test questions))</i>
Regional Education Inspectorates <i>(Sectoral Affiliation)</i>	Control professional qualifications of pedagogies Select and appoint school principals Provide methodological guidance of educational processes Inspect schools and conduct thematic spot checks Monitor schools’ compliance with education laws, norms and regulations Collects and processes administrative data on schools and students	Appointment of heads of REIs and Senior staff may be subjected to political influence Too many and different responsibilities toward a large number of municipalities and schools in the region spread across a limited number of staff Significant share of the legally defined responsibilities of REIs (e.g. with regard to school inspection, professional qualification of teachers and provision of methodological guidance of educational process) are either formally or simply not implemented
School Principal <i>(School Manager)</i>	Managing all funds allocated to the school Determining individual teachers’ remuneration, teachers’ workload Determining the number of students in each class within norms established in 2008 Ability to retain savings from one year to next Flexibility to reallocate funds from staff to non-staff expenditures	Budgetary decisions of the principals subject to pressures from teachers and teachers unions rather than parents and school community
School Councils <i>(Voluntary Bodies)</i>	Fundraising and support in kind	No formal mechanisms to participate in school decisions No formal mechanisms to hold principals accountable

Source: Author’s adaptation of Table A in Levacic 2008

Results

91. The ambitious reform agenda that the government embarked on in 2007-2008 has begun to transform the school education system from one in which the central government managed inputs and lacked outcome measures to one where the MEYS sets strategic goals for the education system and focuses on the attainment of objectively measured student outcomes while promoting efficiency in the use of resources through an adequate funding system. The reforms produced the following results within two years:

- a) **Unified Standards** – These standards merged the previously applied separate per student standards for staffing of schools and their running costs into a single per student amount. This move eliminated the disincentives for school network optimization built into the former staffing sub-standard. This new unified standard (still called UPSCS), coupled with new regulation on class size that allowed a maximum of 29 students per class or more upon ministerial approval also helped optimize the school network. Before this, the class size limit was much lower and sometimes led to the creation of two separate classes to accommodate a few more students, which was inefficient.
- b) **Increased Teacher Pay** – Teacher salaries were gradually increased and four salary grades were established based on education levels and years of experience and seniority. Differentiated teacher pay was also introduced based on performance and hard work. The principal makes this differentiation based on a centrally defined framework and specific criteria determined at the school level. While current legislation neither requires nor discourages the use of student assessment data for differentiating teacher’s pay, principals are increasingly using student assessment test results for that purpose.
- c) **School Network Optimization** – Given that each municipality has a given number of schools within its jurisdiction or school network, the goal of the reforms was to optimize this network, improve teaching and learning, and increase efficiency by closing schools in depopulated villages where teachers often outnumber students. Before the reforms, nearly 80 percent of village schools in Bulgaria maintained multigrade education. Teaching in mixed classes, especially in basic education (grades 1-8) resulted in poor learning results and widened the gap in skills and knowledge of graduates compared to their peers in schools with normal classes. Moreover, the integration of the multigrade students from small villages into the big secondary schools in the neighboring towns where they had to continue their education was extremely difficult. Multigrade education increased the risks of dropping out of the system and generally had negative consequences for students in terms of their labor market and overall, professional success. With DSBS (delegated school budgets system) mandatory in all schools and municipalities, and the UPSCS (unified standards) in place, municipalities responded by adopting school optimization plans and closing small and inefficient schools in 2007. That year, the total number of closed schools reached 111, roughly equal to the number of schools closed in the preceding four years. In 2008, this trend reached its peak with 340 school closures before declining sharply with 44 municipal schools closed in 2009, partly because of the introduction of “Protected Schools” (see (d) below), but also suggesting that the potential for further school optimization under the existing framework for funding schools had been exhausted. The wave of school closures indicates that one of the objectives of the school finance reforms, that is improving schools’ efficiency by

reducing the proportion of small schools and classes and moving closer towards the OECD average student-teacher ratio had been achieved.

- d) **Protected Schools and National Programs Supporting the Reform Process** – In order to ensure that school quality was enhanced and not damaged by the reforms in the longer run, the MEYS and Ministry of Finance carefully monitored which schools were proposed for closure and what were the likely effects on students' educational opportunities. They also monitored dropout rates and achievement by different student groups in the years after school closures. To ensure that all children can still access a good quality school, the government, in consultation with municipalities, defined the criteria for a school to gain "protected status" and established a list of protected schools that would be funded additionally to the unified standard in order to keep them open. Protected schools are typically small schools (10 students or more) in extreme geographic locations e.g. mountainous regions or locations near the state borders. In order to gain the status of a protected school, the next nearest school should be located over 20 kilometers away from the protected school (or adjusted equivalent to 20 kilometers if the route crosses mountainous areas). This helped reduce further school closures as the protected schools were established in 2008, the same year that the largest school closures occurred. Currently, there are 91 protected schools in Bulgaria.

The financial pressure to reorganize the school network was great and resulted in some municipalities that experienced net gains and others that experienced net losses in terms of financial resources. Estimates from the World Bank showed that in 2007, 11 percent of municipalities fell under the latter category. In 2008, about 53 percent of schools had estimated costs per student in excess of the unified standard and a third of municipalities were classified as experiencing net losses (Levacic 2008). (A municipality experiencing 'net losses' is one where the aggregate school costs exceed the municipality's revenue from the unified standard. The method used for these estimates takes into account changes in input costs between years and does not take into account additional funding as part of the national programs, which could only be used under fairly strict guidelines. It also assumes an increase in teacher salaries of 27 percent for all teachers in 2008.) To remedy this, a set of national programs providing extra funding to support the reform process were launched, one of them targeting the disadvantaged municipalities which were able to apply for compensation funding if they closed schools or merged classes. The National Programs are managed by the MEYS and funding was provided from the central budget.

- e) **Launching an External Students' Assessment System for Grades 4, 5, 6, 7 & 12** – Considerable progress was achieved in developing capacity at the national level for collecting, analyzing and disseminating information on student attainment and school performance by establishing the Center for Control and Assessment of the Quality of Education (CKOKO) in 2007. That same year, a national assessment of 4th grade students in all primary schools was carried out, as well as a new grade 7 test intended for selecting students who were interested in continuing their education in "elite schools." In the following years, CKOKO carried out census-based national tests of grade 5 and 6 students, which enabled the progress of students from grade 4 to be assessed. The new Matura externally set examination, used nationally and internationally in parts of Europe for university entrance selection and given to students (aged 18-19) as a final exam at the end of their secondary education was piloted in Bulgaria in April 2007 with 3700 participating students in 45 schools. It

was introduced nation-wide in 2009. School Report Cards (SRC) containing data of individual schools performance began to be routinely sent to all schools participating in the assessment tests. This year (2010), a mandatory census-based external assessment test after grade 7 has been introduced and the formerly elite school selection test after grade 7 has been transformed into an optional second component of the census based assessment test. CKOKO is also preparing for the introduction of external assessments after grade 10 which marks the completion of the lower secondary level.

Outstanding Challenges

92. In spite of the improvements brought by the reforms, **one of the main outstanding challenges is that the level of participation of parents and the community did not increase**, thus limiting the level of accountability of school principals to other local stakeholders (Barrera et al. 2009). Moreover, policymakers in the MEYS still need more and better instruments to hold principals accountable for increases in learning outcomes. While mandatory implementation of the DSBS has brought a lot of positive changes and helped optimize school networks and efficiency, it needs some work and time to become more effective.

93. **A crucial institution currently missing from the Bulgarian school accountability framework is the school council.** These were envisaged in *The National Program for Development of School Education and Preschool Education (2006-2015)* and were widely discussed. Municipalities were strongly in favor of them and a pilot School Council project was launched in 10 municipalities in 2007. The School Councils (*Saveti*) were an unsuccessful pilot program implemented in 2007 as only seven of these ten municipalities set them up. No effort was made to delineate functions between the school councils and school principals and the latter were unwilling to share responsibilities with them. Currently, the schools boards of trustees (*Nastoyatelstva*) are voluntary NGOs existing in about 75 percent of the schools and no schools have school councils (*Saveti*) anymore. Parents do not face incentives to participate in meetings to discuss the allocation of annual resources through the school boards of trustees as there are no clear consequences to their opinion. Moreover, school principals are not required by law to consult with school councils about the composition of the annual budget nor do they face incentives and/or consequences to allocate resources for the effective improvement of learning conditions.

94. A draft for a new School Education Act made public for stakeholder review and discussion in April 2010 proposes that schools boards of trustees retain their legal status of voluntary organizations but establishes that schools without such school boards will receive less funding for recurrent costs. The law also specifies that schools boards of trustees are required to have two organs, a General Assembly (comprised of parents, representatives of the local business community and other interested parties) and a Council of Trustees (comprised of two parents, one representative of the municipality and one representative decided by vote in the General Assembly). The new draft law proposes expanded functions for these school boards – endorsing the school budget and regular reports on its use and endorsing the school development plan. While it is an important first step, the practical implementation of the concept for stronger and empowered school boards needs to cope with the alienation of parents from school life. To address this issue, the implementation phase should be preceded and accompanied by effective public campaigns and massive trainings for parents and other members of the new school boards. This would require coordinated efforts

of policy makers at the national, regional and local level, and broader involvement of civil society organizations and media.

95. **Weakened municipal sense of ownership over the school network.** The lack of dialogue between the government and municipalities prior to mandating delegated school budgets significantly strained central-local relations in 2008. Municipal role in selecting and appointing school principals is rather formal. Municipalities resented losing their power to determine school spending and becoming mere conduits for state funding to schools. The combined effect of these factors reinforced a disconnect between the funding responsibilities of the municipalities and the management responsibilities of the REIs. Moreover, it led to a weakened municipal sense of ownership over the school network on their territory. Weakened municipal sense of ownership over the school network was one of the reasons why some municipalities did not use the 20 percent UPSCS adjustment discretion.

96. **The lines of accountability for the municipalities in a system of self-managing schools are not sufficiently developed.** Despite the responsibility of managing the spending of public money, municipalities have no direct means of holding school principals accountable for their respective management of a school's budget, resources and educational standards (apart from applying to dismiss the school principal if he/she runs a budget deficit of 20% or more). The REIs still retain powers from the previous centralized system, i.e. they appoint school principals, inspect schools, and hold school principals accountable for education quality. Today, mistrust still exists between the central MEYS administration and municipalities. Moreover, principals are not accountable for the effective use of resources in light of a set of clearly defined and measurable outcomes.

97. **Insufficient capacity at the local level to devise a smart funding formula for allocation of resources that benefits all schools and manage delegated budgets, especially given the lack of experience with decentralized school funding in most municipalities and among most school principals.** In a bid to address the stakeholders' capacity gap to manage such significant shift in roles and responsibilities, the government undertook intensive three-day trainings of municipal personnel and school principals on the management of delegated budgets. In 2008, the National School Principals Training Institute delivered training to all school principals in finance and budgeting with the help of officers from the MF, staff from pilot DSBS municipalities, and NGOs. While this training provided some basic understanding of how the DSBS functioned, municipalities lacked more in-depth knowledge of how the school funding formulae can be designed to serve specific education policy objectives, such as preserving small schools. To improve the process, the government issued detailed brochures and guidelines on formula funding and practical aspects of setting up and implementing the DSBS, but these came too late to be effectively used and applied in 2008. As a result, many municipalities either did not or refused to use 20% of the formula that does not need to be allocated according to the number of students, thus turning a blind eye to the modest share of local discretion. Hence, in 2008, a sizeable share of local governments decided to allocate either most or all of their UPSCS (90-100%) to the number of students. Since the regulation states at least 80%, municipalities with 90-100% UPSCS are still conforming to the set standard. In 2010, a new round of trainings on management of delegated budgets has been launched, targeting all school principals, deputy principals and school accountants in the country. Training is based on the lessons learned in the first years of DSBS implementation and advances the capacity building of school management teams beyond the basics of DSBS.

98. **School Report Cards (SRCs) containing data on individual school performance do not contain comparative data analysis showing how a school's performance has changed from year to year and how gains (or losses) in performance compare to other schools, municipalities and regions.** Such comparative analysis does not recognize value-added by taking into account the specific composition of students in individual schools at the municipality, regional and national level. Currently, external assessments do not produce comparable data on school performance over time because of the different levels of difficulty of the tests introduced every year impeding the assessment of gains (value-added) in quality and performance of individual schools. Also, SRC are not in a position to provide schools with information that is essential to their development planning. With the exception of the Matura exam, organizing the test taking process and implementing the integrity of external assessments can be improved by introducing adequate supervision of test taking in the classrooms to guarantee the reliability of results. For example, the process set up for the Matura exam could be applied to other external assessments in grades, 4, 7, and 10. This will require additional human and financial resources. One alternative would be to use funds saved from the discontinuation of grade 5 and 6 assessment tests and improving test taking arrangements for grades 4, 7 and 10.

Relationships of Accountability in the Bulgarian Education System

99. **Further reforms to the Bulgarian education system aiming at addressing the outstanding challenges should focus on strengthening the relationships of accountability between stakeholders, especially with regard to the ability of parents and community members to monitor an efficient use of resources by school principals that would lead to improvements in learning outcomes (Barrera et al. 2009).** Currently, School Boards of Trustees (*Nastoyatelstva*), representing parents and local communities, are voluntary bodies and have no legal authority to participate in the school decision-making process (Levacic 2008).

100. **The reforms did not create clear mechanisms of accountability to enable policymakers at the municipal level to hold school principals accountable for the use of financial resources as measured by the added value of schools, in particular improvements in school conditions or learning outcomes (World Bank 2009).** Table 5.2 illustrates the current relationships of accountability in light of the main goals of increased learning and more efficient financial management between *school councils, school principals, municipalities, and REIs* - these four stakeholders are those directly involved in the delivery of education in the Bulgarian education system. The relationships of accountability between *school principals and school boards of trustees (Nastoyatelstva)* and between *school principals and municipalities* are likely to balance the increased autonomy and responsibility devolved to school principals; influence the way resources are spent; and steer decision-making authorities and management of resources towards improved learning, efficiency, and equity. The tension between the management and funding responsibilities of schools, under the jurisdiction of the municipal authorities and the REIs respectively, jeopardizes the possibility for policymakers to hold school principals accountable for results.

Table 5.2 Current SBM Reforms in Bulgaria: Accountability Framework in light of Desired Results

Relationships of Accountability between	Efficiency in use of Financial Resources	Increased Learning Outcomes
School Principals and Parents & Community Members	Currently non-existent in a formal way.	Parents have no formal ways to hold School Principals accountable for learning outcomes.
School Principals and Municipal authorities	School Principals are accountable to municipal authorities for use of financial resources.	Municipalities have no formal ways to hold School Principals accountable for improvements in school environment or in learning outcomes.
School Principals and REIs	Non-applicable	REIs few formal ways to hold School Principals for improvements in school environment or in learning outcomes.

Source: Author's contribution

Accountability recommendations and international experience

Toward increased parental and community participation

101. The governance and finance reforms in Bulgaria conceded *administrative control* to the school level since, following the full introduction of delegated budgets in 2008, all school principals received funds directly from municipalities and were required to prepare budgets and make decisions about the optimal level of resource allocation. Yet, a crucial institution currently missing from the Bulgarian school accountability framework is the school board.

How do other countries empower school boards and involve them in the school decision-making process?

102. Models of school-based management used in Mexico, the Netherlands and other OECD countries are useful examples to inform policymakers in Bulgaria about the process of designing a model that actively incorporates parents and the community in the school decision-making process. On the range of autonomy reforms, Mexico has made solid efforts to increase community participation and gives communities responsibility for some devolved functions (Box 5.1). In several OECD countries, local authorities and schools boards have substantial autonomy with regard to adapting and implementing educational content and/or allocating and managing resources. Even though there is variation between OECD systems, the devolution of authority is characterized by a high degree of administrative control to the school level (Box 5.2) and in some countries, such as Australia, Austria, Canada, Ireland, Spain and Switzerland the relationship between school autonomy and student performance is strong and significant. The Netherlands stands as an example of a balanced control model of SBM in which schools are accountable to parents, government and society, while the school board is responsible for implementing regulations in schools (Box 5.3) (Gertler et al 2008; OECD 2004; Patrinos 2010)

Policy options to introduce greater decision-making to parents and communities in schools

103. In Bulgaria, a lack of clear guidelines on the role of school councils contributes to low parental participation in school decision making. Similarly, parents have little incentives to get involved in school life as they see little consequences to their actions. Evidence indicates

that school-based management may not improve school quality (see, for example, Galiani et al. 2008, on the case of Argentina), when parents lack the ability to express their opinion over school matters, when local elites can capture public resources (Bardhan and Mookherjee 2005, 2006), or when school councils do not have the capacity to effectively influence school decisions and are less technically capable of administering schools relative to higher levels of government (Smith 1985; Gertler et al. 2008).

104. The draft new School Education Act in Bulgaria recognizes the right of parents to receive a copy of the school budget and retains their legal status as voluntary organizations but establishes that schools without school boards will receive less for recurrent costs. It also proposes that a Council of Trustees within the Board endorse the school development plan, strategy and budget. In addition, policy options towards increasing parental participation can include:

- a. Delineating clear guidelines that specify the role of school boards in school-level decisions (see an example from England in Box 5.4).
- b. Establishing formal procedures through which parents can discuss with principals and municipal authorities decisions about budgetary allocations, human resources, infrastructure and support programs, in order to empower school boards to influence decisions at the school (see an example from Mexico in box 5.1).
- c. Establishing guidelines and tools for information dissemination in order to ensure the flow of information to parents about school performance relative to other schools and budgetary allocations (see an example from the Netherlands in box 5.3).
- d. Supporting the adequate capacity of school boards by providing training and awareness campaigns about the role of parents in promoting school quality (see examples from Mexico and the Netherlands in box 5.1 and 5.3).

Box 5.1 Mexico's Reform to Increase Parental Participation

Mexico's SBM programs grew out of a concern for equity and for poor, rural and heavily indigenous schools, which led to a large scale compensatory education program. That program included a small-scale parental participation program that was introduced in 1996, the Support to School Management (or AGE). AGE consists of monetary support and training to parent associations. The parent associations can spend the money for the purpose of their choosing although spending is limited to small civil works and infrastructure improvements. They are not allowed to spend money on wages and salaries for teachers. Despite being a limited version of SBM, the AGEs represent a significant advance in the Mexican education system, where parent associations have tended to play a minor role in school decision-making. The AGE financial support consists of quarterly transfers to APF school accounts, varying from \$500 to \$700 per year according to the size of the school. AGE helps generate significantly higher levels of school participation and communication – both amongst parents, and with teachers and school principals – because of the projects that parent associations undertake, but more so because of the training they receive and the meetings they undertake. The AGE helps articulate expectations and promotes social participation. Many parents believe that the AGEs put pressure on school principals and teachers to help their children. AGE also motivates parents to follow their children's progress. In rigorous impact evaluations it has been shown that AGE improves parental participation and improves the school climate (Gertler et al. 2008). It has also been shown that AGE leads to improvements in schooling outcomes such as, reduced grade repetition and failure and better test scores (Shapiro and Moreno 2004; Lopez-Calva and Espinosa 2006).

Mexico's successful experience with SBM in rural areas led to the creation of an urban, now nation-wide, more advanced program known as the Quality Schools Program (PEC) in 2001 with the goal of expanding autonomy and improving learning in Mexican schools. Participation in PEC entails the following: staff and parents of a school prepare a plan that outlines steps for improvement; schools receive a five-year grant to implement the activities; parental participation in designing and implementing plans; and training of school principals. Several qualitative evaluations find positive effects on test scores with the largest gains made in schools that had the poorest students and a positive impact on school climate and processes (Loera 2005). PEC also leads to higher accountability and transparency levels (Patrinos and Kagia 2007). And, after only a few years of implementation, participation in PEC significantly decreases dropout rates, failure rates and repetition rates (Skoufias and Shapiro 2006).

Source: Barrera et al. 2009

Box 5.2 Decentralized Decision-Making Can Improve School Quality: Lessons from the OECD

Since the 1980s, OECD countries have been focusing on increasing autonomy over a range of institutional operations, with the objective of raising performance levels through devolving responsibility to the frontline and encouraging responsiveness to local needs. In most of the countries that performed well on PISA, local authorities and schools have substantial autonomy with regard to adapting and implementing educational content and/or allocating and managing resources. In several countries, such as, Australia, Austria, Canada, Ireland, Spain and Switzerland, the relationship between school autonomy and student performance is strong and significant. In other countries, the association tends to be weaker, often because legislation specifies the distribution of decision-making responsibilities so that there is little variation among schools. Some countries focus on strengthening management and administration of individual schools through market-oriented governance instruments or collaboration between schools and other stakeholders in local communities. Greater school autonomy is not necessarily associated with greater disparities in school performance, as long as governments provide a framework in which poorer performing schools receive the necessary support for improvement. Finland and Sweden, among the countries with the highest degree of school autonomy on many of the measures used in PISA 2000 display, together with Iceland, the smallest performance differences among schools.

Source: OECD 2004

Box 5.3 The Netherlands: A Strong Version of School-Based Management

One of the key features of the Dutch education system is freedom of education. While 70 percent of schools are administered by private boards, the system, nevertheless, offers an example to other countries since all schools are funded equally by the government. Parents can choose among several schools, and schools are required to disseminate information to the public. The government provides capital costs and ongoing expenses while the municipality provides the buildings. School boards are able to retain surplus earnings. Schools are accountable to parents, government, and society. The school board is responsible for implementing regulations in schools. The freedom to organize teaching means that schools are free to determine how to teach, even though there are national standards. The Dutch education system combines centralized education policy with decentralized administration and management of schools.

Money follows students and for each student enrolled each school receives a sum equivalent to the per capita cost of public schooling. The school that receives the funds is then entitled to funding that will cover specified amounts of teacher salaries and other expenses. Municipal schools charge small fees during the 12 year compulsory stage of schooling. Schools are fully accountable toward the parents for the use of fees collected.

Parents encourage school choice by the national government by information dissemination. Parents receive a brochure that provides guidance on school choice. They are told about the education system, costs, rules, school issues, and their rights. They even get a checklist of questions to ask before choosing a school. School results are published in newspapers, websites, and by the Ministry and the Inspectorate, as well as, non-governmental organizations.

Sources: Patrinos 2010; Ritzen et al. 1997

Box 5.4. The Statutory Position on the role of Governing Bodies in England

The Governing body are given their powers and duties as an incorporated body. The Statutory responsibilities of the Governing Body **detailed in section 21 of the Education Act 2002**. Governors are required to:

- manage the school budget, consider the annual budget plan, approve the budget, consider and approve any proposed revisions to the budget plan;
- decide on how to spend delegated budget depending on any conditions set out in the LA scheme within the financial year;
- decide whether to delegate their powers to spend the delegated budget to the head teacher if so, they should establish the financial limits of delegated authority;
- be consulted by the Local Authority (LA) on significant changes to the LA's fair funding.
- make sure accurate accounts are kept;
- determine the staff complement and a pay policy for the school (in accordance with School Teachers Pay and Conditions);
- act as a 'critical friend' to the head teacher by providing advice, challenge and support;
- establish a written performance management policy to govern staff appraisal, after making sure that all staff have been consulted.

Source: Department for Children, Schools and Families 2008

Toward re-establishing weakened municipal sense of ownership over the school network

105. Municipalities may resent losing their power to determine school spending and becoming mere conduits for state funding to schools. They do not have a say in selecting and appointing school principals; that has remained the jurisdiction of the REIs managed by the MEYS centrally. The combined effect of these factors reinforce a disconnect between

the responsibility of the municipalities to manage funds for schools and the responsibility of the REIs to hire principals. Moreover, it has led to a weakened municipal sense of ownership over the school network on their territory, which is one of the reasons why some municipalities may not use the 20 percent UPSCS adjustment discretion adequately.

How do other countries manage the connection between school funding and hiring of school principals?

106. In the United Kingdom and the Netherlands, the responsibility for hiring and supervising school principals and managing funding to schools is shared by the same institution. However, across systems, the supervision and evaluation of principals is under the discretion of different entities depending upon their overall organization (Barrera et al. 2009).

107. In England, supervision of the principal is done either entirely by a local school board, or by a municipal authority in consultation with a school board, depending on the governance structure of the school (Eurydice 2008). Financing for schools comes from central government to Local Authorities. Local Authorities then delegate this money to schools. Every school has a governing body (equivalent of school boards in the Bulgaria context) which is legally responsible for the conduct and results of the school; but in practice that responsibility to implement the budget is largely devolved to the school principal. Most governing bodies have a funding sub-committee, which oversees the school's finances, but the school principal generally prepares the annual budget and future financial expenditure proposals. Legally, the governing body of each school is accountable for the disbursement of funds – and they are accountable to parents and the wider community (Department for Children, Schools and Families 2008).

108. In the Netherlands, principals are supervised by the competent authority, either the municipality in the case of public schools or a private governing body in the case of publicly financed private schools, along with a “participation council” comprised of school staff and parents, mandated by law (Eurydice 2008/9). The competent authority shares the responsibility to manage financial and human resources for schools; in other words, they are responsible for hiring principals and for transferring resources from the central level.

Policy options to eliminate the disconnect between funding and management of schools

109. The challenge in Bulgaria is two-fold in order to harmonize the responsibilities between management and funding of schools. Future policies need to empower municipalities with clear functions over the school network to re-establish their sense of ownership and create incentives for them to exercise their discretion to allocate 20 percent of school funding. Also, there is a need to clarify that the institution in charge of hiring school principals is the same institution that should hold them accountable for delivering results.

There are therefore three different options:

- a. An option is to follow other decentralized systems and empower the council of the school boards to appoint the school principal, but given so few school boards have been active and given their limited experience, it will be a challenge to make parents become involved in simpler tasks like reviewing and endorsing the school budgets and school development plan (as envisaged in the new draft law), more so in selecting and appointing the school principal. The proposed composition of the school boards'

council pools different perspectives and may provide the opportunity for parents to become more educated in school management matters.

- b. Another option is to strengthen the municipal sense of ownership over the school network by empowering the municipal council to appoint the school principals. The municipal council is the local parliament with councilors from all political parties elected through local elections. School boards may be invited to participate or be present in the selection of the principals. The REI's role could be to set the criteria for selection of a school principal, but the selection itself should be made by municipalities and school boards. The downside of this policy option is that it may result in changing the school principal's exposure from one set of political pressures (from the REIs) to another one (from the elected municipal bodies – Municipal council and/or Mayor).
- c. Or keep the current distribution of responsibilities and create incentives for municipalities to better exercise their discretion over allocation of 20 percent of school funding by institutionalizing other functions that would re-establish their sense of ownership over the school network. Under this option, a useful first step would be to implement the revised Decentralization program of the government, envisioning equal participation of REIs, municipalities and school boards in selecting school principals. Further measures may include making municipalities legally responsible for the execution of monitoring compliance with regulations on school financing; informing school principals about changes in regulation; buying support services to schools in conditions of inequality; and ensuring that all students within a municipality have a place in the school system. It would be critical to strengthen the ability of REIs to hold school principals accountable for results as given their hiring responsibility, they are the best suited to monitor and evaluate the role of principals over pedagogical matters and for adding-value as measured by student learning.

110. **Strong school leadership provided by highly-qualified principals is central to guaranteeing the conditions to promote accountability for quality in learning.** School principals should be appointed from a pool of highly qualified individuals with the capacity to manage teaching and support staff, implement professional development policies, and make optimal use of financial resources (OECD 2007b) irrespective of which institution is in charge of hiring school principals or which are the instruments to hold them accountable for results. Establishing a robust principal certification process is the first step to upgrade the qualifications of school principals and attract highly-qualified individuals to the profession.

Towards greater accountability for increased performance and value-added of schools: the role of Inspectorates

111. In the process of strengthening relationships of accountability between government authorities and schools for quality improvements, the draft law proposes the establishment of a new institution – the National Inspectorate on Education –to review education policies at the municipal, regional and national level, to prepare analytical reports and diagnosis.

112. Lessons from international experience (Netherlands, England and New Zealand) suggest that there are certain principles that must be followed by quality assurance agencies in order to ensure their effectiveness. First, agencies that oversee the implementation and quality of schools must be **independent** from those organizations defining education policies. This is justified based on the recognition that allowing independence of overseeing

institutions, such as education inspectorates, will enable them to provide useful insight on the quality of education and raise questions on the policies that affect schools (World Bank 2010c). Second, **coordination** between agencies in charge of the common objective of monitoring and assuring the quality of education (i.e. MEYS, REIs) is critical to ensure that each institution concentrates in a particular and clearly defined set of functions (e.g., policy-definition vs. oversight) and ensure relative independence between their functions and daily operations (World Bank 2010c). In the Netherlands and England, coordination between agencies is defined in the law. The third lesson is the importance of **consultation** with different stakeholders in the definition of functions for institutions that are in charge of assuring quality in the system. In several OECD systems, consultations are increasingly used and are aimed at capturing the perspectives, ideas and recommendations of stakeholders' during the process of designing a new agency (World Bank 2010c). It is also crucial to establish **mechanisms of accountability** for agencies that are in charge of assuring education quality in order to build legitimacy of their own function. In several OECD, there is a combination of external and internal mechanisms that ensure that agencies in charge of assuring quality meet their functions, and they are required to prepare annual reports that describe the extent to which the agency fulfilled its own performance objectives (World Bank 2010c).

Capacity building and timing of the reforms

113. The nation-wide reforms in Bulgaria were introduced over a relatively short period of time and while substantial achievements have been observed, in particular regarding the introduction of policies for efficient spending and the delegation of authority to the local levels, there is still much progress to be made to fulfill the vision of improved service delivery, in particular, to see improvements in learning outcomes and equitable opportunities for minority populations. An important part of the reforms has been the willingness of the government of Bulgaria to identify the weaknesses of the system three years into the implementation of the reforms and consult with others such as, the World Bank to identify policies that would strengthen the accountability and responsiveness of local authorities to meet remaining education challenges. Improving assessment systems and tools is the next logical step to empower all stakeholders involved in service delivery, help them make informed decisions about spending, measure the results of their investments, and engage in meaningful discussions about school management. In the process, measuring changes in the behavior of stakeholders and processes at the local and school-level (intermediate outcomes) can help determine whether national policies will result in changes at the local level (Table 5.3).

114. **More time was needed to improve capacity to design appropriate school funding formulae consistent with maintaining financially viable small schools in areas where they are still needed.** While the government's decision to introduce universal formula funding of schools is commendable, the fast pace of reform limited the consultation process between municipal administrations and school principals. Requiring all schools to move to formula funding in one year substantially increased the probability that many schools would become financially unviable because there was insufficient time to develop municipal funding formulae to take account of the inevitably higher per student costs of small schools. Experience from the DSBS pilot implementation from previous years showed that the introduction of the system was a gradual process and that in some places, despite the significant preparatory work; it took years of experimentation with different formulae until the best solution was found. A staggered implementation of formula funding of schools over

two to four years would have given more time for municipalities to better understand how to design funding formula to serve their policy objectives.

115. Capacity building at the school level, in particular as it relates to training and certification of school principals but also of members of the school boards, is a recommended next step for Bulgarian authorities in the process of strengthening school-based management. Increased responsibilities devolved to the school principal, including control over budget for personnel, require an upgrade in the capacity to efficiently manage school resources in order to optimize educational processes. Capacity building and certification of school principals is one of the key changes proposed in the draft for a new School Education Act. Strengthening school leadership and creating a transparent mechanism for certification of school principals that guarantees the quality and effectiveness of school leaders is a critical element for the long-term success of a school autonomy reform (World Bank 2010d), in particular, their ability to manage school budgets, infrastructure, and personnel towards improved results. On the other hand, training for parents and other members of school councils can strengthen their ability to keep school principals accountable, to effectively participate in school decisions, provide support to the school leadership and staff, and press for improvement of service delivery and outcomes (World Bank 2010d). The experience of Mexico implementing school-based management reforms indicates that strengthening the capacity of parents and community members, particularly for minority groups, is central to creating incentives to the participation in school life and to enhance their ability to positively influence decisions at the school level (box 5.5).

Box 5.5. Training Parents to Manage School Activities: Two Experiences from Mexico

PEC (Program for Quality Schools)

To join the Program and qualify to receive a school grant, schools must prepare a five year School Strategic Transformation Plan (PETE) where the school community defines the goals it want to reach in the median term and the means that will be used to achieve these goals. To implement the PETE the schools prepare, as an added condition to qualify for the Program, Annual Work Programs (*Programa Anual de Trabajo*, PAT) where they specify the investments and activities that will be carried out each year. Since the great majority of schools have no experience in strategic planning or in participatory management, the PEC provides technical assistance and training to all schools that express interest in participating in the Program. This assistance is provided by state education authorities through different means: (a) direct assistance to the school by the technical coordination of the Program at state level; (b) technical meetings organized by the supervisory team of each level of education (preschool, primary and lower-secondary); or (c) services provided to schools by pedagogic assistants assigned to the corresponding supervisory teams. In all cases, technical assistance focuses on school management and planning, diagnosis of school needs and evaluation of results. Technical assistance is primarily provided to school principals, who in turn have the responsibility for sharing the information with the teachers and parents.

AGE (Support to School Management Program)

The program provides Support and Training for Parent Associations (*Asociaciones de Padres de Familia*, APFs). The aim is to consolidate and strengthen the APFs through training and financial support. Training will focus on (a) management of school funds transferred by CONAFE to the APFs; (b) participatory skills to increase parent's involvement in school activities; and (c) information on the achievements of students and ways in which parents can help improve their learning achievements.

The project trains promoters and teachers, provides appropriate didactic materials, and supports School Parents Associations at the preschool level in indigenous schools. At the primary level, indigenous students and schools benefit from a variety of project interventions:

- Infrastructure improvements, including additional classrooms, sanitary services and complementary facilities for school supervision and teacher training;
- Equipment, consisting in school furniture and sports equipment;
- Didactic materials, including student packages of school utensils and basic didactic materials for the classroom;
- In-service teacher training in multi-grade pedagogical techniques in bilingual education, and in a multicultural approach to teaching and learning, in addition to training in selected national and regional courses. Teacher training is also supported with technical assistance to teachers in the classroom provided by technical pedagogical assistants;
- Improvements in school management through modernization of supervision and assistance to supervisors and sector chiefs to facilitate frequent school visits;
- Performance incentives for primary teachers provided for teachers who (a) attend the full school calendar and keep specified class hours, as certified by School Parents Associations; (b) prepare jointly with the advisor specific learning activities for resolving specific problems; (c) provide remedial education to students who are lagging behind peers, in after-school hours at least three days per week; (d) participate in training programs; (e) collaborate with parents associations, and (f) development education activities with the community;

Source: World Bank 2005; 2004

6. Conclusions and Policy Options

116. **The sweeping decentralization reform of the education system introduced by the Government of Bulgaria to promote greater local autonomy and more efficient public spending produced impressive efficiency gains and set the foundation for better adjustment to local education needs.** Despite these initial successes, lingering concerns remain about the accountability of schools to the local community. Thus, as a part of a continued engagement with the Government of Bulgaria, this study records the achievements of the reforms and highlights outstanding challenges.

117. **The objectives of the Bulgaria School Autonomy Reform study** are to assess the progress in the functioning of the model of delegated financing and governance in the education sector. The study aims to identify where the model could be strengthened to further improve the achievement of the objectives of the reform. Four areas have been identified as being of interest: efficiency, quality, equity and accountability. Thus, the study focuses on four questions -

- To what extent are the reforms leading to a more efficient system?
- Is there any evidence that the quality of education had been impacted by these reforms?
- What is the equity impact of the reform in terms of the income quintile and ethnicity of students affected by the school closures?
- How are the accountability mechanisms in the reform affecting the role of the major stakeholders including the municipalities, principals, teachers, community, and parents?

To what extent are the reforms leading to a more efficient system?

118. **Bulgaria began the decentralization of the financial decision-making to the school level in 1998 and declared nation-wide expansion in 2008.** A comprehensive fiscal decentralization and municipal finance reform was launched in 2001 and within two years, revamped the environment in which local governments performed their public service duties, particularly the financing mechanisms of school education. The transfer system resulted in a transparent mechanism for the calculation and allocation of subsidies across municipalities, and the introduction of the “unified” per student cost standards (UPSCS) for education in 2007 set the stage for significant gains in efficiency of schools. The delegated school budget system introduced in all Bulgarian schools in 2008 further improved transparency of funds allocation, ensuring money for education was passed on to the schools. These measures were coupled with substantial delegation of decision making authority to school principals. Per-student financing reform embodied by the introduction of UPSCS and the delegated school budget system was a central part of the reform and a critical enabler of meaningful school-based management policies that followed as it introduced transparency and clarity in school financing, which guided the decision-making process of school principals

119. **The considerable decrease in population and the expected change in age composition constitute a significant challenge that the country needs to face, particularly in the education sector.** The school age population decreased by 30 percent from 2000 to 2009. The total population that demanded primary education decreased by 26 percent while the secondary school age population decreased by 31 percent. Therefore, the education system faced diminishing demand and an urgent need to implement structural

changes in order to maintain efficiency. In 2007, as part of the third phase of the education reform, municipalities started to optimize the number of schools within each jurisdiction.

120. **The reform generated considerable efficiency savings.** If the Government of Bulgaria had not implemented the reforms and consolidated schools, the projected total budget in 2008 would have been almost 50 percent higher than the actual. The reform allowed the government to save a considerable amount of resources that allowed for the increase of wages in the education sector by almost 140 percent from 2001 to 2008 and the reallocation of more resources for capital investment.

Is there any evidence that the quality of education had been impacted by these reforms?

121. **There is yet no conclusive evidence that Bulgaria's reforms improved learning outcomes.** That is, up to 2006, there is no correlational evidence that the school-based management reforms – autonomy or participation in various school decisions – improves learning outcomes. It may be too early to see the effects of the initial reforms; therefore, the international assessments may provide a baseline for future rounds and insights into the equity impact of the reforms.

122. **However, small schools, which are more likely to have been closed as a result of the reforms, are associated with significantly lower scores.** Therefore, over time, the reduction in the number of small schools could result in higher overall test scores. The case is not so clear, however, for linguistic minority students, who although have lower overall scores, tend to perform better in small schools than in larger schools (controlling for socioeconomic conditions).

123. **Even though measuring the impacts of the reforms on education quality is important, a national standardized test for this purpose does not exist.** The national external examinations are not designed to measure this. The national examinations assess 4th, 5th, 6th, 7th and 12th grades, but are not comparable over time, are not published, and the most important ones – 7th and 12th grade – are for selection into higher levels of schooling.

What is the equity impact of the reform in terms of the income quintile and ethnicity of students affected by the school closures?

124. **Evidence suggests that school consolidations may have exacerbated school dropout rates.** One of the main reforms was the efficiency enhancing measures, which included the optimization of the school network. Given population declines and dwindling budgets, demands for teacher salary increases, the need to close down some inefficient schools became necessary. A natural concern is whether students from schools that closed were able to fully integrate into their new, consolidated school. The results of a rigorous impact evaluation study suggest that the school closures and consequent consolidations contributed to a small but significant increase in school dropout rates.

125. **Problems integrating with other pupils and distance are the two main factors discouraging Roma attendance at consolidated schools.** The reforms' consequent school consolidations occurred primarily in rural areas, including locations where the Roma are over represented. Evidence from qualitative research indicates that Roma children are not always integrating easily into consolidated schools. Combined with the distance from closed to consolidated schools, then much of decline in overall enrollments may be due to Roma experience with the consolidation. The main problems that Roma parents cited as

discouraging their children's attendance are deficiencies in local arrangements for implementation of specific programs like the bus transportation, school canteens and the semi-boarding facilities.

How are the accountability mechanisms in the reform affecting the role of the major stakeholders including the municipalities, principals, teachers, community, and parents?

126. **Decentralized decision-making in schools empowers principals and parents.** At the school level, the principals are empowered to make all necessary decisions. They manage budgets, hire and fire teachers, make pedagogical decisions, and manage the relations with the Regional Education Inspectorate (the arm of the Ministry of Education, and the principal's employer), the school council, the municipality, and parents. School principals are satisfied with the reforms. Parents are able to choose from any school in the country and can obtain academic results about their children's schools.

127. **However, even with the information and school choice, the level of participation of parents and the community did not increase with the reforms, thus limiting the level of accountability of principals to local stakeholders.** The high level of between-school variation detected in Bulgaria could be the result of choice with lack of information on school outcomes combined with selection by schools. This would tend to favor more educated and informed parents, who would be able to choose the better schools, thus contributed to inequality. Parents do not have a formal say on school matters and therefore do not influence principal's decisions on budgetary issues. Though some would argue that parents have little interest in or knowledge on such matters, the fact remains that they have little incentive in participating, especially when there are no legal requirements to consult them. Also, parents have no formal ways to hold school principals accountable for learning outcomes; which would be ineffective in any case since they do not receive information on the academic performance of other schools.

128. **Policymakers need more and better instruments to hold principals accountable for increases in learning outcomes.** There is a weakened sense of municipality ownership over the school network. The lines of accountability for the municipalities in a system of self-managing schools are not sufficiently developed.

Challenges and Policy Options

Efficiency:

129. **Population shifts provide opportunity for the introduction of further efficiency savings.** The demographic change and declining age cohorts provide an opportunity to improve the efficiency of public education spending, and ensure it is spent effectively on improving the quality of education and training and increasing coverage of the shrinking age cohorts of students. Despite the reforms and the progress made so far, there is still room for improving the allocation of resources in order to increase the efficiency of the system. Despite the increases, the pupil: teacher ratio is still low, suggesting that further consolidation is possible, just so long as it does not adversely affect disadvantaged populations.

Quality:

130. **Less than one-half of Bulgarian students are able to reach the OECD critical threshold of reading literacy and math competency.** Bulgaria has witnessed a sharp

decline in mathematics achievement in both international assessments over the years. Also, Bulgaria has the highest between-school variance of all countries that participate in PISA, suggesting that school differences play a large role in student achievement. To remain competitive, the country needs to consider improvements in school quality, and this could be the next step to the reforms.

131. A first step towards such improvement is measurement, or assessment of the system. Bulgaria participates in both of the major international student assessments. While the latest rounds of PISA and TIMSS precede the reforms, they nevertheless provide a baseline for future rounds and insights into the equity and quality impacts of the on-going and future reforms. In fact, it would be useful to set specific targets for future rounds of international assessments such as PISA. At present, Bulgaria's score in math is 413 and 53 percent of students score below the second or adequate proficiency level. A useful target would be to reduce the number of students at these lower levels. Moving 50 percent of the students below level two into level two would imply a score of 443 points in 2012, which would put Bulgaria on par with Chile and above Russia. Other countries use such policy targeting in a number of important indicators, including education, such as Brazil, Mexico and New Zealand.

Specific measures to improve quality might include:

- Strengthening accountability and autonomy of schools (see below);
- Incentives for performance-such as PISA targets or similar using national tests;

132. These could include merit scholarships which provide access to further education for the best performing disadvantaged students (Kremer et al. 2004) or cash awards for raising test performance among students (Angrist and Lavy 2002; Lavy 2002) or rewarding teachers (Contreras et al. 2003). Of course, this requires:

- Extending compulsory **comprehensive** schooling to age 16 (grade 10);
- Exposing more students to a general curriculum could improve academic abilities.
- Poland's reform, which extended general, comprehensive schooling, led to a significant improvement in learning outcomes (Jakubowski et al. 2010) Monitor learning outcomes in small schools;
- Target linguistic minorities, implement second-language programs, and increase early childhood development programs

133. ECD programs are associated with high lifetime returns (Patrinos 2008) and have been shown in rigorous assessments to improve child readiness for school, among many other benefits. Bulgaria could continue to expand Roma participation in pre-school education. While research on bilingual education is not conclusive (Patrinos and Velez 2010), nevertheless introducing textbooks in mother tongue for Romani language minority groups is worth considering, given the experience in other countries.

134. **At the same time, Bulgaria could further improve its national assessment system, by strengthening and aligning it to the accountability and autonomy framework.** National assessments do not exist that are suited to monitoring changes in education quality resulting from the reform. As stated, international assessments are useful for this, but may not be aligned with the Bulgarian curriculum or education objectives whereas a national assessment would be. Additionally, international assessments are sample based, a census based assessment that is comparable across time is necessary for providing local stakeholders, including parents and municipal officials, with information about performance of individual schools. This is a key requirement for the accountability needed to produce

success given the increase in autonomy to schools. National assessments are needed to measure progress, school value-added and determine the ability of parents and local authorities to hold principals accountable.

Equity:

135. Also, linguistic minority students and students from less wealthy families perform worse in academic achievement tests. The majority of students perform worse in small schools relative to their household characteristics such as socio-economic status; but, linguistic minority students perform better. This suggests that specific measures are required to address the needs of linguistic minorities and students from poor backgrounds. In addition, such groups need more access to school accountability tools, such as greater interaction in parent-teacher meetings, and effective representations in future school boards/councils.

136. There is a need to focus on integrating dropouts and preventing more from occurring. Some of the accountability measures will help, but more specific actions may be needed. Since dropouts are more likely to be from poorer areas, then specific measures may be needed, both financial and non-financial, such as conditional cash transfers in some cases, which have been shown to work effectively in other countries (see, for example, Schultz 2004), more community involvement in integration efforts in others. Other demand-side efforts (Patrinos and Ariasingam 1997) may be needed, such as improved and expanded transportation services to consolidated schools. Extra effort should be made to ensure that an adequate supervision of CCT implementation to ensure maximum attendance of beneficiary students. This would include monitoring and enforcement. Monitoring is both an information systems challenge and a behavioral challenge. The information systems challenge includes school attendance monitoring itself, linking school attendance monitoring to actual beneficiaries, and institutional arrangements, technical aspects for information flows and timeliness. Enforcement practice varies by country, with some having very automatic penalties (that is, as in Mexico, if one misses school they face loss of some benefits. Others have gradual enforcement penalties, beginning with a warning, visits by social workers, before non-compliance leads to losses of benefits.

137. For the Roma integration is the priority. One mechanism for attempting to better integrate the Roma is to more actively increase voice. Giving Roma parents an increased say over the design, management and funding of school programs may help remedy the deficiencies exposed during the qualitative research. The main problems that Roma parents cited as discouraging their children's attendance are deficiencies in local arrangements for implementation of specific programs including the bus transportation, school canteens and the semi-boarding facilities. These present clear and specific policy options, however, a more general policy option would be to strengthen the representation of Roma parents in the design of such programs in order to solve not only these specific problems, but also ones that were not captured by these few case studies and ones that may arise in the future.

Accountability:

138. There is a need to further strengthen the accountability measures, and align them to the existing and future autonomy measures, as well as to the assessment system. Until now more autonomous schools have not performed better than other schools. Rather than interpret this as a causal relationship, it is more likely due to: (a) too short a time

period to assess reforms; (b) real reforms have not taken place; that is, effectively designed school autonomy and accountability reforms have yet to be operationalized; and (c) if the proposed changes in the education act (see Box 1) are implemented, piloted and assessed, then the results of the analysis of PISA 2006 become a baseline from which to analyze future outcomes, supplemented with impact evaluations.

More rigorous accountability system might include:

- a. Increased participation of parents and the community through a legally recognized and empowered school boards, provided with adequate capacity.
- b. Better instruments to hold principals accountable for increases in learning outcomes, such as a greater role for the municipality, greater monitoring by parents and the school boards, and real consequences for poor performance.
- c. Reconsideration of municipality-principal relationship, and the employment relationship between principals and the Regional Education Inspectorates.
- d. Publication, dissemination, analysis and use of comparable school assessment information, available to schools, parents and the general public. This proved useful in assessments of state-level accountability and student achievement in the United States (Hanushek and Raymond 2005; Carnoy and Loeb 2002) and Mexico (Alvarez et al. 2007). Test-based accountability systems range from those that use only student tests, to those that publicly disseminate the results, to those that receive feedback on the results from the schools, to those that use the results and the public feedback to design policies, strategies and specific interventions to improve outcomes. The latter complete or full accountability system is particularly useful for improving learning outcomes. Tests can be high stakes, so that schools not showing progress are penalized financially, or they may be low stakes, where no financial penalties are levied, but parental pressure could lead to changes. In the Bulgarian context, the fact that parents have choice over public school and funding follows the student, then unsatisfactory progress on learning outcomes will have real consequences for the school.

139. Further reforms to the Bulgarian education system aiming at addressing the outstanding challenges should focus on strengthening the relationships of accountability between stakeholders, especially with regard to the ability of parents and community members to monitor an efficient use of resources by principals that would lead to improvements in learning outcomes. School boards, with the ability to participate in the school decision-making process and greater parental and community participation could be implemented, based on a menu of policy options derived from international experience.

140. Clearer mechanisms of accountability that enable policymakers at the municipal level to hold principals accountable for the use of financial resources as measured by the added value of schools, in particular improvements in school conditions or learning outcomes, are needed. The plans for school councils outlined in the draft law are a useful first step. The accountability relationship between municipalities and principals must be addressed; perhaps by re-visiting the employment relationship. There are therefore three different options: (1) keep the current distribution of responsibilities and institutionalize other functions that would re-establish their sense of ownership over the school network, for example ensure equal participation of municipalities, REIs and school boards in selecting school principals; (2) follow other decentralized systems and empower the council of the school boards to appoint the school principal; and (3)

strengthen the municipal sense of ownership over the school network by empowering the municipalities to appoint the school principals.

141. In the process of strengthening relationships of accountability between government authorities and schools for quality improvements, the draft law proposes the establishment of a new institution – the National Inspectorate on Education – to review education policies at the municipal, regional and national level, and to prepare analytical reports and diagnosis. Lessons from international experience suggest that there are certain principles that must be followed by quality assurance agencies in order to ensure their effectiveness: (1) agencies that oversee the implementation and quality of schools must be independent from those organizations defining education policies; (2) coordination between agencies in charge of the common objective of monitoring and assuring the quality of education is critical to ensure that each institution concentrates in a particular and clearly defined set of functions (policy-definition versus oversight) and ensure relative independence between their functions and daily operations; and (3) the importance of consultation with different stakeholders in the definition of functions for institutions that are in charge of assuring quality in the system.

142. Bulgaria has made great strides in promoting school autonomy, and has proposed legislation to strengthen accountability relationships and has created the institutional structure for a national assessment system; their continued performance in international student assessments is to be praised. The policy options offered here are meant to generate discussion about further actions that would strengthen autonomy, accountability and assessment. Focusing on the 3As will help improve the quality of education and increase learning, making other policy actions (such as financing reforms in place) more effective. But to generate better system performance, they need be connected through an integrated system of incentives, rewards and sanctions.

Box 6.1: Proposed Education Reforms

The Government of Bulgaria is currently in the process of drafting a new School Education Act. Based on the version released for stakeholders' review and discussion in April 2010, the proposed revisions relevant to this report include:

- The right of the parents to receive a copy of the school budget is recognized (article 141)
- A new structure – the National Inspectorate on Education – is established to review education policies on municipal, regional and national level, to prepare analytical reports, analyses, projections, diagnosis
- School boards retain their legal status of voluntary organizations registered under the Non-profit Organizations Act; but schools without boards will receive less funding for recurrent costs. School boards will include a Council of Trustees to endorse the school development strategy and plan, and endorse the school budget (articles 161, 167, 168)
- The consolidated schools and the protected schools are now part of the new School education Act. The draft law defines the entitlement of these two types of schools to additional funding on top of unified per student cost standards (article 175)
- The draft law defines a separate stream of funds (as per legal act of the Government) for incentivizing higher quality of education and student performance (article 176)
- The principals' full authority to determine the number of staff and its authority to determine class sizes and individual teacher pay within a centrally set framework are now part of the law (article 179)
- Legal requirement for schools to publicize their budgets (on their web sites or otherwise as to ensure access of community to this information) and for municipalities to publicize allocation of education funds across schools (on their web sites or otherwise).

Summary of Issues and Policy Options	
Issue	Policy Options
<i>Efficiency</i>	
School age population decrease leading to reduced demand for education	Optimize the number of schools within each jurisdiction, with due concern for equity and inclusion issues Stimulate even higher student teacher ratios in the big cities where optimization will be less painful (to the extent this does not harm the learning and teaching conditions)
Small municipalities in groups 3 and 4 took the brunt of the school optimization with the largest cases of school closures	To avoid further dropouts in small municipalities, protected schools could be a buffer
There is a need to review the funding formula in order to ensure sustainability and promote equity, and ensure that the formula aligns with school's real costs	Consider reviewing municipality groupings with additional criteria which take into account different weights for specific populations, including, for example, linguistic minorities Ensure that funding is based on current and real enrolment and cost figures
<i>Quality</i>	
There is yet no conclusive evidence that autonomy and participation reforms improved learning outcomes (but may be too early to see the effects of the initial reforms)	International assessments provide a baseline for future rounds
Small schools are associated with lower scores	Monitor learning outcomes in small schools
Linguistic minority students have lower scores but tend to perform better in small schools than in larger schools (controlling for socioeconomic conditions)	Target linguistic minorities, implement second-language learning programs (bilingual education) and investigate small school relationship
A national standardized test for measuring impacts of reforms on quality is required	Revise national examinations for this purpose or create separate national standardized test for this purpose. In either case results should be public, disseminated, analyzed, use for policy and strategy, comparable. Strengthened assessment system should be aligned with the accountability and autonomy framework. National assessments are needed to measure progress, school value-added and determine the ability of parents and local authorities to hold principals accountable
Less than one-half of students able to reach OECD critical threshold of reading literacy and math competency	Target specific improvements over time using PISA, for example, reducing the number of students scoring below level 2 Specific measures to improve quality might include: strengthening accountability and autonomy of schools (see below) Incentives for performance—such as PISA targets or similar using national assessments Extending compulsory, comprehensive schooling to age 16

<i>Equity</i>	
School closures and consolidations contributed to a small but significant increase in school dropout rates	Conditional cash transfer programs and adequate supervision of effective implementation More community involvement in integration efforts Other demand-side efforts such as improved and expanded transportation services to consolidated schools
Specific measures to address needs of students from linguistic minorities, particularly Roma	Expand and continue to support ECD programs Introduce textbooks in mother tongue for Romani language minority groups
Integration of Roma with other pupils in consolidated schools	Consider more protected schools if likelihood of Roma dropout is high in future consolidations Consider semi-boarding schools for Roma if cost-effective Promote extra-curricular activities for Roma children to make new schools more attractive Encourage voice of Roma parents
Primary school (grades 1-4) net enrollment rate dropped from 100% in 2002 to 93% in 2009	Integrating dropouts, preventing more, by: Roma integration and enhancing voice Roma parental participation and increased say over design, management, funding of programs Improving coordination between municipalities and schools with regard to bus transportation Use of semi-boarding facilities Bilingual education or more flexible language policy in schools catering to linguistic minority groups
Minority students tend to underperform in academic achievement tests	International assessments provide a baseline for future rounds and insights into the equity impact of the reforms
<i>Accountability</i>	
Participation of parents and community did not increase	Empower school council Provide more public information on school outcomes
Make schools accountable for increases in learning	More and better instruments, such as: Empower school councils Public information on results Closer relationship between municipality and principal Independent evaluation system
Delegated budgets need more time and specific incentives to become fully effective	Increase capacity of staff and parents (and school councils)
Weakened sense of municipality ownership over school network, and lines of accountability for municipalities in a system of self-managing schools not sufficiently developed	Reconsider hiring of principals; now MOE (through REI); could be municipality
School decentralization reform produced impressive efficiency gains and set the foundation for better adjustment to local needs, but some concerns about accountability model and results	Regular evaluation of the results of the current and future school reforms (PISA 2006 become a baseline to analyze future outcomes, supplemented with impact evaluations)

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Annex 1: Teacher Demographics

Table 1a. Total Teaching Staff in General School (2000-2009)

Year	Primary			Secondary			Total		
	Teachers	$\Delta(t-t^{+1})$		Teachers	$\Delta(t-t^{+1})$		Teachers	$\Delta(t-t^{+1})$	
		#	%		#	%		#	%
2000	21,459			42,293			63,752		
2001	21,223	236	1%	42,038	255	1%	63,261	491	1%
2002	18,938	2,285	11%	42,416	-378	-1%	61,354	1,907	3%
2003	18,317	621	3%	42,021	395	1%	60,338	1,016	2%
2004	17,459	858	5%	41,676	345	1%	59,135	1,203	2%
2005	16,886	573	3%	41,119	557	1%	58,005	1,130	2%
2006	16,469	417	2%	40,047	1,072	3%	56,516	1,489	3%
2007	16,099	370	2%	38,355	1,692	4%	54,454	2,062	4%
2008	14,879	1,220	8%	34,768	3,587	9%	49,647	4,807	9%
2009	14,722	157	1%	33,571	1,197	3%	48,293	1,354	3%

Source: National Statistical Institute, May 2010

Table 1b. Pupil-Teacher Ratios (2000-2009)

Year	Primary	Secondary	Total
2000	17.1	11.8	13.6
2001	16.1	11.8	13.3
2002	17.2	11.8	13.5
2003	16.8	11.6	13.2
2004	16.3	11.4	12.8
2005	15.9	11.1	12.5
2006	16.0	10.9	12.4
2007	16.1	10.8	12.3
2008	17.4	11.1	13.0
2009	17.5	11.0	13.0

Source: World Bank Estimations using data from National Statistical Institute, May 2010.

Table 1c. Teaching Staff in General Schools by Attained Educational level (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	63752	63261	61354	60338	59135	58005	56516	54454	49647	48293
Tertiary – bachelor and master	49175	50176	50233	50326	50190	49917	49281	47946	44348	43446
Tertiary – professional bachelor	13482	12144	10385	9367	8358	7581	6799	6109	4960	4568
Upper secondary	1095	941	736	645	587	507	436	399	339	279

Source: National Statistical Institute, May 2010.

Table 1d. Teaching Staff in General Schools by Age (2000-2009)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	63752	63261	61354	60338	59135	58005	56516	54454	49647	48293
Under 25	1658	1657	1318	1143	967	787	674	532	401	254
25 - 29	6590	6255	5730	5172	4552	3936	3236	2636	1884	1404
30 - 34	9761	9499	8801	8178	7601	6862	6399	5599	4598	3807
35 - 39	11046	10626	10207	9904	9710	9495	9061	8425	7239	6450
40 - 44	12229	11848	11551	11261	10708	10203	9820	9518	8649	8515
45 - 49	10571	10960	10988	11080	10956	10960	10916	10592	9861	9415
50 - 54	7531	7780	8270	8714	9093	9475	9770	9937	9618	9753
55 - 59	3744	3900	3650	3921	4418	5013	5381	5897	6142	7216
60 and over	622	736	839	965	1130	1274	1259	1318	1255	1479

Source: National Statistical Institute, May 2010.

Table 1e. Evolution of Monthly Wages (BGN) by Economic Activity (2001-2008), Public Sector

Source: National Statistical Institute, April 2010

	2001	2002	2003	2004	2005	2006	2007	2008	Δ 2006 -08	
									#	%
Total	257	282	308	332	370	395	449	563	168	43%
Agriculture, hunting, forestry and fishing	203	216	238	252	279	301	353	442	141	47%
Mining and quarrying	376	404	438	506	586	678	900	1245	567	84%
Manufacturing	286	310	328	371	444	498	553	720	222	45%
Electricity, gas and water supply	427	428	438	509	541	591	671	817	226	38%
Construction	223	247	264	300	331	373	458	550	177	47%
Trade, repair of motor vehicles and personal and household goods	262	305	365	462	521	416	534	628	212	51%
Hotels and restaurants	186	202	221	250	271	289	318	385	96	33%
Transport, storage and communication	302	322	347	371	404	451	488	712	261	58%
Financial intermediation	366	428	489	822	824	930	1042	1130	200	22%
Real estate, renting and business activities	245	276	286	297	355	385	441	529	144	37%
Public administration; compulsory social security	283	323	358	411	430	455	512	605	150	33%
Education	202	227	251	276	303	331	370	483	152	46%
Health and social work	205	230	279	315	361	364	430	508	144	40%
Other community, social and personal service activities	173	211	209	177	215	251	296	355	104	41%

Annex 2: Data on Math Achievement Regression and other Tables

Table 2a: PISA Math Achievement Regression estimates

	(1)	(2)	(3)	(4)
Linguistic Minority	-80.36*** (9.08)	-18.51*** (6.57)		
Poorest 20% Approx.			- 56.39*** (6.88)	-14.98*** (4.11)
Student Household Control Variables	No	Yes	No	Yes
Constant	423.48*** (5.91)	373.18*** (6.54)	428.9*** (6.17)	375.32*** (6.7)
Observations	4382	4114	4405	4135
R-Square	.06	.26	.06	.26

Source: Author's calculations using PISA 2006 Bulgaria. Note: Standard errors are reported in parentheses and statistical significance at 1%, 5%, and 10% levels denoted by ***, **, *

Table 2b: Small Schools

Estimated percentage 15 year-old students who are in small schools	10.1
Estimated percent of 15 year-old students in small schools who are a linguistic minority	28.7
among the poorest 25% (approx.)	53.7
Estimated percent in small schools of all linguistic minority 15 year-old students	27.3
of all poorest 25% (approx.) 15 year-old students	20.4

Source: Author's calculations using PISA 2006 Bulgaria.

Table 2c: PISA Math Achievement Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)
Small school	-72.53*** (10.09)	-20.87* (10.61)	-77.83*** (10.46)	-35.56*** (10.11)	-78.94*** (12.16)	-41.97*** (11.23)
Linguistic Minority			-83.39*** (11.33)	-31.56*** (7.99)		
Small School x Linguistic Minority			65.12*** (17.3)	65.16*** (17.02)		
Poorest 20% Approx.					-53.36*** (7.81)	-20.17*** (4.92)
Small School x Poorest					38.55*** (13.47)	48.25*** (13.28)
Student Household Control Variables	No	Yes	No	Yes	No	Yes
Constant	420.4*** (7.02)	372.4*** (7.05)	429.54*** (6.54)	378.48*** (6.86)	433.85*** (6.74)	377.21*** (6.96)
Small School x Linguistic Minority + Small School			-12.71 (16.74)	29.59* (16.82)		
Small School x Linguistic Minority + Linguistic Minority			-18.27 (13.55)	33.60** (13.74)		
Small School x Poorest + Small School					-40.39*** (11.37)	6.28 (12.78)
Small School x Poorest + Poorest					-14.81 (10.97)	28.08** (11.72)
Observations	4350	4002	4237	3978	4260	3999
R-Square	.05	.27	.1	.28	.09	.27

Source: Author's calculations using PISA 2006 Bulgaria. Note: Standard errors are reported in parentheses and statistical significance at 1%, 5%, and 10% levels denoted ***, **, *

Table 2d: Percent of 15 year-old students in schools with:

Autonomy over:

Hiring Teachers	92.9
Firing Teachers	92.5
Teacher Starting Salary	8.5
Teacher Salary Increases	9.0
Budget Formulation	29.1
Budget Allocations	57.5
Student Discipline	44.5
Student Assessment	8.9
Student Admission	47.0
Textbook Use	74.1
Course Content	9.5
Courses Offered	10.2

Parents involved in:

Staffing	6.1
Budget	10.4
Instructional Content	4.6
Assessment	11.0

Source: Author's calculations using PISA 2006 Bulgaria

Table 2e: PISA Math Achievement Regression Estimates - School Autonomy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Autonomy - Hiring Teachers	-1.08 (25.35)											
Autonomy - Firing Teachers		41.71 (29.61)										
Autonomy - Teacher Starting Salary			20.98 (20.1)									
Autonomy - Teacher Salary Increases				-1.09 (18.68)								
Autonomy - Budget Formulation					-4.44 (12.46)							
Autonomy - Budget Allocations						8.15 (14.09)						
Autonomy - Student Discipline							-5.85 (13.27)					
Autonomy - Student Assessment								16.68 (25.18)				
Autonomy - Student Admission									-60.82* ** (11.95)			
Autonomy - Textbook Use										-7.83 (16.17)		
Autonomy - Course Content											33.44 (22.94)	
Autonomy - Courses Offered												-1.08 (14.65)
Constant	414.11 *** (23.83)	374.51 *** (28.41)	411.33 *** (6.71)	413.2 *** (6.68)	414.4 *** (8.25)	408.42 *** (9.65)	415.71 *** (9.46)	411.62 *** (6.41)	441.69 *** (8.41)	418.91 *** (14.06)	409.93 *** (6.49)	413.22 *** (7)
Observations	4467	4467	4467	4467	4467	4467	4467	4467	4467	4467	4467	4467
R-Square	0	.01	0	0	0	0	0	0	.09	0	.01	0

Source: Author's calculations using PISA 2006 Bulgaria. Note: Standard errors are reported in parentheses and statistical significance at 1%, 5%, and 10% levels denoted ***, **, *

Table 2f: PISA Math Achievement Regression Estimates - Parental Involvement in School Decisions

	(1)	(2)	(3)	(4)
Parents Involvement - Staffing	10.03 (27.24)			
Parents Involvement - Budget		-6.43 (17.79)		
Parents Involvement - Instructional Content			-7.47 (21.78)	
Parents Involvement - Assessment				-10.68 (15.25)
Constant	412.49*** (6.54)	413.77*** (6.78)	413.45*** (6.42)	414.28*** (6.91)
Observations	4467	4467	4467	4467
R-Square	0	0	0	0

Source: Author's calculations using PISA 2006 Bulgaria. Note: Standard errors are reported in parentheses and statistical significance at 1%, 5%, and 10% levels denoted ***, **, *

Table 2g: PISA Math Achievement Regression Estimates - School Autonomy Interaction with Equity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Autonomy - Hiring Teachers	2.36											
	(24.9)											
Autonomy - Firing Teachers		24.81										
		(25.37)										
Autonomy - Teacher Starting Salary			13.87									
			(20.18)									
Autonomy - Teacher Salary Increases				-5.03								
				(17.54)								
Autonomy - Budget Formulation					-10.52							
					(12.46)							
Autonomy - Budget Allocations						8.58						
						(13.63)						
Autonomy - Student Discipline							-4.04					
							(12.59)					
Autonomy - Student Assessment								12.66				
								(25.7)				
Autonomy - Student Admission									-55.67*			
									**			
									(11.66)			
Autonomy - Textbook Use										-11.61		
										(15.08)		
Autonomy - Course Content											30.89	
											(23.19)	
Autonomy - Courses Offered												-8.81
												(14.88)
Linguistic Minority	-	-	-	-	-	-	-	-	-	-	-	-
	50.76*	97.64*	79.8**	80.06*	87.96*	77.98*	76.86*	80.77*	70.61*	90.26*	80.46*	81.14*
	**	**	*	**	**	**	**	**	**	**	**	**
	(17.18)	(24.85)	(9.58)	(9.88)	(12.03)	(12.3)	(13.02)	(9.28)	(11.57)	(19.52)	(9.46)	(9.66)
))))))))))))
Interaction	-31.7	21.95	18.6	-3.76	32.38*	-3.17	-7.02	13.53	-98	13.7	11.06	10.16
	(20.79)	(26.77)	(30.3)	(29.82)	(19.1)	(19.08)	(18.99)	(26.24)	(16.21)	(22)	(27.31)	(29.43)
))))))))))))
Constant	420.98	400.01	421.91	423.64	426.34	418.19	424.95	422.04	448.25	431.78	420.2*	424.14
	***	***	***	***	***	***	***	***	***	***	**	***
	(23.41)	(24.1)	(6.5)	(6.5)	(8.1)	(9.6)	(9.1)	(6.05)	(8.58)	(13.21)	(6.19)	(6.79)
))))))))))))
Observations	4353	4353	4353	4353	4353	4353	4353	4353	4353	4353	4353	4353
R-Square	.06	.07	.06	.06	.06	.06	.06	.06	.14	.06	.07	.06

Source: Author's calculations using PISA 2006 Bulgaria. Note: Standard errors are reported in parentheses and statistical significance at 1%, 5%, and 10% levels denoted ***, **, *

Table 2h: PISA Math Achievement Regression Estimates: Parents Involvement Interaction with Equity

	(1)	(2)	(3)	(4)
Parents Involvement - Staffing	3.8 (27.55)			
Parents Involvement - Budget		-7.26 (17.7)		
Parents Involvement - Instructional Content			-9.96 (20.44)	
Parents Involvement - Assessment				-12.01 (15.48)
Linguistic Minority	-79.59*** (9.23)	-78.57*** (10.26)	-80.98*** (9.45)	-81.8*** (9.92)
Interaction	-22.56 (36.66)	-25 (23.13)	21.56 (20.72)	15.15 (22.18)
Constant	422.92*** (6.26)	423.95*** (6.65)	423.64*** (6.22)	424.48*** (6.62)
Observations	4353	4353	4353	4353
R-Square	.06	.06	.06	.06

Source: Author's calculations using PISA 2006 Bulgaria. Note: Standard errors are reported in parentheses and statistical significance at 1%, 5%, and 10% levels denoted ***, **, *

Annex 3: Impact of School Closure on Dropout Rates

Table 3a: Mean Differences, Characteristics of Schools and Municipalities

	Number of students	Teacher-student ratio	Share of schools in urban area	Poverty rate	Percentage Roma	Population density of municipality
(1) Schools closed down in 2007	41	11.5	11.6%	18.8%	6.0%	90
(2) Schools closed down in 2008	62	11.2	10.5%	17.1%	6.7%	81
(3) Schools never closed down	211	12.7	36.9%	16.1%	6.1%	223
<i>Statistical test of significant difference</i>						
Difference: (1)-(2)	(3.44)**	(0.48)	(2.46)*	(0.31)	(1.27)	(0.48)
Difference: (1)-(3)	(8.15)**	(3.10)**	(5.04)**	(3.68)**	(0.22)	(2.50)*
Difference: (2)-(3)	(12.27)**	(6.33)**	(8.95)**	(2.21)*	(1.78)	(4.61)**

Note: Differences show the t-value for a test of equal mean. * means significant at 5 percent level, ** significant at 1 percent level

Table 3b: Impact of School Closure on Dropout Rates in 2007

	<i>Comparison group: Schools closed in 2008</i>				<i>Comparison group: Schools not closed down</i>			
	OLS		Matching		OLS		Matching	
	No controls (1)	School Controls (2)	School Controls + location & region dummies (3)	Abadie- Imbens (4)	No controls (1)	School Controls (2)	School Controls + location & region dummies (3)	Abadie-Imbens (4)
Impact of school closure on dropout rate	0.066	0.073	0.078	0.077	0.088	0.088	0.092	0.124
(SE)	(0.012)**	(0.013)**	(0.014)**	(0.021)**	(0.007)**	(0.008)**	(0.008)**	(0.022)**
N	382	370	364	364	1640	1613	1565	1565
R-squared	0.07	0.10	0.22		0.08	0.15	0.24	

Notes. The table shows the estimated impact of school closures on dropout rates. Column 1 is a regression of dropout rates on school closures.

Column 2 is the same as column 1 plus the following school variables: school size, average class size, dummy for urban schools, and type of school. Column 3 is the same as Column 2 and includes the following municipal variables: poverty rate, population density, share of population being Turkish, share of population being Roma, dummies for all regions. Column 4 is the nearest neighbor matching using the same variables as in Column 3. Estimates with * is at significant at 5%; ** significant at 1%

Table 3c: Impact of School Closures on Dropout Rates in 2008

	<i>Comparison group: Schools not closed down</i>				<i>Difference in difference</i>		
	OLS		Matching		OLS		
	No controls (1)	School Controls (2)	School Controls + location & region dummies (3)	Abadie-Imbens (4)	No controls (1)	School Controls (2)	School Controls + location & region dummies (3)
Impact of school closure on dropout rate	0.064	0.062	0.062	0.064	0.043	0.047	0.048
(SE)	(0.004)**	(0.005)**	(0.005)**	(0.010)**	(0.004)**	(0.006)**	(0.005)**
N	1832	1809	1757	1757	1832	1809	1757
R-squared	0.11	0.15	0.23		0.06	0.05	0.09

Notes. The table shows the estimated impact of school closures on dropout rates. Column 1 is a regression of dropout rates on school closures. Column 2 is the same as column 1 plus the following school variables: school size, average class size, dummy for urban schools, and type of school. Column 3 is the same as column 2 plus the following municipal variables: poverty rate, population density, share of population being Turkish, share of population being Roma, dummies for all regions. Column 4 is the nearest neighbor matching using the same variables as in Column 3. Estimates with * is at significant at 5%; ** significant at 1%