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Moldova:
Education Sector Public Expenditure Review
Selected Issues

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LIST OF ACRONYMS

BOOST	The World Bank's BOOST program facilitates access to national budget and expenditure data and promotes its effective use for improved decision-making, transparency and accountability.
ECE	Early Childhood Education
EMIS	Education Management Information System
ESCS	Economic, Social, and Cultural Status
EU	European Union
EUR	Euro
GDP	Gross Domestic Product
HE	Higher Education
LPA (II)	Second level local public administration authorities (districts/*raions* and municipalities)
LPA (I)	First level local public administration authority (*primarias* of villages, communes, and cities)
MDL	Moldovan Lei
MERP	Moldova Education Reform Project
MoECR	Ministry of Education, Culture, and Research
MoF	Ministry of Finance
NBS	National Bureau of Statistics
NEA	National Employment Agency
OECD	Organization for Economic Co-operation and Development
PCF	Per-capita financing
PER	Public Expenditure Review
PISA	Program for International Student Assessment
STR	Student-Teacher Ratio
VET	Vocational Education and Training

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A NOTE ON DATA

Multiple data sources are used throughout this report. Among the national sources whose data underlie the analyses contained herein are: the National Bureau of Statistics (NBS), which publishes official government statistics in the Republic of Moldova; the Moldova BOOST database, assembled by World Bank staff on the basis of government expenditure data provided by the Ministry of Finance (MoF); and the EMIS Open Data Portal of the Ministry of Education, Culture, and Research (MoECR).

The data on efficiency indicators used in Chapter 4 of this report to assess the impact of optimization reforms is derived from the MoECR's EMIS Open Data Portal. The reason for using this data is that, unlike other sources, it includes information at school level on the number of students, classes, teachers, non-teaching staff, as well as the number of staffing positions (not just physical persons). However, significant differences exist between data reported in the EMIS Portal and data published by the NBS. For example, while the number of students in general education schools in EMIS is only 1% higher than that reported by NBS for 2016/17, the number of teaching staff in EMIS is 21% higher than in NBS data in the same year. The reason for this and other discrepancies is not clear.

The choice of data source has implications for the conclusions of the analysis, which shows that the optimization of the general education school network has been slow and uneven in recent years. If alternative data from the NBS had been used, efficiency indicators would likely reveal a more pronounced pace of optimization. (For example, the average student-teacher ratio calculated using NBS data increased slightly between 2011/12 and 2016/17, while it remained generally flat if calculated using EMIS data.) For this reason, this report recommends that the Moldovan authorities investigate the discrepancies present in the different sources of education data in the country and harmonize the data collection processes to ensure consistent measurement of key statistics (such as the number of students, teachers, non-teaching staff, etc.) Once doubts about data are resolved, a clearer picture of the changes undergone by Moldova's education system in recent years should emerge.

EXECUTIVE SUMMARY

Context, objectives, and methodology

Moldova recovered from the 2015 recession, but its current growth model may not be sustainable. Thanks to good harvest years, the economy grew 4.3 percent in 2016 and is expected to reach 3.0 percent in 2017. On the expenditure side, growth was recently driven by consumption, thanks to the ongoing rebound in remittances and strong wage growth. However, the sustainability of this growth model is uncertain. The impact of remittances is likely to moderate due to weaker links of second generation emigrants to the country. Agriculture dominates production, but has been volatile due to the Moldova's vulnerability to climate-related and external demand shocks.[1] Moreover, while Moldova is slowly rebuilding its macroeconomic buffers, major challenges related to the efficiency of the public spending persists.

While debt dynamics appear sustainable, Moldova should seek efficiency gains to finance its social and infrastructure needs and safeguard fiscal sustainability. From 2008 to 2016, about a third of capital expenditures were financed by externally projects. Grants represented 6-10 percent of overall revenue. In 2016, after external assistance was halted in 2015, public expenditure fell by almost 2 percent in real terms, largely through lower capital expenditure. Social expenditures and the wage bill were instead preserved. Recent analysis shows that the government of Moldova spent more than countries with similar per capita income, degree of human development, and government efficiency, with spending on education and health sector emerging as a clear outlier.[2]

There are strong incentives to use education resources efficiently. Education expenditures represent a substantial share of total public expenditure in many countries. This is also the case in Moldova, where in 2015 18.3 percent of the national budget was allocated to the sector (representing a substantial decrease from 2010, when it was still 22.5 percent of the budget). Looking at the period 2012-2015, capital spending on education represented about 10 percent of total spending on education and about 10 percent of the total capital spending.[3] An increasing share of capital spending has been accounted by external donor finance. The way that financing is allocated and used impacts a large share of the population, including school-age children and teachers. The relatively high amounts allocated to education, combined with the importance of "getting spending right" to achieve optimal results, provides strong incentives to use available resources efficiently.[4]

Like elsewhere, Moldova's education system relies on financing to function. Education finance systems are responsible for providing the necessary resources to implement education policies. Education spending is necessary, although not sufficient, to achieve learning outcomes. It

[1] World Bank. 2016. Moldova - Paths to sustained prosperity: a systematic country diagnostic. Washington, D.C.: World Bank Group.
[2] World Bank. 2016. Republic of Moldova Public Finance Review: Towards More Efficient and More Sustainable Public Finances. Washington, DC.
[3] Capital spending on education represents the third largest capital spending item after the transport and agricultural sectors.
[4] World Bank. 2017. *Education public expenditure review guidelines*. Washington, D.C.

facilitates the provision of essential inputs such as teachers, school buildings, and learning materials. Financial resources do not guarantee a quality education, but a quality education is impossible to achieve without adequate resources. Some education expenditures can make a marked difference in learning, particularly in the cases of inputs that directly benefit students or resources that compensate for challenges of low-income settings. The same money can be wasted if it is allocated to input factors that only marginally affect learning or without regard to the conditions that must be met for factors to translate into learning gains.[5]

Demographic trends and changing expectations on the role of education in preparing people for participation in society and the labor market, require continuous rethinking of education provision and its financing. Concerning demographics, persistently declining student numbers have a negative impact on efficiency, that needs to be countered by interventions that improve key efficiency indicators such as student-teacher ratios. Moreover, Moldova's economic development objectives and the skills that are required to participate in a labor market with increasingly high level and fast changing skill needs, implies that increasing emphasis is placed on the universal acquisition of basic skills, the demand-responsiveness of the education system, and lifelong learning. Responding to these trends requires fundamental changes in the education system that include a review of education expenditures and financing mechanism.

This report reviews selected issues in public expenditures for education in Moldova. It is the product *not* of a comprehensive analysis that would comprise a full-fledged Public Expenditure Review (PER), but from a review of key elements related to financing of the education sector as a whole, and to important sub-segments of the education and training system. In particular, after providing an overview of the governance and financing arrangements of the education system (chapter 1), and of recent general trends in education expenditures (chapter 2), the report focuses on trends in capital investment for pre-primary education, driven largely by the strong increases in the recent period (chapter 3). It then proceeds with a broad first assessment of the impact of ongoing optimization reforms in general education on efficiency, quality, and equity (chapter 4). The report also looks at the external efficiency of vocational education and training (VET) and higher education (HE), particularly on the extent to which financing mechanisms are applied to promote the demand-responsiveness of education and training provision.

This report is part of broader efforts by the World Bank to report on the effectiveness of Moldova's current education and training system in preparing all individuals for productive participation in the labor market. Other elements of this exercise include, among others, private sector consultations on skill bottlenecks and human resource management practices of firms; a report on service delivery in pre-school and general education in Moldova's current decentralized governance structure; and a mapping and assessment of non-formal training providers. In addition to generally contributing to the relevant knowledge base to strengthen education policies, the findings of these activities are expected to inform the support provided by the World Bank to the Government of Moldova through the proposed Additional Financing of the Moldova Education Reform Project (MERP) and the proposed Skills for Jobs Project.

[5] From: World Bank. 2017. *Education public expenditure review guidelines*. Washington, D.C. https://hubs.worldbank.org/docs/ImageBank/Pages/DocProfile.aspx?nodeid=27624862

The report is complementary to analyses carried out by the Ministry of Education, Culture, and Research (MoECR) and other development partners. For example, the MoECR recently completed a feasibility study for rationalizing the general schools network, under the Education Reform Project financed by the World Bank. UNICEF prepared a study focusing on the provision of early childhood education with a decentralized governance context.[6]

The content of this report is primarily based on quantitative data on financing and education that is either publicly available or kindly provided by the MoECR. Principal data sources used include budget data from the BOOST initiative, the Education Management Information System (EMIS) from the MoECR, and the National Bureau of Statistics.[7] The main data sources used allow the analysis of trends over time to track key education indicators before, during, and after the implementation of key sector reforms (such as the nationwide rollout of per capita financing in general education in 2013 and the significant scale-up of infrastructure investment for pre-school education in 2014). For example, the BOOST dataset provides education expenditure data dating back to 2005, while the EMIS database contains school-level data dating back to the 2011/12 academic year.

Main findings

Education in Moldova is largely publicly financed, with stagnant or falling student numbers in all sub-sectors except for pre-school. Only in pre-school and higher education are a significant share of expenditures financed by private actors. Pre-school is also the only sub-sector of the education system which has seen a promising increase in student numbers, albeit from a low base.

Education expenditures have fallen as a share of total government expenditures since the historic high of 2010, but are still high from an international perspective. At 18.3 percent of the budget, expenditures in 2015 were significantly lower than in 2010, when they were 22.5 percent of the budget. Nevertheless, even in 2015, Moldova's spending on education as share of the budget was, for example, higher than in any other EU country.

Considering its income level, Moldova's education system (as assessed by PISA data), performs comparatively well, but education outcomes are substantially below those of (richer) neighboring and competitor countries. For example, 2015 PISA scores in science, mathematics, and reading of Moldovan 15-year-olds were above those of some countries with higher income levels, such as Georgia, Kosovo, and the Former Yugoslav Republic of Macedonia. However, Moldova's performance was lower than the performance of even the European Union's poorest countries, Romania and Bulgaria. Moldova also performed significantly below neighboring Russia.

In addition to the declining budget share, education expenditures are characterized by a strong rise in expenditures on pre-school, which have a positive impact on enrollment but

[6] UNICEF (forthcoming), *An Analytical Review of Governance, Provision and Quality of Early Childhood Education Services at the Local Level in Countries of Central Eastern Europe / Commonwealth of Independent States.*

[7] The World Bank BOOST initiative was launched in 2010 to facilitate access to budget data and promote effective use for improved decision-making processes, transparency and accountability. It collects and compiles detailed data on public expenditures from national treasury systems and presents it in a simple user-friendly format.

raise sustainability concerns. Public spending on pre-school has increased significantly in recent years, and has resulted in substantially higher enrollment, partly due to the construction of new facilities, especially in rural areas. The ten-year trend suggests that Moldova is on track to achieve the 95 percent enrollment target among 3-6 year olds by 2020, with the current level of donor support for the sector. However, the reliance on external financing for capital investments (70 percent comes from external sources), and the relatively high share of the education budget that is allocated to pre-schools (28 percent in 2015) raise questions about sustainability (chapter 3).

Another important recent development are network optimization efforts, which to date have focused on general primary and secondary schools, also targeted VET providers, and have not yet included higher education providers. Even where strong optimization efforts are made, such as through the introduction of per capita financing in general education, it is hard to retain efficiency gains, which are outpaced by the falling number of students.

The extent to which network optimization results in efficiency gains seems to depend on the forcefulness of the reforms and the extent and pace to which their positive impact is offset by demographic decline. In general education, the combined impact of network optimization with declining student numbers seems to have been more positive in urban areas, largely because the decline in student numbers is more severe in rural areas. Raions that made more efforts to right-size their networks were more successful in achieving efficiency gains than other raions.

Greater effort is needed to address the quality and efficiency of general education provision in rural areas. Students from the most disadvantaged backgrounds continue to attend the smallest, most rural schools, where they continue to perform worse on standardized tests, despite slightly higher level per-student spending compared to students from better-off families who mostly attend urban schools.

In VET and higher education, external efficiency (the extent to which they ensure that students acquire skills that are in need of the labor market in a cost-efficient manner) needs to be improved. Moldovan employers are extraordinarily critical about the skills of the workforce, and while both VET and HE do improve graduates' job prospects, investments do not efficiently translate in positive employment outcomes. For example, 40 to 50 percent of graduates choose not to look for work or have been discouraged to participate in the national labor market.

Neither in VET nor in Higher Education do financing mechanisms exploit well-tested financing mechanisms that strengthen incentives to provide education and training that is responsive to labor demand. In VET, the introduction of per-capita financing is under way. It appears that further steps can be considered that allocate financing based on a sound balance of labor demand and the costs of training provision, including through the introduction of performance-based funding elements. In Higher Education, network optimization, remains to materialize, as do intentions to create strong linkages between the quality and relevance of education on the one hand, and financing on the other. The current financing mechanism seems to provide few incentives to universities to respond to labor demand. The option to introduce financing elements based on performance and competition could be considered, as part of broader reforms that will also optimize the provider network.

Policy directions

The findings of the analysis carried out in this report point to various policy directions and recommendations for reforms, which can be summarized as follows (see also chapter 6):

1. **Ensure consistency of education indicators across key databases.** A reconciliation of key databases and data sources of education indicators, particularly the EMIS Portal, data from the National Bureau of Statistics, and staff/payroll data from the Ministry of Finance, would substantially improve the scope for sound education analyses and evidence-based decision making.

2. **Promote access to pre-school through a variety of measures in addition to infrastructure investments.** Strong capital investments in pre-school infrastructure in rural areas are having a positive impact on rural enrollment numbers, but could usefully be complemented with interventions that are more cost-efficient, tackle demand-side constraints, and also focus on cities, where there are strong capacity shortages. Such actions should ideally be well-targeted based on a sound analysis of where capacity expansion is needed (mostly urban areas) and where demand-side constraints are more pertinent (probably rural areas), as well as where optimization can be considered. Interventions that can be considered include:

    - *Introduce per-capita financing for pre-schools,* to improve efficiency (efforts to implement this reform is already under way, supported by the World Bank and UNICEF).

    - *Promote creative solutions to expanding capacity beyond building new infrastructure*. This could include creating pre-school spaces in unused areas of (rural) primary schools; reviewing regulations that prevent private provision of pre-primary education; and relaxing outdated zoning, sanitary and other regulations that complicate creating pre-school places in urban areas.

    - *Take a gradual approach to expanding compulsory (ante-)pre-school for younger children*, dependent on the availability of fiscal space to finance this expansion.

    - *Move the mandate for pre-school provision from municipalities to raions,* to address constraints related to capacity, monitoring and consolidation.

    - *Make a comprehensive review of human resource processes* to address bottlenecks in recruitment, retention, and performance, in a financially sustainable manner.

3. **In general education, step up optimization efforts and ensure that efficiency gains are applied to improve the quality of education.** Since the impact of optimization is easily balanced out by falling student numbers, increased optimization efforts are required, both in rural areas (where student numbers fall more rapidly), and in cities (where efficiency gains may be more easily reached). Evidence that savings from optimization are used to promote the equitable provision of quality education is still weak. The government is addressing this

situation, including through improving monitoring and building capacity at the school level (all with support of the World Bank-financed MERP project). In the future, this could be complemented with a clarification of mandates for general education beyond the existing Education Code, and capacity strengthening of responsible local level authorities.[8]

4. **Adjust financing mechanisms for VET and Higher Education so that they promote transparency, relevance and efficiency.** The financing mechanisms for both VET and HE are currently opaque, but could become an integral part of a well-established mechanism holding education and training providers accountable for ensuring that graduates acquire market-relevant skills in a cost-efficient manner. While financing reforms in VET are in process, there are no signs of similar efforts in higher education. For both VET and HE, a financing mechanism that is transparent, based on international best practices, and that promotes quality, relevance and efficiency could make a substantial contribution to the extent to which the education system prepares students for productive careers and alleviates skill constraints that hold back private sector growth.

[8] See also World Bank (forthcoming), "Moldova Pre-School and General Education: Transitioning to a Decentralized Service Delivery Model."

CHAPTER 1.
OVERVIEW OF THE EDUCATION SYSTEM: GOVERNANCE AND FINANCING ARRANGEMENTS

Key Findings:

- Education in Moldova is provided and financed largely through the public sector with different levels of public administration assigned responsibilities by the legislation governing the sector.
- Private financing is more prevalent in the pre-school and higher education sub-sectors, but it is not well accounted for in the official data.
- Enrollment in pre-primary education has grown substantially in recent years, while enrollment rates in primary and secondary education have stagnated or even declined.
- The declining number of school-aged children combined with unsustainable levels of public expenditures on education have led the Government of Moldova to introduce financing and school network optimization reforms, though their impact has not kept pace with the speed of demographic decline.

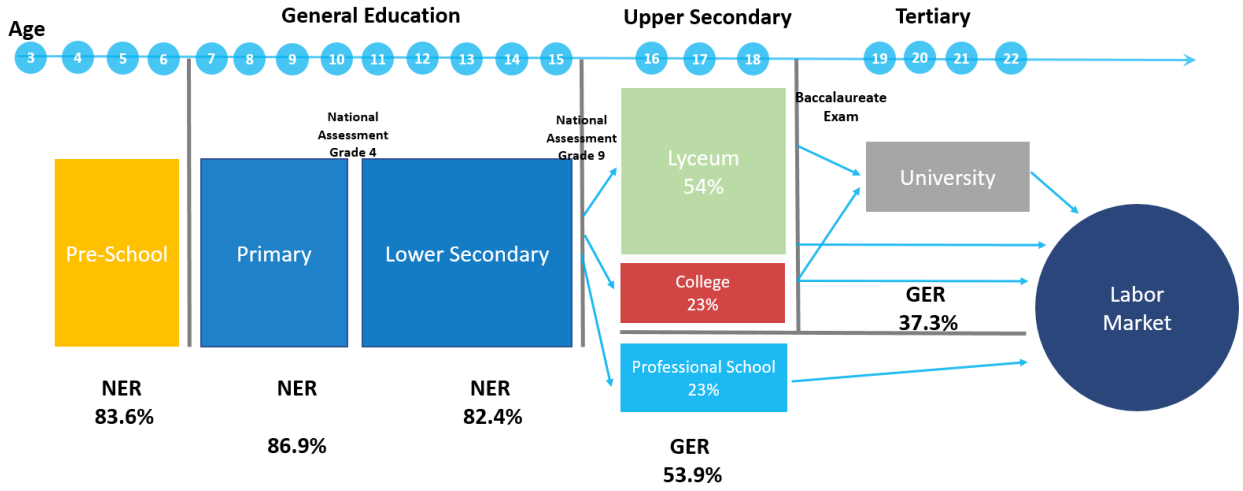
The purpose of this chapter is to present an overview of the Moldovan education system. The structure of the education system in Moldova underwent several important changes in recent years, most notably as a result of school network reorganization in general education. In response to demographic decline and low efficiency in primary and secondary education, the Government of Moldova has begun consolidating the school network and establishing "hub schools". At the same time, an expansion of the pre-primary education system allowed greater numbers of children to access early childhood education services. A number of new governance arrangements and financing mechanisms have been introduced, giving local authorities and university administrators greater autonomy to make decisions regarding the management of resources and provision of education in their respective institutions.

1.1. Structure of the education system

Per the Education Code, compulsory education in Moldova covers one year of pre-school education followed by 9 years of general education up to age 15. After that comes the tracking of students into three different streams: 1) a three-year Lyceum (general academic stream); 2) Colleges (vocational stream with access to higher education); and 3) Professional Schools (see Figure 1.1). Although only 1 year of pre-school education is mandatory, children typically enroll as early as age 3 and continue until age 6-7.

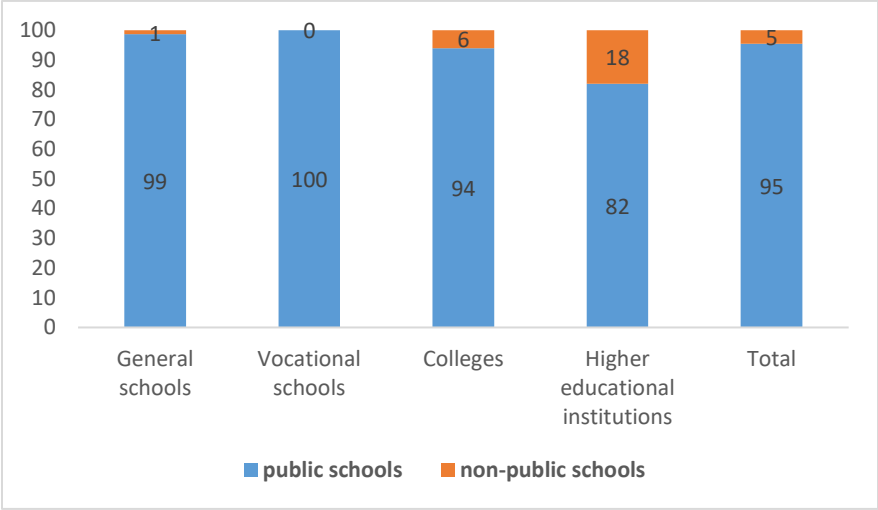
Historically, basic education in Moldova has been provided mainly in public schools, with less than 1% of students going to private schools. This tends to diversify in upper secondary education, especially with Colleges (between 5-8% private provision) and in Higher Education Institutions, with almost 20% of education provided privately (see Figure 1.2).

Figure 1.1. Structure of the Moldova Education System and Enrollment Rates, 2015/16



Source: Authors' calculations based on data from the National Bureau of Statistics (NBS).

Figure 1.2. Percentage of Students in Public and Private Education by Level, 2015/2016



Source: Authors' calculations based on data from NBS.

In the past two decades, Moldova's population steadily fell—a pattern like in many Eastern European countries. Since achieving independence in 1991, the official population declined 19% (from 4.4 million in 1991 to 3.6 million in 2017).[9] The school-age population (ages 5 to 19) fell by 50% during this time, from 1,144,000 to 577,000. Since the turn of this century, their number fell by 100,000 on average every 4 years. Meanwhile, the school network was slow to adjust.

In response to the demographic trends and declining school-age population, combined with unsustainably high levels of education expenditures, the Government of Moldova has been implementing a school network optimization reform. Since 2009, Moldova has been

[9] National Bureau of Statistics.

consolidating its school network, and in 2010 launched on a pilot basis a per capita financing (PCF) mechanism with the aim of improve spending efficiency in general secondary education. After initially launching the PCF pilot in two raions in 2010, the Government rolled it out nationwide from January 2013, with the law approval in 2014 and official entering in force in 2015.This has involved closing and merging under-enrolled schools, consolidating classes, reorganizing a number of lyceums into gymnasiums (which provide lower secondary education) and gymnasiums into primary schools, as well as creating hub schools. Between 2011 and 2014, central and local authorities closed 115 schools and reorganized almost 200 schools representing together around 21 percent of the school network.[10] During the academic year 2014/15, the total number of institutions had decreased by 27 compared to the previous academic year. At the same time, 32 institutions changed their status from lyceum to gymnasium and 13 institutions transformed from gymnasium into primary school.[11] In 2015/16, an additional 134 schools were restructured.[12]

Overall, the number of schools providing primary and general secondary education, decreased by 15% (235 schools) between 2005/06 and 2015/16. Over the same period, the vocational education and training network was also reduced, especially the network of "professional schools" which saw a reduction of 40% (equivalent to 31 institutions). The number of "collegiums", the graduates of which (unlike those of professional schools) have access to higher education, was reduced by 12%, or 6 institutions. Tertiary education institutions (universities) were reduced by 11% (or 4 institutions). The overall number of educational institutions decreased by 16%.[13]

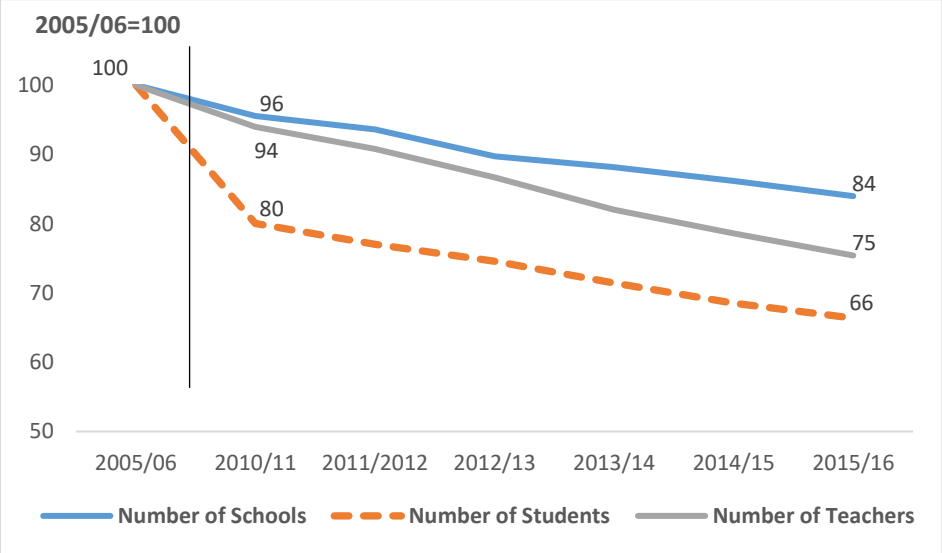
In primary and secondary education, school network optimization led to the decrease in the number of teaching staff as well as institutions. However, decreases in the number of institutions and teaching staff have not kept pace with the decreasing number of students over the past decade. Between 2005/06 and 2015/16, the number of school shrank by 16% while the number of teachers declined by 25%. However, the total enrollment of students dropped by 34% over same time, leading to sharp decreases in the average numbers of students per school and per teacher in the Moldovan education system, which are commonly used indicators to assess school network efficiency (see Figure 1.3).

While the number of primary and secondary education institutions decreased in the past decade, about 166 new pre-primary facilities were added over the same period. The number of pre-school institutions rose steadily from 1,295 in 2005 to 1,461 in 2015, as did the number of children enrolled in early childhood education (an increase of 33% or 36,801 children during the period of 2005-2015). The pre-primary education enrollment rate has been rising since 2005/06 (from 68.6 to 83.6) due to high demand for kindergartens and the increase in the government's investment in this sub-sector (financed partly through external donor funds). Over the same period,

[10] World Bank Final Technical Note, 2015.
[11] World Bank (2017), "Moldova Pre-School and General Education: Transitioning to a Decentralized Service Delivery Model."
[12] Data from the Ministry of Education, Culture and Research.
[13] VET is provided in "professional schools" and "collegiums", with only graduates from the latter able to enroll in higher education. Students can enroll in professional schools upon completing lower secondary education. Students enroll in collegiums after completing lower *or* upper secondary education. In Moldovan parlance, professional schools are categorized as "post-secondary" and collegiums as "post-secondary, non-tertiary" education.

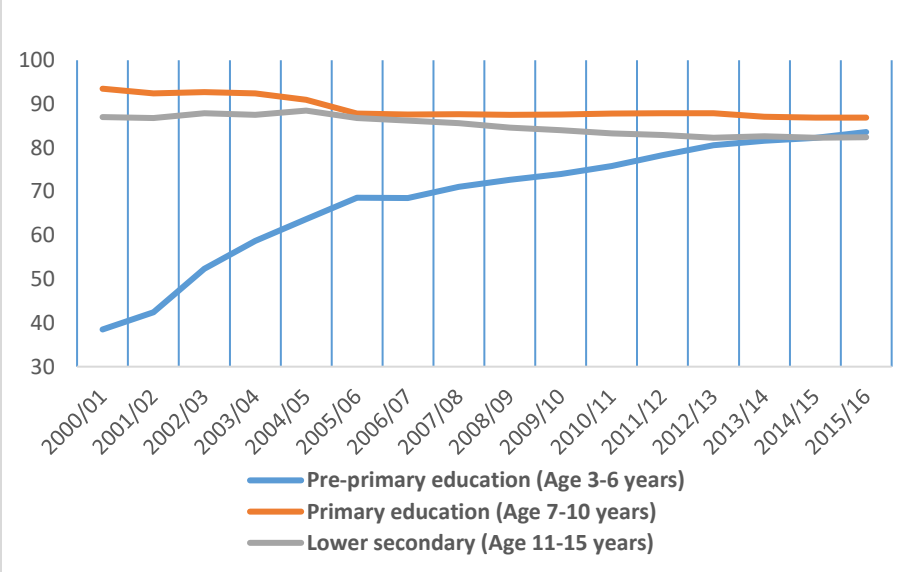
enrollment rates for primary and lower secondary education have declined from 87.8 to 86.9 for primary education and from 86.8 to 82.4 for lower secondary education (see Figure 1.4).

Figure 1.3. Consolidation of the General Education School Network, 2005/06 to 2015/16



Source: Authors' calculations based on data from NBS.

Figure 1.4. Net Enrollment Rates by Level of Education, 2000/01 to 2015/16



Source: NBS data.

Despite the overall positive gains in pre-school enrollment achieved over the past decade, the enrollment rates in rural areas remain low. Almost 90%, or 146 new pre-primary facilities, added to the network in recent years were in rural areas. However, only 71.5% of children aged 3-6 and 54% of children aged 1-6 were enrolled in pre-school education in rural areas in 2015. Part of the problem is related to higher demand for enrollment in urban areas even among children who reside in rural areas. Enrollment rates in excess of 100% in urban pre-schools indicate that some of the rural children aged 3-6 were enrolled in urban institutions in recent years.

1.2. Governance

The main regulatory provisions on the education system of Moldova are stipulated in the Constitution of the Republic of Moldova and the Education Code in force since 2014. Key institutions mandated with legislative power include the Parliament through its commission on culture, education, research, youth, sports and mass-media, as well as through the legislative initiatives of the MPs; the Government of Moldova through decisions, strategies and programs; the MoECR[14] through its orders/decrees and sectorial strategies; and local public administrations (LPAs) through decisions taken at the local level.

Governance of the education system in Moldova is decentralized and based on the principle of *shared competence*.[15] The MoECR has direct responsibility only for the provision of VET. Responsibility for pre-school and general education is shared between the central and local governments. While the central government regulates the sector, local governments and their subordinates have broad responsibilities, including management of school network (the authority to establish and abolish pre-school and general education public schools), as well as human resources management, financial and technical supply management responsibilities. In the case of pre-schools, this authority is assigned to the municipalities or *primarias*, which represent the lower tier of local government (first level Local Public Administration, LPA I). In the case of primary and secondary schools, this authority is assigned to the *raions*, which represent the upper tier of local government (second level Local Public Administration, LPA II). Although higher education is a central government responsibility, universities in Moldova are, to a large extent, autonomous.

1.3. Financing arrangements

In 2013, Parliament enacted new legislation to fundamentally change the system of local finance. Prior to this law, local education spending had been financed out of the general revenues of local governments. Local governments, in turn, derived the vast majority of their revenues from shared taxes and equalizing intergovernmental transfers. The enactment of the new law in 2014 created a new system of earmarked per capita funded (PCF) transfers designated for specific local functions, including education. The per-capita (or per-student) funding mechanism is based on the principle of "money follows the pupil", under which the allocated resources for a student are transferred to the educational institution where the student is enrolled. The Government of Moldova launched a PCF in the education sector as part of a broader structural reform in order to bring education spending on a more efficient and fiscally sustainable footing while improving the

[14] More information can on the mandates of various levels of government in pre-school and general education can be found in the accompanying study on decentralization in the education sector (World Bank, forthcoming). While the MoECR is the main ministry responsible for developing, promoting and monitoring national education policy and strategy, other ministries have responsibilities for delivering and overseeing education provision, including sector ministries, such as Ministry of Health and Ministry of Agriculture and Food.

[15] This type of competence differs from the own and delegated competence because: 1) raions and municipalities do not have complete autonomy in the sphere of education and for important decisions need approval from the MoECR; and 2) raions possess a certain degree of autonomy in some key management and financial areas that do not require decisions to be adopted at a higher level.

quality of the education being provided. The PCF formula was first piloted in two raions (Causeni and Riscani) in 2010 and implemented in all general education institutions nationwide in 2013.[16]

In *general education*, at least 95 percent of the budget that is available for schools is allocated per the PCF formula (see Box 1.1). These transfers are carried out by the Ministry of Finance (MoF) in line with the allocation formula proposed every year by the MoECR and approved by the Government. Schools may receive additional funding (from the remaining 5 percent of the total budget) from the *inclusive education fund* and from resources that are allocated to the *Local Public Administration (LPA) component*.[17] A fourth possible source of funds is *project-based financing*, which are funds provided by development partners to which schools can gain access through a competitive application, either in collaboration with a NGO or via their parents-teachers association. This last form of financing reportedly rarely materializes, due to schools' low capacity to develop proposals, initiate partnerships, write in English, etc.

As part of the general education budget preparation process, heads of the educational institution are responsible for preparing and presenting budget proposals. Raion finance departments together with raion education departments calculate the volume of the allocations for each educational institution financed from the budget of the administrative-territorial unit. LPA (II) authorities estimate the volume of expenses for all educational institutions and present them to the MoF and MoECR. Monitoring the implementation of the current methodology is done at the central level by the MoECR together with the MoF, and locally by the raion education departments together with raion finance departments. Budgets of educational institutions and reports on budget execution are required to be posted on the official web-page of the institutions and/or of the local body specialized in the education area.

In *pre-school education*, there is no specific per-child formula as there is in general education. The MoF prepares a preliminary overall budget for pre-school education based on historical data, trends in average salaries in the economy, number of staff in the pre-school sector, number of children, and so forth. It then sends this overall budget to the MoECR for review. In addition to the calculations made by the Ministry of Finance, each LPA (I) does its own budget calculations, which are later submitted to LPA (II) authorities and the MoF for verification. The calculations are based on the total number of children enrolled, working hours of the institution (full day kindergarten, half-day kindergarten, activities during summer time) among others. The structure of the budget is relatively standard and reflects the following costs:

a) Salaries and staff costs (in most cases up to 60-70% of the total budget);
b) Nutrition costs (parents can contribute as well, but this is not mandatory);
c) Costs associated with heating and maintenance of the building;
d) Purchase of educational and material resources.

In *vocational education and training*, per capita financing is being introduced. Similar to the reforms in general education, the changes in the financing mechanism in VET are to be

[16] Even though the Law with the new financing formula was adopted in 2014 and entered into force in 2015, the mechanism was already rolled out nationwide in 2013.
[17] In addition to funds received from the state, LPAs may supplement these funds from their own means.

accompanied by increased autonomy of VET providers. Since the financing and self-governance reforms are more recent than in general education, their impact cannot yet be assessed.

In *higher education*, there appears to be no formal formula determining the annual budget allocation to individual universities. No approved and publicly accessible method is available highlighting how decision-making on the annual budget allocation to public universities is made. Financing appears to be linked to the 'admission plans' which, among others, determine the number of publicly financed student places that public universities may provide each year.

Box 1.1. PCF Formula Methodology in Financing of General Education of Moldova

According to Government Decision 868, the total amount of transfers for the second level Local Public Administration (LPA II) authorities is calculated using the following formula:

C = A x N + B x S,

Where:

C = sum/amount of all categorical transfers for all institutions from the administrative-territorial unit;
A = normative value per one "weighted student";
N = number of "weighed students" from a specific administrative-territorial unit;
B = normative value per educational institution;
S = number of educational institutions of one administrative-territorial unit *(fixed based on the number of institutions in 2007)*;

In the formula, the share of normative value **A** (variable expenses per pupil) or WA equals 0.82, while the normative value **B** (fixed expenses per institution) or WB is 0.18.

For calculating the number of "weighted students" the following weighting coefficients are applied:

0.75 – for students of grades 1-4;
1.00 – for students of grades 5-9;
1.22 – for students of grades 10-12.

The volume of allocations per educational institution is determined based on the following formula:

V = (A x N + B) x K + R + I,

Where:

V – volume of the allocations for an educational institution;
A – normative value for a "weighted pupil";
N – number of "weighted pupils" in an educational institution;
B – normative value for an educational institution;
K – coefficient of the territorial administrative unit, equal to 0.95, which can't be lower than this value (maximum 3% for composition of the second level territorial administrative unit and maximum 2% for inclusive education);
R – allocations distributed to a specific educational institution from the territorial administrative unit;
I – allocations distributed to a specific educational institution from inclusive education fund.

Source: World Bank (2017), "Moldova Pre-School and General Education: Transitioning to a Decentralized Service Delivery Model."

CHAPTER 2.
EDUCATION EXPENDITURES IN MOLDOVA: RECENT TRENDS

Key Findings:

- After reaching historic highs around 2009, public spending levels on education have decreased in recent years.
- Still, the overall level of spending is high when compared to other European countries, presenting concerns about sustainability in the long term.
- Growing investment in pre-primary education has shown results in terms of higher enrollment levels, but heavy reliance on donor funding may prove unsustainable.
- Persistently low student-teacher ratios in general primary and secondary and vocational education show further scope for network consolidation to reduce staffing levels and increase the take-home pay of individual teachers within the current budget envelope.

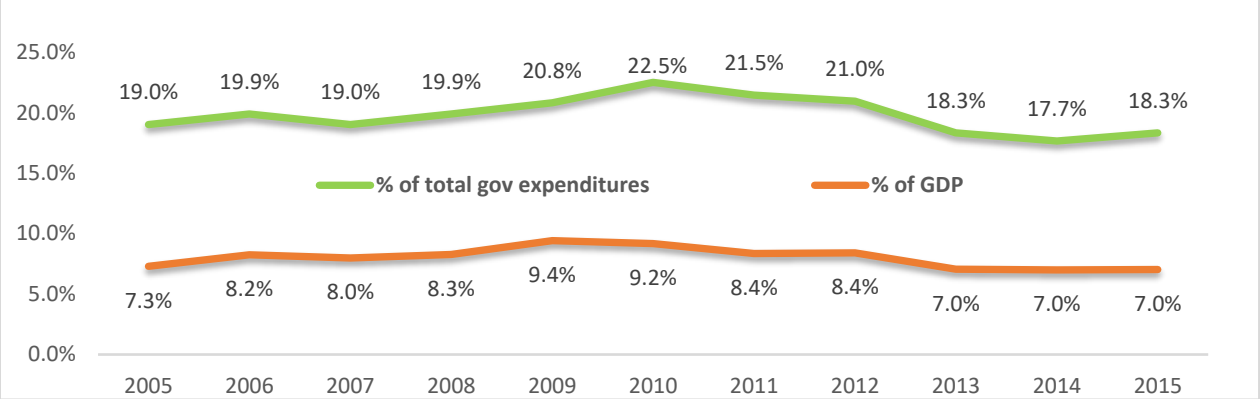
The purpose of this chapter is to examine the overall trends in public expenditure on education in Moldova in recent years. After continuous growth in the share of fiscal resources devoted to the sector, the education budget reached unsustainable levels by 2009. In response, a number of optimization measures were put in place that saw the education spending as a share of the national budget gradually decline after 2010. This chapter looks at the trends in expenditure growth before 2010 and the subsequent consolidation through the breakdowns of education spending by levels of education and by expenditure categories. It also compares Moldova's level of education spending to that of other countries.

2.1. Expenditure Trends

As a result of the optimization reforms (discussed in Chapter 4), public expenditures on education have fallen as a share of GDP and of the total national budget. Public spending on education peaked at 9.4% of GDP in 2009, then gradually declined to 7.0% by 2013 (remaining at that level until 2015). As a share of the total national budget, education spending reached a high point of 22.5% in 2010 and proceeded to decline to 17.7% by 2014 (rebounding to 18.3% in 2015). The decrease in education spending was most pronounced from 2012 to 2013, after the nationwide implementation of the PCF reform took place (see Figure 2.1).[18] However, the education sector remains among the top government priorities in terms of budgetary allocations. Compared to other countries in the region, Moldova's public spending on education remains high both in terms of the share of GDP and the share total government expenditures. When compared to the OECD and the EU, no country exceeds Moldova in terms of the share of its public budget spent on education (see Figure 2.2).

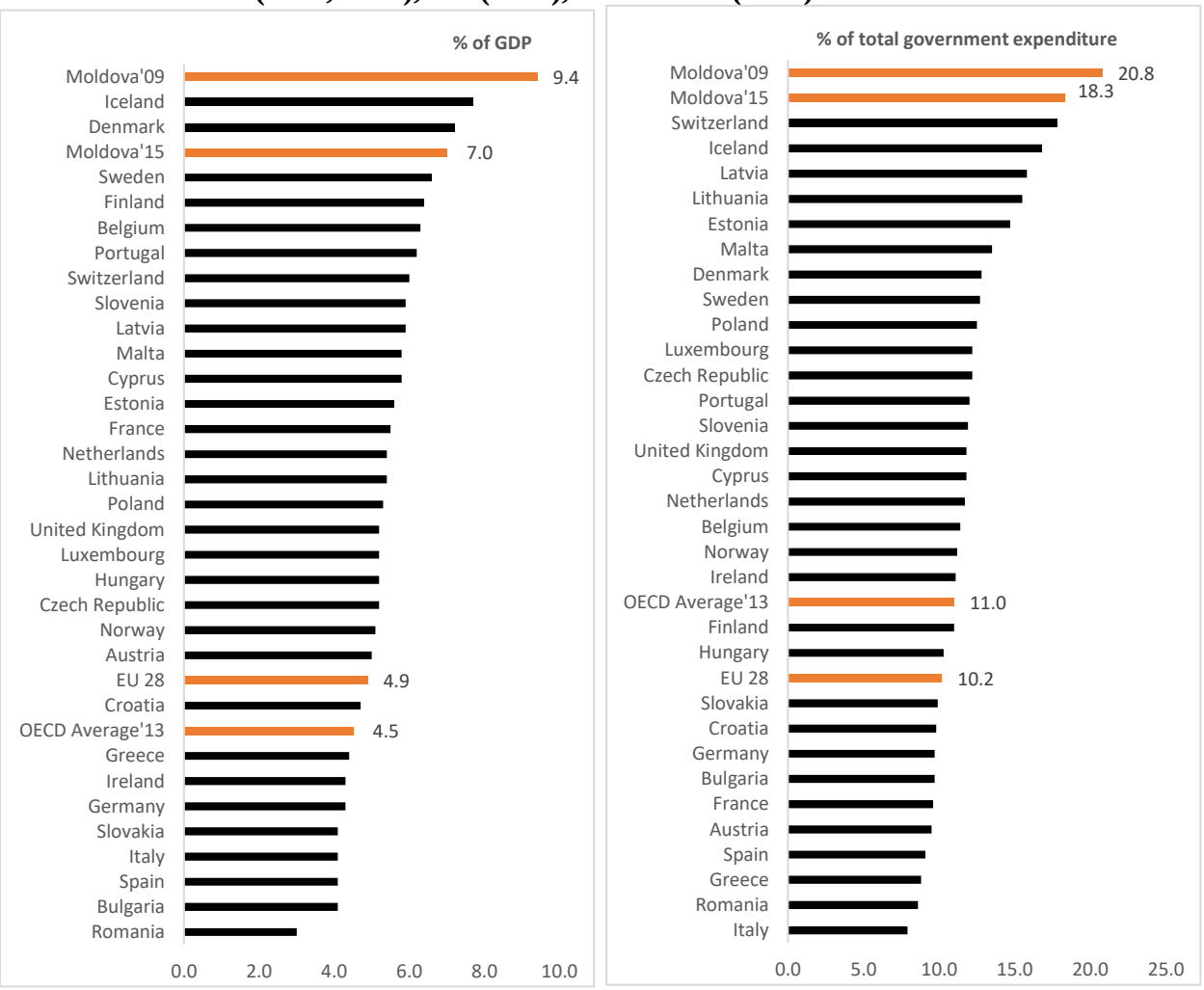
[18] After 2012, own-source revenues of universities were not included in the public expenditure data reported by the Ministry of Finance, further contributing to the apparent decline in public spending in education.

Figure 2.1. Public Spending on Education, 2005-2015



Sources: Moldova BOOST database, MOF, IMF.

Figure 2.2. Government Expenditure on Education in Moldova (2009, 2015), EU (2014), and OECD (2014) Member Countries

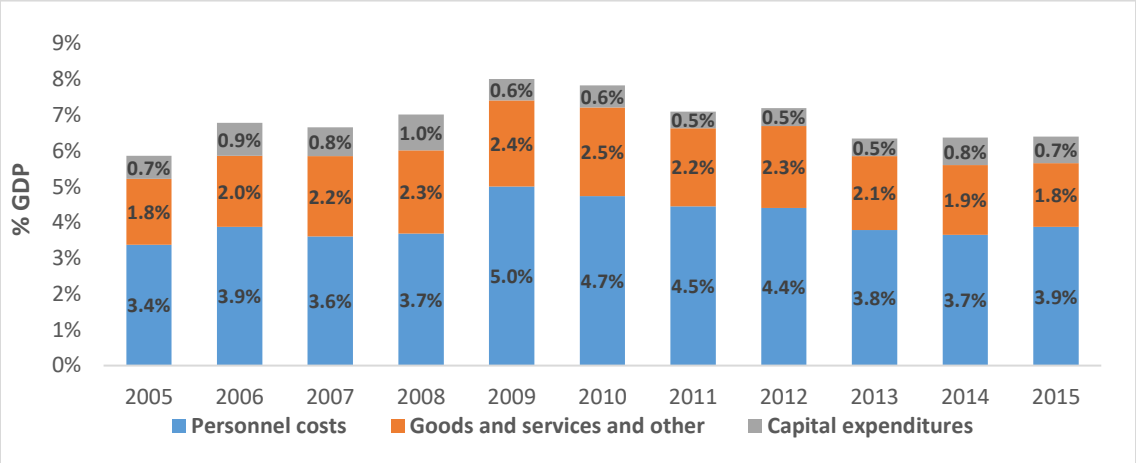


Sources: Eurostat, OECD, Moldova BOOST database.

Spending by expenditure category

The share of total education spending used to finance the wage bill has been declining along with the declining number of staff positions in recent years.[19] Between 2009 and 2014, pre-university education wage bill spending as a share of GDP declined from 5.0% to 3.7% before rebounding slightly to 3.9% in 2015 (see Figure 2.3). As a share of all pre-university spending, the amount devoted to wage bill expenditures declined from 63% to 58% over the same five-year span before increasing to 61% in 2015. At the same time, the education sector has seen significant cuts in teacher positions. Nevertheless, overstaffing remains a problem due to insufficient adjustment of the school network to sharp declines in student numbers since the 1990s. Despite some upward improvements in the student-teacher ratio (STR), Moldova still has one of the lowest STRs in the region, particularly in secondary education (with STRs of 9.5 in lower secondary education and 9.2 in upper secondary education compared to European average STRs of 10.5 and 11.8 for respective sub-sectors).

Figure 2.3. Trends in Public Spending on Education by Expenditure Category (excluding Higher Education), 2005-2015



Source: Moldova BOOST database.

With the high number of staff in the system their individual wages are relatively low. A recent analysis showed that teachers' salaries are 23% below the national average, which is among the lowest in the region.[20] However, increasing teachers' take-home pay will be difficult without significant rationalization of the system to decrease the overall staffing levels.

With some shifts in spending priorities across sub-sectors, capital expenditure on education has been relatively stable at around 0.7-0.8% of GDP. This is slightly above the ECA regional average on capital expenditure in education, but is explained by recent trends. Over the past few years, there has been a substantial increase in capital investment in pre-primary education and a corresponding decrease in capital spending on other levels of education. The pre-primary

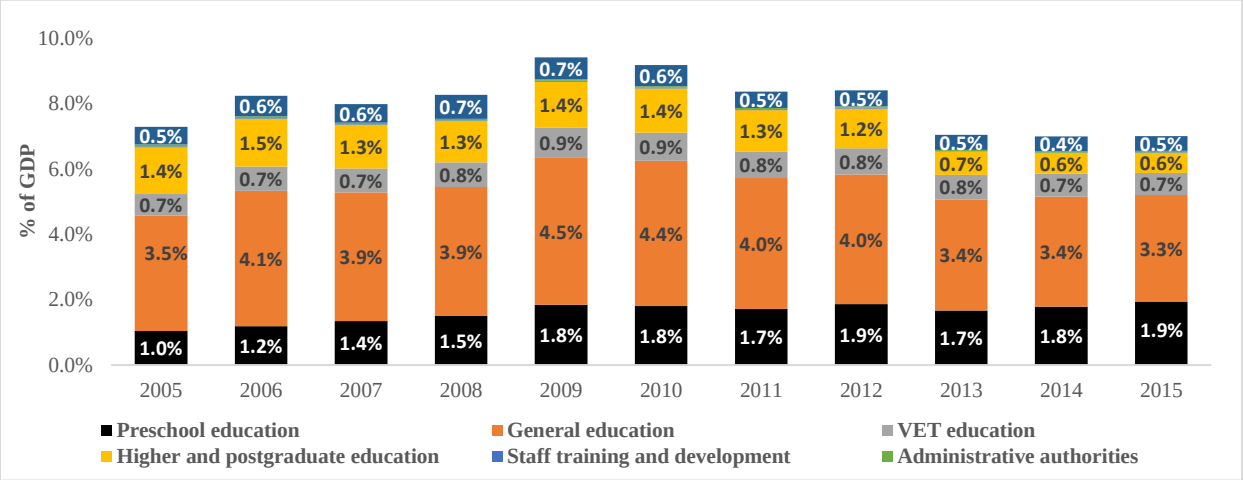
[19] Based on trends in public spending on education excluding higher education. It is not possible to disaggregate spending on higher education by expenditure category after 2012.
[20] Moldova Public Finance Review: Towards More Efficient and More Sustainable Public Finances, World Bank, 2016.

education sub-sector has seen significant expansion supported by the increase in contributions from donor-funded projects, which are analyzed in detail in Chapter 3.

Spending by level of education

There has been a shift in public spending across education sub-sectors, particularly from general to pre-primary education (Figure 2.4). Between 2009 and 2015, spending on general education fell by 1.2% of GDP following the restructuring and closure of a number of education facilities, the nationwide implementation of PCF, and the consequent cuts and freezes in wages and hiring of pedagogical staff. At the same time, pre-primary education has steadily attracted an increasing amount of government allocations and donor funds. Total public expenditures on pre-primary education nearly doubled over the past decade, from 1.0% of GDP in 2005 to 1.9% in 2015, reflecting the growing priority to expand access to early childhood education.

Figure 2.4. Trends in Public Spending on Education by Level of Education, 2005-2015



Source: Moldova BOOST database.

A moderate contraction in allocations was observed in the case of vocational education and training (VET) and staff development programs, whereas trends in higher education expenditures are hard to grasp. Expenditures on VET and staff development each contracted by about 0.2% of GDP between 2009 and 2015. Spending on higher and postgraduate education shows a decline, but spending trends are difficult to assess due to budget data reporting issues: own-source revenues of universities were no longer reported as part of the public budget starting from 2013.

In *pre-primary education*, Moldova's spending is relatively high by international standards. Moldova spent 1.9% of GDP and 28% of total education expenditure on pre-school education in 2015, which is high when placed in the international context (the EU average is 0.5% of GDP and 10% of education expenditures). The expansion of the pre-primary budget has been relatively broad-based with increases in both recurrent and capital expenditures. Between 2005 and 2015, the average annual percent growth in wage bill expenditures outpaced the growth in non-wage recurrent expenditures, lifting the share of the wage bill in overall recurrent expenditures from

52% in 2005 up to 63% in 2015. From 2005 to 2009, recurrent expenditures per pupil enrolled in early childhood education grew by an average of 15% per year in real terms. Starting from 2010, per capita recurrent costs have shown some signs of stabilization, however capital spending per child enrolled continued growing at roughly 20% per year.

In *general primary and secondary education*, the new per capita financing mechanism has been fully rolled out, and initial indications are that they helped generate moderate efficiency savings. The overall spending on general education saw a 7% decrease in real terms from 2012 to 2015, triggered by decreases in spending on the wage bill (-6%) and goods and services (-22%). At the same time, capital expenditure in general education increased by 46% since 2012, recuperating most of the decreases in this category that were introduced in response to the fiscal crisis of 2009-2012.

In *vocational education and training*, a combination of relatively low capital expenditures and low student-teacher ratios may point to a need to review expenditures across categories. Expenditures on VET have been gradually shrinking since 2009, particularly investment in capital, and spending on goods and services. Capital investment in this sub-sector is relatively low, representing only 2% of total VET spending, as compared to 10% in general education and 18% in pre-primary education. Considering that VET provision tends to require relatively substantial investments in equipment, it may be worthwhile considering whether the current share is appropriate, especially since there appear to be substantial inefficiencies in other expenditure categories: despite the low share of capital expenditures, the VET system has the highest spending level per student compared to other sub-sectors. In 2015, the student-teacher ratios in professional school and collegiums were as low as 8.7 and 12.8 respectively, while spending per student enrolled in VET (18,223 lei) was 54% higher than spending per student in general education (11,818 lei) and 16% higher than per child enrolled in pre-school (15,678 lei).

The *higher education* budget lacks transparency and presents a challenge for expenditure trends tracking and assessment. Since 2013, own-source revenues of universities (so-called "special means") are no longer reflected in the national public budget data. The newly revised funding mechanism provides universities with greater autonomy and flexibility in budget management, however it may also have adverse implications for budget transparency and accountability. While own-source revenues of universities are no longer reflected in the budget, the government continues to contribute its share to funding the costs of the higher education system, which is likely to continue to decline further.

2.2. Sources of Financing

General government revenues continue to remain the main source of financing of public expenditures on education in Moldova. Budget revenues represent the main source of financing of public spending on education. Their relative importance has increased to 92% of total education spending in 2015, up from 82% in 2005. Central government transfers stand out as the largest source of education funding in local budgets, representing approximately 70% in 2014 for both municipal and raion spending, while local governments' own-source revenues were 13% and 6% at the municipal and raion level, respectively.

Own-source revenues of budget institutions ("special means") represent a small share of overall education financing, which has been decreasing mainly due to the changes in the budgeting system in higher education. The decrease in special means can be mainly attributed to relatively stagnant revenues of universities between 2005 and 2013, and the fact that own-source revenues of higher education institutions were taken out of the budget starting from 2013. Although special means are a legal source of education financing in Moldova, they represent a small share of schools' revenues**,** as schools are not provided with practical tools and mechanisms to generate additional income. Basic education in Moldova is mostly provided by public schools (with less than 1% of students enrolled in private schools), which can officially charge fees only for textbooks. However, there are informal ways for schools to collect fees from parents, which include periodic Parent-Teacher Association (PTA) payments and other mechanisms. Own-source revenues are relatively important in pre-school education facilities, representing around 7% of total financing of pre-school education in recent years. This can be explained by the common practice of parental contributions and fees in this sub-sector, where parents usually cover costs related to purchases of basic supplies and part of the cost of nutrition services.

In the past few years, externally funded projects have become a crucial source of education financing in Moldova. The importance of externally financed projects, as recorded in the budget, was particularly high in 2014 and 2015 due to the implementation of the Program of Technical and Financial Assistance to pre-school institutions in Moldova granted by the Government of Romania. The share of the total external assistance, including on- and off-budget programs, has been increasing over the past years, representing more than a half of total capital spending (about 62%), or about 13% of total education expenditure, in 2014. It included several large-scale external assistance programs in pre-university, vocational, pre-school and higher education. According to the EU report on external assistance in the education sector in the Republic of Moldova, a total of 96 projects in the area of education were initiated in the period of 2008-2015. Among the most significant recent external assistance projects were the World Bank's "Moldova Education Reform Project" worth EUR 30 million in 2013, the European Union's "Budget support for VET reform implementation in Moldova" worth EUR 25 million in 2014, and Romania's assistance program for pre-school institutions worth about EUR 22.7 million in 2014-2015.[21]

[21] EU Report on External Assistance in the Education Sector in 2008-2015. Accomplishments in the VET Sector in 2014 and the Objectives for 2016.

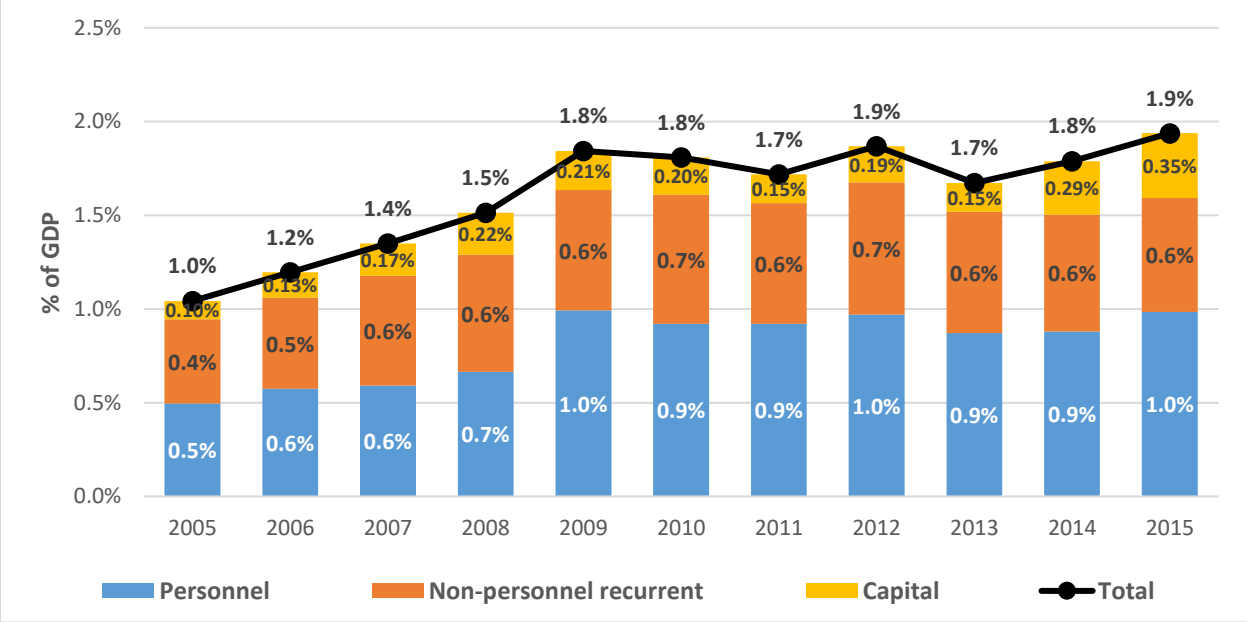
CHAPTER 3.
PRE-PRIMARY EDUCATION: TRENDS IN CAPITAL INVESTMENT

Key Findings:

- Public spending on pre-school education increased dramatically in the past decade in Moldova, with rates of growth of capital expenditure exceeding other expenditure categories.
- At the same time, pre-school enrollment rates showed tremendous improvements, in part due to the expanding access to early childhood education services made possible by the construction of new pre-school facilities.
- Ten-year trends suggest that Moldova is on track to achieve the 95% enrollment target among 3-6 year olds by 2020 with the current level of donor support for this sub-sector.
- However, dependence on donor funding is a concern for the pre-school education sector, as 70% of capital investment is now funded from external sources.

This chapter examines the sources of recent growth in public spending on pre-primary education in Moldova, focusing mainly on the increase in capital expenditure. In recent years, government spending on pre-primary education increased substantially with the aim of expanding access to early childhood education (ECE) services. Particularly dramatic increases were observed in the area of capital investment, as additional pre-school facilities were built throughout the country to increase the supply of educational infrastructure in order to expand coverage to meet demand. Enrollment rates among children of pre-school age rose accordingly, indicating success along the stated objective. However, much of the expansion in capital investment was financed with donor funds, thus raising questions about the future sustainability of the higher levels of expenditure.

Figure 3.1. Public Spending on Pre-school Education, 2005-2015

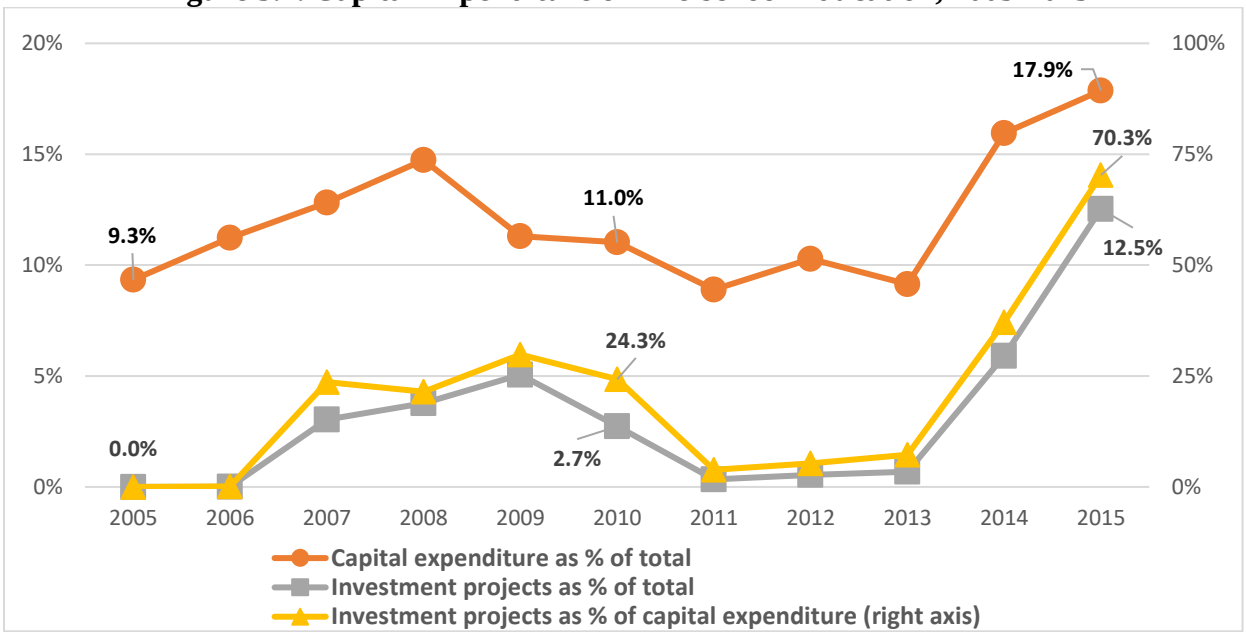


Source: Moldova BOOST database.

3.1. Trends in pre-primary spending and enrollment

Over the past decade, total public spending on pre-school education nearly doubled from 1.0% to 1.9% of GDP (see Figure 3.1). Although wage bill expenses still make up half of all pre-school spending, the share going to capital investment doubled from 9.3% to 17.9% between 2005 and 2015 and capital investment in the pre-school sector as a share of GDP more than tripled from 0.10% to 0.35%. Most of the growth in capital spending came after 2013 as a result of increased contributions from donor investment projects. Donor funding for the sector, which was non-existent a decade ago, accounted for 12.5% of all pre-school spending in 2015. Virtually all of it was used to financing capital investment with donor investment projects making up 70% of all capital spending on pre-school education in 2015, up from 7% in 2013 (see Figure 3.2).

Figure 3.2. Capital Expenditure on Pre-school Education, 2005-2015



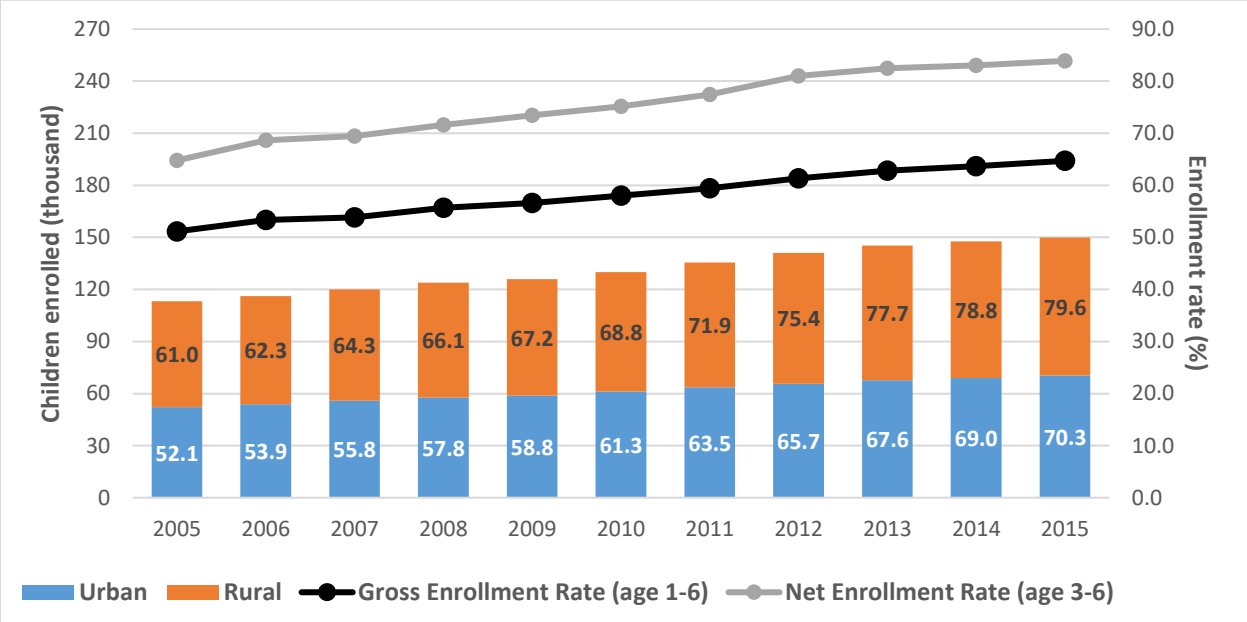
Source: Moldova BOOST database.

During this time, enrollment in pre-school education increased substantially in both urban and rural areas of Moldova. The total number of children enrolled in early education institutions increased from 113 thousand to 150 thousand (up 33%) between 2005 and 2015. Similar increases were noted in urban areas (+35%) and rural areas (+30%) during this time. This is particularly significant because enrollment rates have been especially low in rural parts of Moldova, which are home to two-thirds of the country's children of pre-school age. While the overall population of children of pre-school age remained largely flat, the gross enrollment rate improved from 51% in 2005 to 65% in 2015 (see Figure 3.3).

However, public spending grew faster than enrollment, largely due to increases in wage expenditures and other non-recurrent costs. Greater coverage of ECE facilities was made possible by large investments in pre-school construction and increases in recurrent spending. Between 2005 and 2015, average public spending per child enrolled in pre-school more than doubled in real terms—from 7,669 lei to 16,850 lei (in constant 2016 lei). The amount of capital spending per child more than quadrupled—from 716 lei to 3,011 lei. The proportional rise in wage

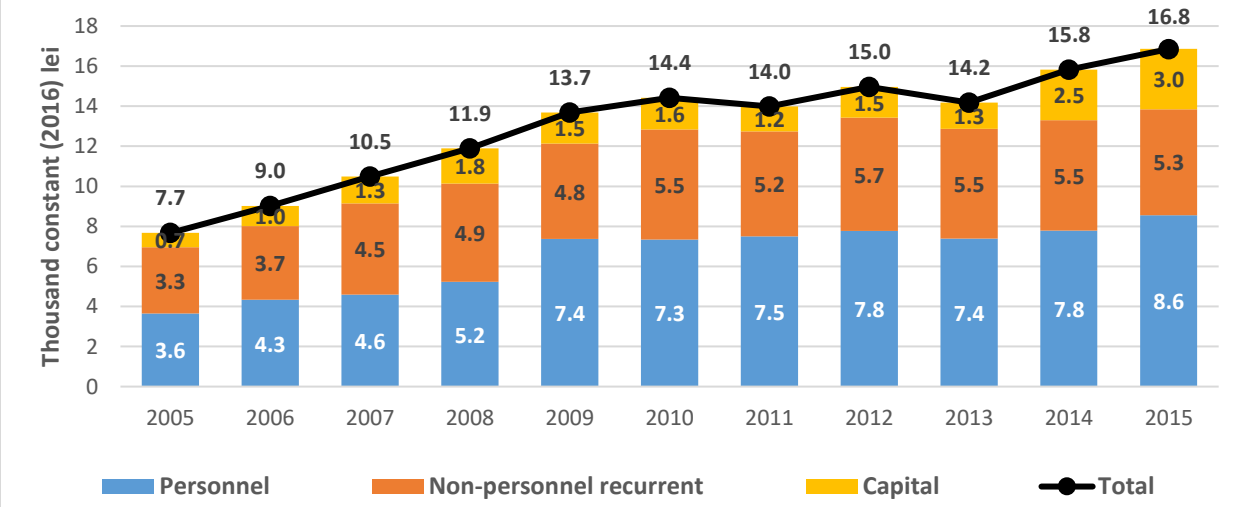
bill spending and non-personnel recurrent costs was smaller (expenses grew by a factor of 2.4 and 1.6, respectively), but since these expenditures comprise a larger share of overall spending, these increases were responsible for more than three quarters of the total rise in pre-school expenditures between 2005 and 2015 (see Figure 3.4).

Figure 3.3. Enrollment in Pre-school Education, 2005-2015



Source: Authors' calculations based on data from NBS.
Notes: Gross enrollment rate is calculated as the total number of children enrolled in early education institutions (regardless of age) divided by the number of children of pre-school age (1-6 years) in Moldova. Net enrollment rate is calculated as the number of children ages 3-6 years enrolled in early education institutions divided by the total number of children ages 3-6 years in Moldova.

Figure 3.4. Public Spending per Child Enrolled in Pre-school, 2005-2015



Sources: Moldova BOOST database, NBS.

3.2. Sustainability of financing sources for capital investment

Given that a large portion of the increase in capital spending was financing through donor funds, it is reasonable to ask whether higher levels of investment are sustainable in the future. Since 2008,[22] there have been three major donors financing budget expenditures on pre-school education in Moldova. These include the Moldova Social Investment Fund (MSIF) financed by the World Bank; the Global Partnership for Education (GPE), formerly known as the Education for All – Fast Track Initiative; and the Program of Technical and Financial Assistance financed by the Government of Romania. Together with other donors, between 2008 and 2015 they spent approximately 569 million lei (in nominal terms) on pre-school education in Moldova[23]. Of this total, 366 million came from the Government of Romania, 137 million lei from GPE, 41 million lei from MSIF, and 26 million from other donors.

The Romanian government's contribution to financing the pre-school education sector is particularly noteworthy. In 2014, Romanian assistance contributed 70 million lei to funding pre-school education through Moldova's national public budget. In 2015, that number was 296 million lei—more than all donors in the previous 7 years combined. This amount went fully toward financing capital investment, amounting to 70% of all capital expenditure on pre-school education or about 0.24% of Moldova's GDP.

Between 2005 and 2015, enrollment in Moldova's early childhood education system increased by 36,800 children. Among children aged 3-6 years, the net enrollment rate rose from 68.6% to 83.6%. At the same time, Moldova devoted a total of 1.8 billion lei (in nominal terms)[24] of public funds on capital investment in pre-school education. The average capital investment per additional child enrolled over the past decade is, therefore, equal to about 48,700 lei (in nominal terms).[25]

In its Education 2020 Strategy, the Government of Moldova set a target of enrolling 95% of 3-6 year olds in pre-school education by 2020. This means that at least 12,200 more children will need to be enrolled by the end of the decade to reach this target (or around 19,800 to ensure full enrollment). Based on the unit costs calculated above, an estimated 596-790 million lei in capital investment will be required between 2018 and 2020 to increase enrollment to reach 95%, or about 199-264 million lei annually (see Table 3.1).[26] (An estimated 321-425 million lei per year in capital spending would be needed to reach full enrollment.) In recent years, the "base component"[27] of Moldova's public budget has spent an average of 150 million lei per year (in 2016 lei) on capital investment in pre-school education. However, donor-funded "investment projects" contributed an additional 75 million lei per year on average (in 2016 lei) with as much as 300

[22] Donor-disaggregated spending data is available in the BOOST database starting from 2008.
[23] Equivalent to about 672 million in constant (2016) lei or about 38 million US dollars at the official National Bank of Moldova exchange rate of 17.66 MDL/USD as of September 15, 2017.
[24] Equivalent to about 2.4 billion in constant (2016) lei or about 135 million US dollars.
[25] Equivalent to about 64,600 in constant (2016) lei or about 3,657 US dollars per child.
[26] Using inflation adjusted figures for past costs, the corresponding funding needs rise to 760 million lei (253 million lei per year) to reach the 95% enrollment target and 1,246 million lei (415 million lei per year) for full enrollment.
[27] The "base component" is funded through regular budget revenues, which exclude donor-funded "investment projects", extra-budgetary "special funds", and own-source revenues of budget institutions ("special means").

million lei coming from the Romanian government in 2015 alone. Therefore, if current levels of donor funding persist, they should be sufficient (together with budget funds) to allow the Moldovan government to meet its ambitious 95% enrollment target by 2020.

Table 3.1. Estimated Cost of Capital Expenditures for Increasing Pre-school Enrollment, 2015 to 2020

	2015 (actual)	*2020 (95% enrollment target)*		*2020 (full enrollment)*	
Children aged 3-6 years		**Low case**	**High case**	**Low case**	**High case**
Total population	156,066	150,225	150,225	150,225	150,225
Net enrollment rate *(%)*	83.6	95.0	95.0	100.0	100.0
Children enrolled	130,471	142,714	142,714	150,225	150,225
Change in enrollment *(from 2015)*	n/a	12,243	12,243	19,754	19,754
Unit cost of increased enrollment[1] *(lei/child)*	n/a	48,681	64,590	48,681	64,590
Total cost of increased enrollment *(million lei)*	n/a	596.0	790.7	961.6	1275.9
Average annual capital budget required *(million lei)*	n/a	198.7	263.6	320.5	425.3

Source: Authors' calculations based on data from NBS and the Moldova BOOST database.
Note: 1/ Based on total capital expenditure from 2005-2015 in nominal lei ("low case") or constant (2016) lei ("high case") divided by the number of additional children enrolled.

CHAPTER 4.
GENERAL PRIMARY AND SECONDARY EDUCATION: TRACK RECORD OF OPTIMIZATION

Key Findings:

- Recent optimization reforms have had some impact in urban areas on improving—or at least stopping the decline in—key efficiency indicators, but have not improved efficiency in rural schools, which continue to shrink at a faster rate than the network is adjusting.
- Raions that took more aggressive action since 2011 to right-size their school networks in response to declining student numbers were more successful in achieving efficiency improvements than those raions in which these adjustments were slow or non-existent.
- Larger classes and especially larger schools are associated with moderately better performance on international learning assessments, as is the autonomy of school principals to hire and deploy teaching staff.
- From the point of view of equity, students from the most disadvantaged socioeconomic backgrounds continue to attend the smallest, most rural schools, where they continue to perform worse on standardized tests in spite of slightly higher levels of per-student spending than students from better-off families who attend overwhelmingly urban schools.
- Greater effort is needed to address the quality and efficiency of education provision in rural areas to give students there an equal chance of obtaining a high-quality education.

The purpose of this chapter is to examine the trends in Moldova's network of general education institutions following the implementation of key efficiency reforms. Starting in 2010, the Government of Moldova has been using a per-capita financing (PCF) formula to allocate funding for primary and secondary schools. Among other objectives, the new financing mechanisms was designed to increase the efficiency of public resource use in education. The funding formula was initially piloted in 2 raions, followed by expansion to 9 additional raions plus the municipalities of Balti and Chisinau in 2012 and eventual nationwide rollout in 2013.[28] The reform was codified in the *Action Plan for Education Structural Reform Implementation* in 2011 with expectations that it would help consolidate the school network and improve education system efficiency and fiscal sustainability.[29] The analysis that follows takes a retrospective look at changes in selected efficiency indicators in light of the optimization reforms in place since 2010.

4.1. Optimization and changes in school network efficiency

In 2009, the last year before the piloting of the first PCF mechanism, public spending on education in Moldova rose to 9.4 percent of GDP. This figure was higher than in any EU or OECD member country and well above what is typically considered fiscally sustainable. By 2015, the share of GDP devoted to public spending on education declined to 7.0 percent. The largest share of the education budget was—and continues to be—allocated to financing the general education system (i.e., one that includes primary and non-vocational secondary education

[28] The law regulating the financing formula entered into force in 2015, even though implementation started sooner.
[29] World Bank (2013). "Piloting Per-Student Formula Financing in Moldova: First Outcomes and Policy Recommendations." https://openknowledge.worldbank.org/handle/10986/20775.

institutions). Between 2009 and 2015, public spending on general education declined from 4.5 to 3.3 percent of GDP, while accounting for a relatively stable 47 percent of total education spending.

Since the general education school network was most directly affected by the optimization reforms, it is reasonable to ask whether system efficiency improved as a result. This assessment is made on the basis of commonly used efficiency indicators, such as the ratios of the number of students per teacher (student-teacher ratio), students per class (average class size), students per school (average school size), and other metrics. The calculations used in this section are based on the data from the Education Management Information System (EMIS) Open Data Portal launched by the Ministry of Education, Culture and Research in May 2017, which contains annual education statistics covering a range of indicators from 2011/12 to 2016/17 academic years (as of the time of writing).[30] As differences exist between the data from EMIS and the official data published by the National Bureau of Statistics, the choice of data source does have an impact on the findings of the analysis (see also textbox 4.1).

Box 4.1. Student-teacher ratio: different data sources and calculation methodologies

Official government statistics, including on education, are published by the National Bureau of Statistics. The data on efficiency indicators used in this report to assess the impact of optimization reforms, however, stem from the MoECR's EMIS Open Data Portal. The reason for using data from the EMIS portal is that, unlike NBS data, it includes data at school level and on the number of non-teaching staff (school managers and auxiliary staff) and staff positions (not just physical persons). However, differences exist between data reported in the EMIS Portal and data published by the NBS. For example, while the number of students in general schools in EMIS is only 1% higher than that reported by NBS for 2016/17, the number of teaching staff in EMIS is 21% higher than in NBS data in the same year. The reason for the discrepancy is not clear. Thus, the choice of data source has implications for the conclusions of the analysis.

In addition to difference in source data, there are possible differences in the way that efficiency indicators are calculated. For example, the analysis in this report calculates student-teacher ratios including data for all schools providing general primary and secondary education in the country. The Moldova Education Reform Project, however, which includes the student-teacher ratio as one its key performance indicators, excludes data from school categories which are out of the scope of project interventions (such as general schools focusing on sports or arts).

Between 2011/12 and 2016/17, the general education system underwent noticeable optimization in response to the country's declining demographic trends. The total number of students declined by 8% while the number of classes shrank by 15% (see Table 4.1). Over the same period, the number of schools declined by 2% and the numbers of teachers and auxiliary staff were reduced by 6% each.[31]

[30] MoECR (2017). Education Management Information System (EMIS) Open Data Portal. http://sime.ctice.md/. Data extracted on April 26 and August 14, 2017.

[31] Staff numbers reported here are for *physical persons*. The number of teaching and auxiliary staffing *positions* declined by 13% and 10%, respectively, during this time.

However, the aggregate trends mask large differences between the urban and rural school networks. The enrollment in Moldova's urban schools grew by approximately 10,000 students between 2011/12 and 2016/17 (an increase of 6%). At the same time, rural schools lost roughly 40,000 students (a decrease of 19%). The urban school network saw a net addition of 19 institutions (+6%) and more than 1100 total staff (+5%), while the rural network shrank by 50 schools (–5%) and reduced total staff by nearly 5000 (–11%).

Table 4.1. General Education School Network Trends, 2011/12 to 2016/17

	Schools	*Classes*	*Students*	*Teachers*	*Managers*	*Aux. Staff*	*Total Staff*[1]
TOTAL							
2011/12	1,404	19,241	368,490	37,405	4,136	25,082	66,623
2016/17	1,373	16,275	337,876	35,089	4,130	23,602	62,821
% change	*-2.2*	*-15.4*	*-8.3*	*-6.2*	*-0.1*	*-5.9*	*-5.7*
URBAN							
2011/12	326	6,687	151,517	14,516	1,376	7,291	23,183
2016/17	345	6,561	161,271	15,018	1,469	7,833	24,320
% change	*+5.8*	*-1.9*	*+6.4*	*+3.5*	*+6.8*	*+7.4*	*+4.9*
RURAL							
2011/12	1,078	12,554	216,973	22,889	2,760	17,791	43,440
2016/17	1,028	9,714	176,605	20,071	2,661	15,769	38,501
% change	*-4.6*	*-22.6*	*-18.6*	*-12.3*	*-3.6*	*-11.4*	*-11.4*
	Avg. School Size	*Avg. Class Size*	*Student-Teacher Ratio*	*Students per Staff Member*[1]	*Teachers per Class*	*Teaching Posit. per Class*	*Teaching Posit. per Teacher*
TOTAL							
2011/12	262	19.2	9.9	5.5	1.94	1.76	0.91
2016/17	246	20.8	9.6	5.4	2.16	1.82	0.84
change	*-16*	*+1.6*	*-0.3*	*-0.1*	*+0.22*	*+0.06*	*-0.07*
URBAN							
2011/12	465	22.7	10.4	6.5	2.17	2.02	0.93
2016/17	467	24.6	10.7	6.6	2.29	2.07	0.91
change	*+2*	*+1.9*	*+0.3*	*+0.1*	*+0.12*	*+0.05*	*-0.02*
RURAL							
2011/12	201	17.3	9.5	5.0	1.82	1.63	0.89
2016/17	172	18.2	8.8	4.6	2.07	1.65	0.80
change	*-29*	*+0.9*	*-0.7*	*-0.4*	*+0.25*	*+0.02*	*-0.09*

Source: EMIS Open Data Portal and authors' calculations.
Note: 1/ Total staff include teachers, school managers, and auxiliary staff.

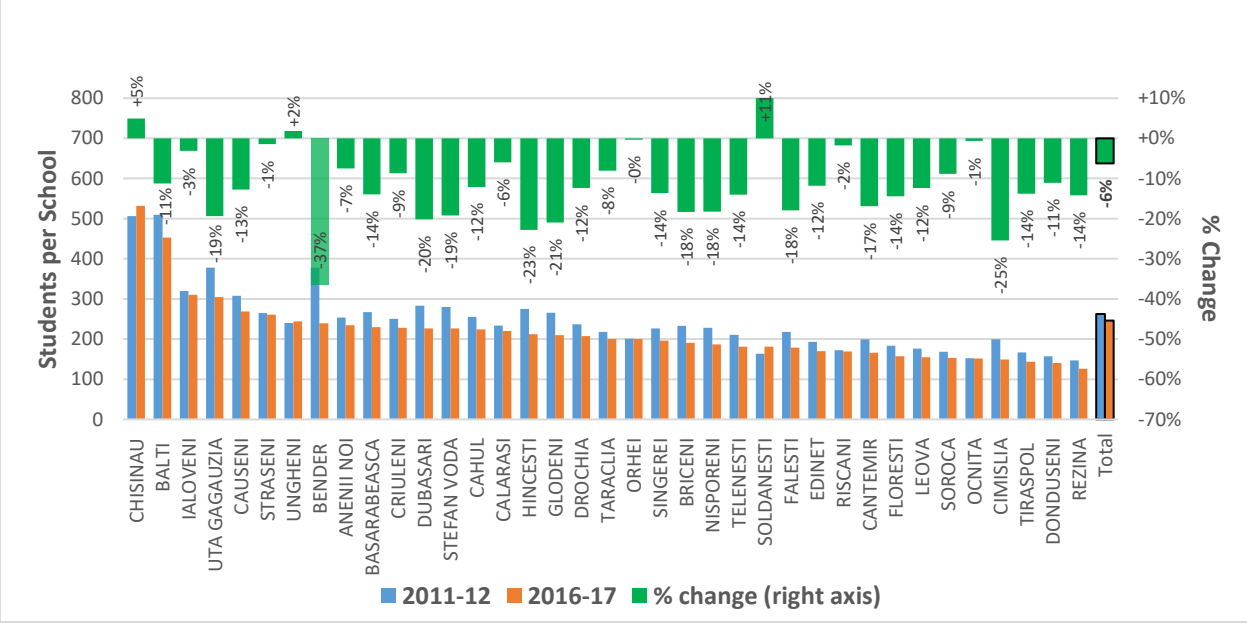
Rural schools saw a strong deterioration in key efficiency indicators. While in urban areas, schools experienced increases in several efficiency indicators — such as average class size and student-teacher ratio—their rural counterparts saw declining efficiency across the board. During the five-year period ending in 2016/17, the average size of a rural school in Moldova declined from 201 to 172 students while staffing levels declined more slowly than student enrollment. By 2016/17, rural schools had a student-teacher ratio of 8.8 (down from 9.5 five years earlier), an average of 4.6 students per staff member (down from 5.0) and employed on average 2.1 teachers per class (up from 1.8).

The optimization of the school network, while significant, was not aggressive enough to keep pace with the declining demography in Moldova's rural areas. Most raions saw the average

enrollment per school decline substantially in recent years (see Figure 4.1). Some, such as Cimișlia raion, experienced a decline of more than 25% in the size of an average school (from 200 to 149 students) between 2011/12 and 2016/17. Even places with relatively large schools—such as Bălți and UTA Găgăuzia—experienced declines in average school size of more than 10%. Only the municipality of Chișinău and the raions of Șoldănești and Ungheni saw modest increases in average school sizes. While the city of Chișinău achieved this through demographic growth, the latter two are predominantly rural raions that experienced demographic declines similar to the rest of the country but were among the most proactive in reducing the number of schools between 2011/12 and 2016/17 (Șoldănești raion reduced the number of schools from 31 to 23, while Ungheni reduced their school network from 57 to 50 during this time).

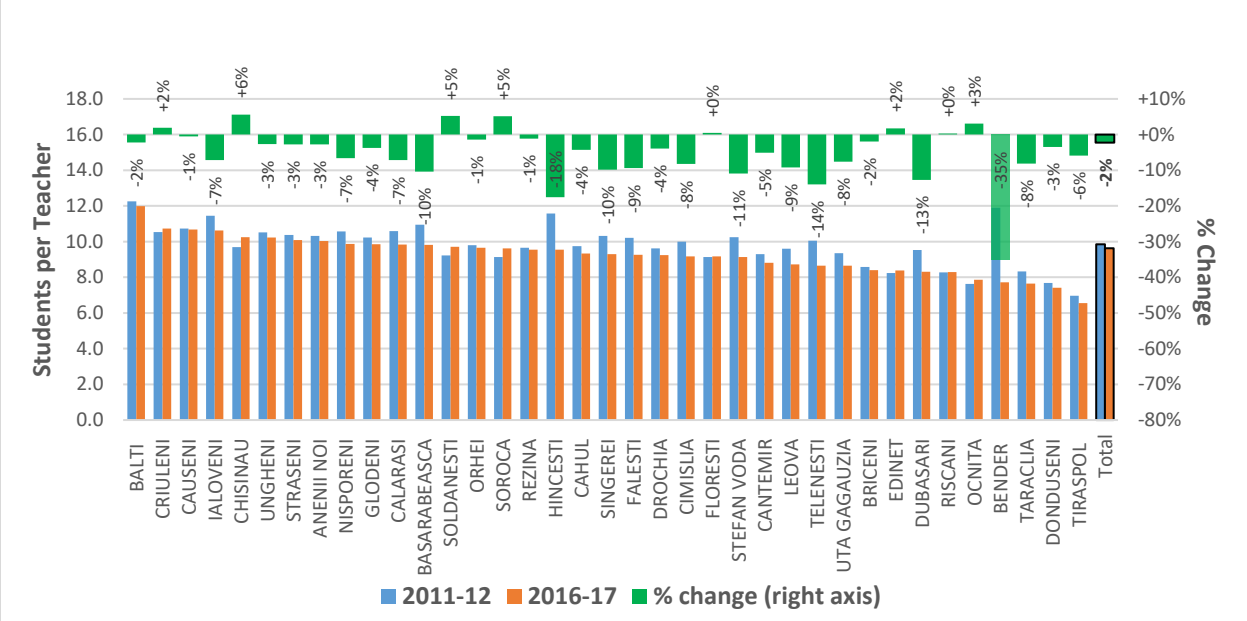
Another key efficiency indicator—the ratio of students per teacher—also declined in many rural parts of Moldova's school network. Over the last 5 years, while this ratio declined from 9.9 to 9.6 nationwide, and from 9.5 to 8.8 in rural areas as a whole, some raions saw decreases of more than 1 student per teacher. Hîncești (from 11.6 to 9.5), Ștefan Vodă (from 10.3 to 9.1), Telenești (from 10.1 to 8.7), and Dubăsari (from 9.5 to 8.3) raions all experienced declines of more than 10% (see Figure 4.2). On the other hand, Chișinău (from 9.7 to 10.2), Șoldănești (from 9.2 to 9.7), and Soroca (from 9.1 to 9.6) saw increases of at least 5% in their student-teacher ratios. Again, with the exception of the growing capital city, the other two raions simply did a better job of adjusting their school networks to their changing demographic reality. Between 2011/12 and 2016/17, both Șoldănești and Soroca raions experienced enrollment declines of 18% of their student population, but each raion also reduced the number of teachers in its schools by 22%.

Figure 4.1. Average School Size Trends by Raion, 2011/12 to 2016/17



Source: EMIS Open Data Portal and authors' calculations.
Note: Data for Bender municipality, as reported in the EMIS Open Data Portal, are considered an outlier.

Figure 4.2. Student-Teacher Ratio Trends by Raion, 2011/12 to 2016/17



Source: EMIS Open Data Portal and authors' calculations.
Note: Data for Bender municipality, as reported in the EMIS Open Data Portal, are considered an outlier.

At the same time, the utilization of teachers has become less efficient in Moldova's schools. Between 2011/12 and 2016/17, the average teaching load (defined as the number of teaching positions/"*stavkas*" per teacher) declined from 0.91 to 0.84. In rural schools, this trend was more pronounced, declining from 0.89 teaching positions per teacher to 0.80. Simultaneously, the average number of teachers employed per class rose from 1.94 to 2.14 across all schools (increasing even more in rural schools: from 1.82 to 2.07 teachers per class). The underlying cause, as with the student-teacher ratio, appears to be the slower rate of reduction in the number of (physical) teachers than the reduction in the number of classes or number of allocated teaching positions (*stavkas*). At this rate, Moldova's rural schools would see teachers with an average teaching load of 0.62 *stavkas* within a decade, an unsustainably and undesirably low level with possible negative consequences for teacher professionalism and quality of education.

4.2. Optimization and quality of education

Moldova's participation in two rounds of the Programme for International Student Assessment (PISA) helps track the quality of education and the mode of its delivery over time. The participation in the 2009+ round of PISA (administered in 2010) and again in 2015 was well-timed to use the data of these international assessments to draw conclusions about changes in Moldova's education system before and after the implementation of key optimization reforms.

Two main categories of changes associated with these reforms can be examined using PISA data from 2010 and 2015. The first is the *increase in perceived autonomy* granted to schools, principals (school leaders), and local authorities as a result of the school funding and school management reforms.[32] The second is the change in the organization of the school network that

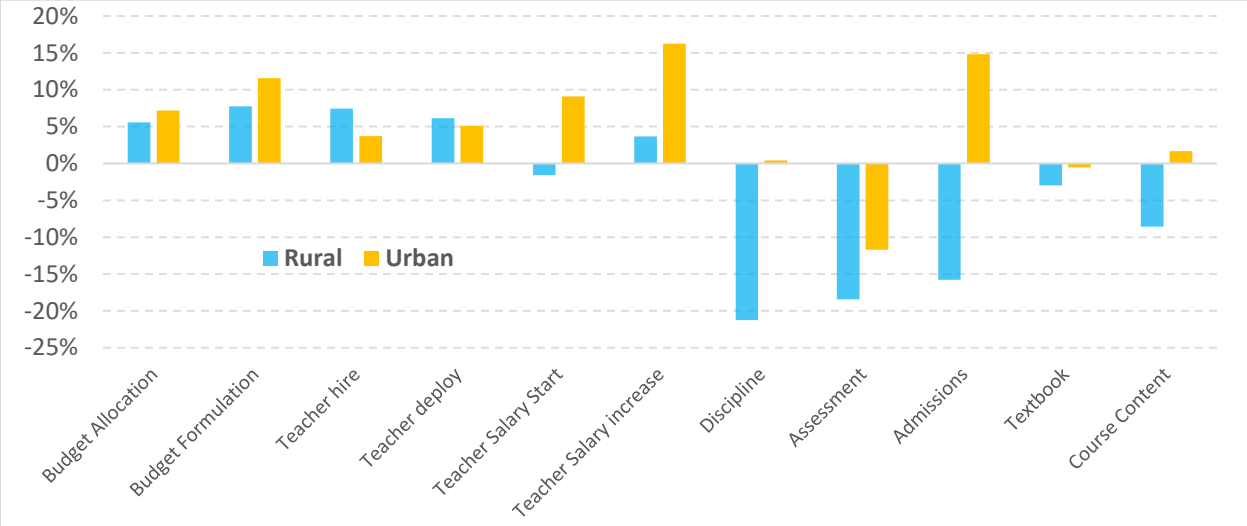
[32] A more detailed discussion of school autonomy reforms can be found in the accompanying report:

has aimed (but not always achieved) to *increase school and class sizes* in rural areas of Moldova and improve the efficiency of public resources going to education. Each of these aspects of the reform is discussed below through the lens of student achievement data collected through PISA, which is used as a proxy measure for quality of education.

First, addressing the perceived increases in various aspects of school autonomy associated with the recent reforms. Between 2010 and 2015, school principals in Moldova reported increasing levels of responsibility in several important areas measured by PISA (Figure 4.3a). These included increased responsibility for budget allocation and formulation, especially in urban areas, and in the areas of teacher hiring, teacher deployment, and the setting of teacher salaries. Not all of these areas showed equal levels of responsibility experienced by school principals; for example, perceived autonomy related to teacher salaries remains relatively low, as is shown in Figure 4.3b). But in each case, there was a noticeable increase in the share of principals who self-reported having responsibility for a particular area of school management. On the other hand, some areas—such as school discipline and learning assessment—showed decreasing self-reported responsibility of school principals between 2010 and 2015. In the case of learning assessment, this was by design, as a more highly centralized system of examinations was put in place nationwide to reduce variations in student assessment practices across schools.

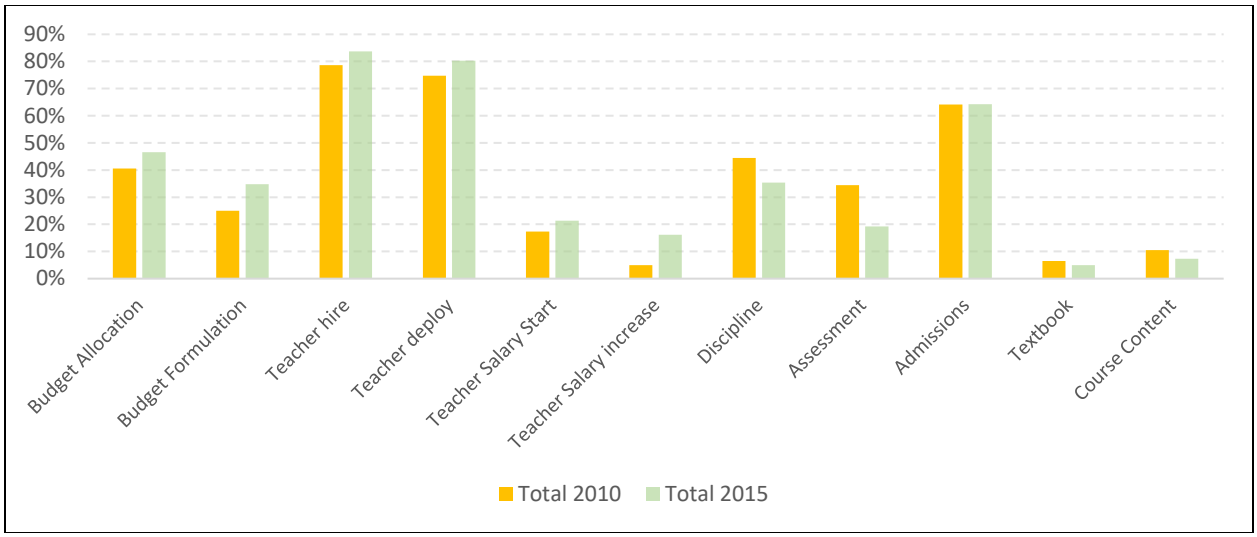
Figure 4.3. Changes in Perceived Responsibility of Principals (% of schools, Moldova)

(a) By Policy Area and Urban-Rural Location (% change from 2010-2015)



(b) By Policy Area, 2010 and 2015 (% of schools)

World Bank (2017), "Moldova Pre-School and General Education: Transitioning to a Decentralized Service Delivery Model."



Source: Authors' calculations based on PISA 2010 and 2015 data.

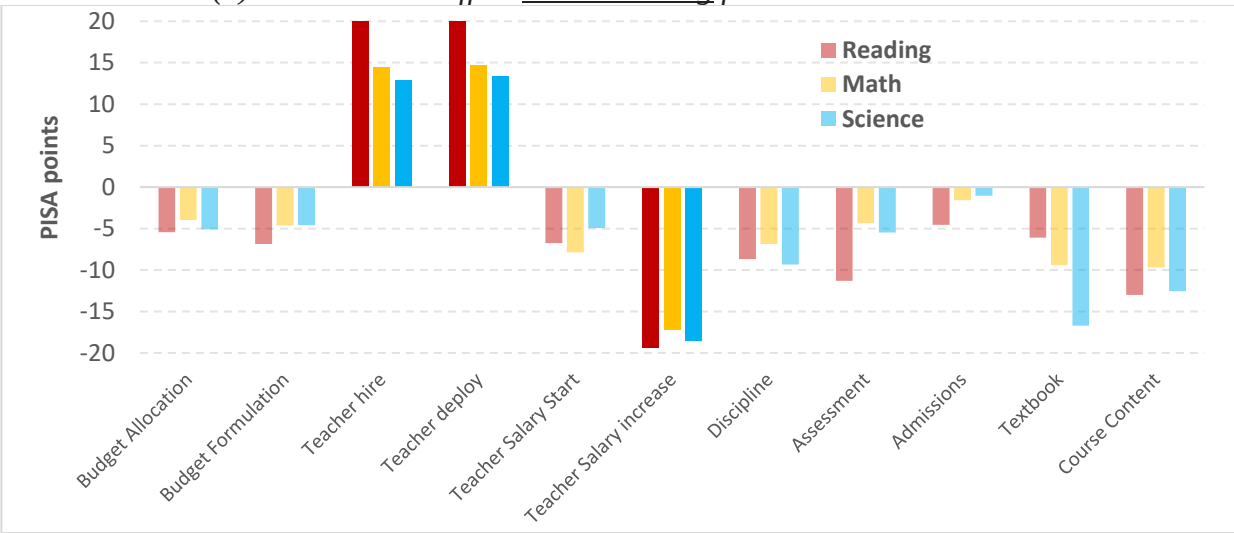
Autonomy related to teacher hiring and deployment exhibited the strongest relationship between principal autonomy and better student performance. The relationship between principal autonomy and student performance on PISA assessments varied substantially across areas of principal responsibility**.** Most policy areas measured by PISA in which a principal may experience increased autonomy showed no statistically significant relationship with student learning (see Figure 4.4). However, decisions related to teacher hiring and deployment showed the strongest relationship between autonomy and better student performance. For example, a Moldovan school where the principal reported having the authority to hire a teacher was associated with student performance of 20 points higher on PISA reading tests in 2015 (equivalent to about two-thirds of one year of schooling) versus a school where the principal reported having no such authority. On science and math tests, this effect was around 13-14 PISA points (about one-half of one year of schooling). When variations in student characteristics are taken into account, these effects decrease to 6-12 PISA points (still a statistically significant effect of about 0.2-0.4 years of schooling).

On the other hand, principals having autonomy for setting teacher salaries were associated with lower student performance. The negative effect was equivalent to an average of 18 PISA points (14 points when student characteristics are taken into account)—equivalent to about one-half of one year of schooling. No other dimensions of principal autonomy showed consistently statistically significant effects on student learning in Moldova. These preliminary findings may suggest that allowing greater school autonomy in some dimensions of school management policy—in particular in the area of teacher hiring and deployment—contribute to better student learning outcomes. However, the findings should be interpreted with caution, since they may also point to other linkages, such as a common cause. For example, both the better PISA results and the choice to use the opportunity of self-governance, especially in the areas of teacher recruitment and deployment, may be correlated to the overall capabilities of school principals. Similarly, the findings may suggest that devolving salary setting decisions to school principals may be adversely associated with student performance (possibly indicating that principals do not exclusively reward

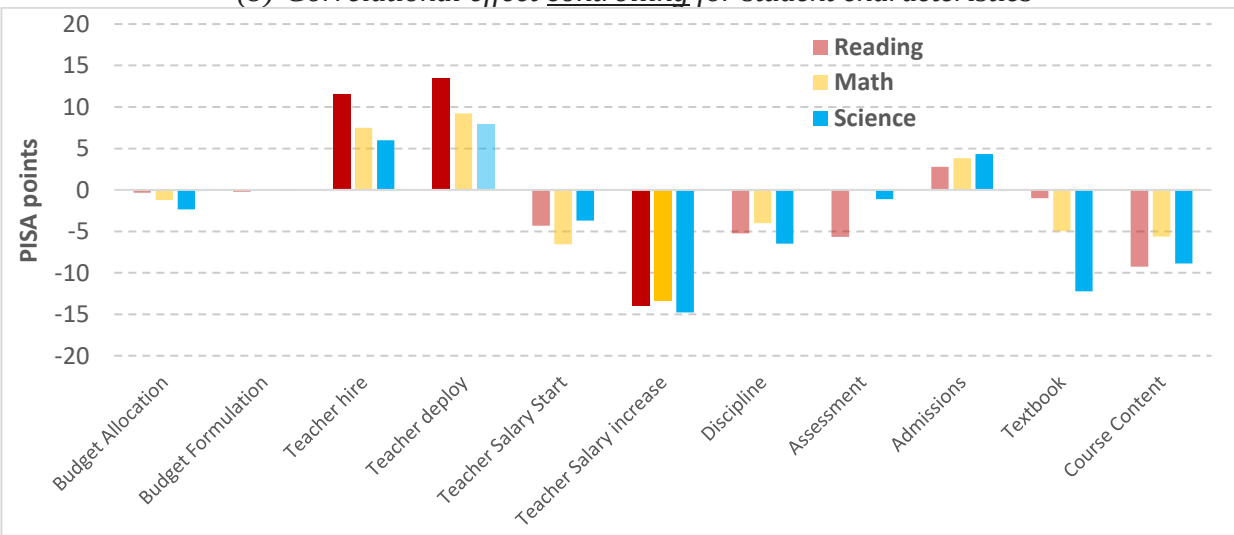
teachers based on performance), but caution on this interpretation is warranted among others because the share of principals reporting autonomy in salary setting remains rather small.

Figure 4.4. Effect of Principal Autonomy on Student Learning Outcomes (2015, Moldova)

(a) Correlational effect not controlling for student characteristics



(b) Correlational effect controlling for student characteristics

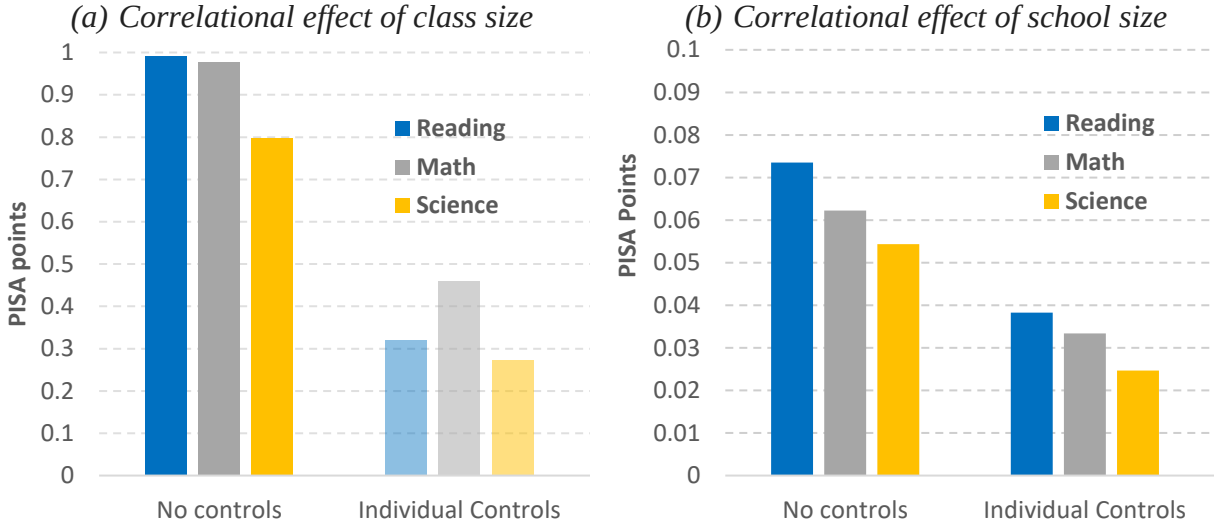


Source: Authors' calculations based on PISA 2015 data.
Note: Coefficients from linear regression models are reported. Darker bars represent coefficients, which are statistically significant at the 90% confidence level (using standard errors clustered at the school level).

Second, the question of whether larger school and class sizes are associated with better student learning outcomes can be examined using PISA data. In 2015, PISA results show that students enrolled in larger schools scored higher on reading, science, and math tests than those enrolled in smaller schools; and those studying in larger classes scored better than students in smaller classes (see Figure 4.5). In particular, the increase of average class size by 1 student was associated with PISA scores that were on average 1 point higher in reading and math and 0.8 points higher in science. Since classes in Moldova's rural schools are on average 6.4 students smaller

than those in urban schools, differences in class sizes alone account for 5.1-6.4 PISA points (or about one-fifth of one year of schooling) in differences of student performance between urban and rural schools. (This effect is not meaningfully large and becomes statistically insignificant when differences in student characteristics are taken into account.)

Figure 4.5. Effect of Class and School Size on Student Learning Outcomes, 2015



Source: Authors' calculations based on PISA 2015 data.
Note: Coefficients from linear regression models are reported. Darker bars represent coefficients, which are statistically significant at the 90% confidence level (using standard errors clustered at the school level). The following student characteristics are included in the regression: gender; age; Economic, Social, and Cultural Status (ESCS) index; school location (urban/rural); and school size.

On the other hand, school sizes show a stronger association with PISA test scores. Specifically, the increase of school size by 1 student was associated with PISA scores that were on average 0.05-0.07 points higher in science, math, and reading. Given that the average urban school in Moldova enrolls almost 300 more students than an average rural school (467 versus 172), differences in school size alone account for about 15-20 PISA points (or one-half to two-thirds of one year of learning) in differences in learning outcomes between urban and rural students. Once differences in student characteristics are taken into account, these gaps are reduced roughly in half to 7-11 PISA points (still a statistically significant difference).

4.3. Optimization and equity concerns

One argument in favor of school network optimization is that it may allow educational resources to be used more efficiently to provide a better quality of education to students currently enrolled in small, rural schools. In Moldova, students in these schools tend to come overwhelmingly from families with lower socioeconomic background who rely on the education system to help prepare their children to compete on equal terms in the labor market of the future. Serving as an engine of social mobility has long been recognized as one of the main functions of a public education system. However, recent optimization reforms have done little to overcome the quality and efficiency deficits of schools serving children from the most disadvantaged socioeconomic backgrounds.

Using student background data collected through Moldova's national assessments, the country's schools can be grouped into 5 quintiles according to the average socioeconomic level of the students enrolled in each school. Based on data from 2016/17, several key indicators measuring the efficiency and quality of education in schools with students of each level of socioeconomic well-being are presented in Table 4.2.

Table 4.2. General Education School Indicators by Average ESCS Quintile[33], 2016/17

	Avg. School Size	*Avg. Class Size*	*Student-Teacher Ratio*	*% of Teachers with a University Degree*	*Expenditure per Student in 2015 (thousand lei)*	*Avg. BAC Score – Math (standardized)*	*Avg. BAC Score – Romanian (standardized)*
ESCS Quintile[1]							
Q1 (most disadvantaged)	143.7	15.1	7.75	81.0	13.1	-0.52	-0.47
Q2	184.4	17.2	8.85	83.3	12.3	-0.59	-0.41
Q3	200.0	18.0	8.70	84.0	12.2	-0.64	-0.35
Q4	266.0	19.0	9.04	87.1	12.0	-0.41	-0.31
Q5 (least disadvantaged)	553.0	22.5	10.54	92.6	11.5	0.30	0.34

Source: Authors' calculations on the basis of EMIS data provided by MoECR.
Note: 1/ Average ESCS quintile of students taking 4th grade national assessments in each school.

From the point of view of equitable education provision, these results are a cause for concern. Schools enrolling the most disadvantaged students (Q1) are significantly smaller than those catering to the least disadvantaged (Q5), have fewer teachers with university degrees, and—despite slightly higher per-student expenditure levels—receive substantially lower scores on the national baccalaureate (BAC) exam. More disappointingly, these differences have remained remarkably stable since 2011/12 and 2012/13, in spite of the optimization reforms that have taken place in the interim (though perhaps the reforms being implemented need more time to achieve the desired results). In fact, the gaps on some indicators have grown slightly, with average school and class sizes in Q5 schools increasing in recent years, while school and class sizes in Q1 schools continue to decrease. In essence, the optimization reforms have done little to close the gaps between small/large schools, rural/urban schools, and Q1/Q5 schools due to their inability to make significant improvements in the use of educational resources in rural areas where most of the disadvantaged students are enrolled. Moving forward, greater effort is needed to address the quality and efficiency of education provision in Moldova's rural school network in order to reverse these trends and give students in rural areas an equal chance of obtaining a high-quality education; increased spending alone will not achieve this objective.

[33] The Economic, Social and Cultural Status (ESCS) index is based on student background questionnaire data collected during the execution of Moldova's national assessments for 4th and 9th grade students. The methodology to develop the index, similar to that used by the OECD with PISA data, is as follows: (1) Using data on parental education (Q27 and Q28), pick the highest education of both parents and compute the equivalent years of schooling. (2) Using data on parental occupation (Q31), pick the highest occupation of both parents ordered per the ISEI08-ISCO08 categorization. (3) Using data on educational resources in the home (Q6), wealth and goods at home (Q7), and number of books at home (Q8), we construct an index of household possessions using a Rasch model. (4) Using the components generated in steps 1-3 above, conduct a principal component analysis and pick the first component, variance maximizing, to generate the composite ESCS index.

CHAPTER 5.
VET AND HIGHER EDUCATION: EXTERNAL EFFICIENCY

Key Findings:

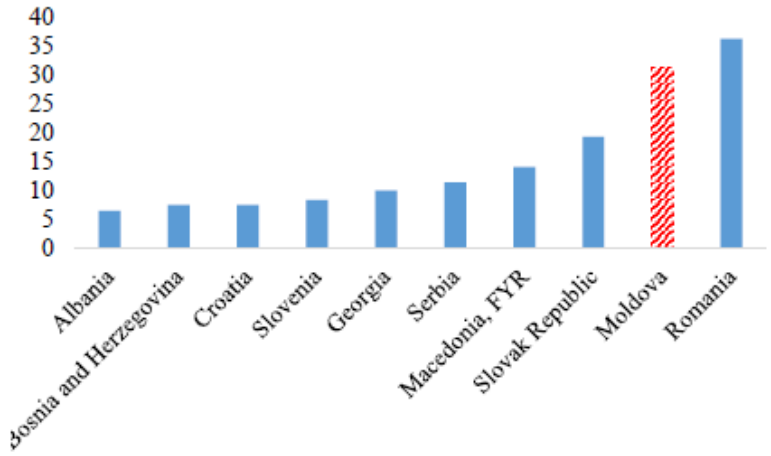
- External efficiency, or the extent to which education contributes to positive labour outcomes, needs to be improved both for VET and Higher Education,
- Financing mechanisms can play a role in promoting the external efficiency of education.
- In VET, changes in the financing mechanism have been initiated as part of broader reforms to promote quality, relevance, and efficiency of VET. It seems possible to further strengthen the contribution of the financing mechanism to the demand-responsiveness of VET, for example by introducing performance-based funding elements.
- In higher education, intentions to create strong linkages between quality and financing remain to materialize. The current financing mechanism seems to provide few incentives to universities to respond to labor demand. The option to introduce financing elements based on performance and competition could be considered, as part of broader reforms that will also optimize the provider network.

This chapter examines to which extent budgetary allocations and financing mechanisms for vocational education and training (VET) and higher education (HE) promote the provision of demand-responsive education. Whereas *internal efficiency* relates, broadly, to the costs with which the education system produces graduates, *external efficiency* relates to the benefits of education that materialize after graduation. These benefits exist for the educated individual as well as for society as a whole, and include both economic and social aspects. A crucial dimension of these benefits concern the extent to which education provides individuals with the skills to achieve strong labor outcomes and thus (as the other side of the coin) also satisfies skill demand from private (and public) employers. Since VET and HE are intended to be the last parts of the formal education system before individuals join the labor market, their external efficiency is particularly important. The financing mechanism for VET and HE is an important instrument to influence their external efficiency, including their responsiveness to labor demand.

5.1 What do we know about the external efficiency of VET and HE?

Moldovan employers are extraordinarily critical about the skills of the workforce, despite the relatively high share of expenditures on education, making the topic of external efficiency particularly important. Nearly half of firms (46 percent) encounter difficulties on a systematic basis in seeking staff with the desired skills, and around a third consider skill gaps and mismatches a major constraint to doing business (Figure 5.1). The Government of Moldova attaches great importance to increasing the demand-responsiveness of education, to support productivity, innovation, and employability, including in priority export-oriented sectors. For example, the Moldova 2020 National Development Strategy identifies matching the education system with labor market demands to raise the productivity of the workforce and the level of employability in the national economy, as a key priority. The urgent need to improve the demand-responsiveness of the education and training system to labor demand is also recognized in the Investment Attraction and Export Strategy 2020; the Innovation for Competitiveness Strategy 2020; the National Employment Strategy 2017-2021; and the Education Development Strategy 2020.

Figure 5.1. Firms for which inadequately educated workforce is major constraint (%, 2013)



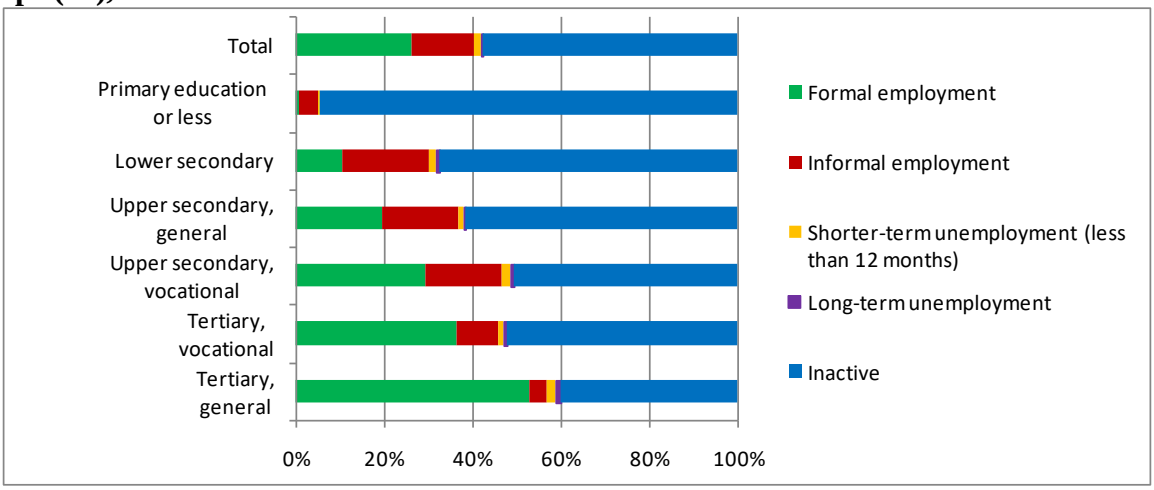
Source: BEEPS survey 2013.

Both VET and HE improve an individuals' job prospects, but investments do not efficiently translate in positive employment outcomes. There is no doubt that VET and HE helps individuals to access jobs. Graduates from VET and, particularly, HE are more often formally employed than workers with primary or secondary general education. Nevertheless, 40 to 50 percent of them choose not to look for work or have been discouraged to participate in the labor market (Figure 5.2). Earnings of university graduates are on average significantly higher than those of less educated workers. The difference between the wages of VET graduates with those of workers with general secondary education are less pronounced, even though public expenditures per student are substantially higher in VET than in general (or higher) education (Figure 5.3).

Skill gaps and mismatches are pervasive: they concern firms across sectors, graduates from VET and HE, and various types of skills. Employer and labor force surveys provide insights in the scope and nature of the skill gaps and mismatches. Available data shows that skill constraints occur across economic sectors, and concern both blue and white collar workers. Employers report skill deficiencies related to workers' technical, socio-emotional and higher order cognitive skills, and lacking practical skills for VET and HE graduates alike. Firms also tend to report that skill deficiencies are larger for blue collar workers than for white collar workers, but that the skill gaps of white collar workers have a stronger negative impact on business operations. Of those, VET and HE graduates who are employed in the country, increasing shares report a mismatch between the education and their job, meaning that they are either over- or underqualified for their job, or employed in a field that does not correspond with their field of study. For example, the share of mismatched higher education graduates more than doubled from 19 percent to 43 percent between 2006 and 2015, with 28 percent reporting to be overeducated in the last year. In the same period, the share of mismatched secondary VET graduates rose from 29 percent to 56 percent; the share of VET graduates working in a field for which they did not train had risen to 20 percent by 2015.[34]

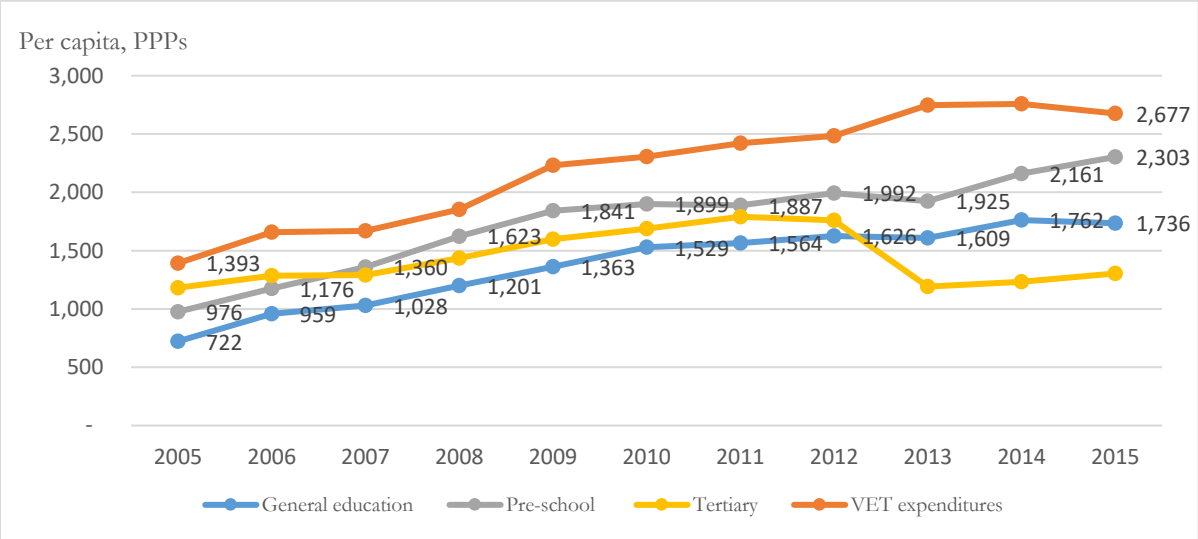
[34] Sources: Labor Market Forecast Survey (NEA), Labor Force Survey (NBS)

Figure 5.2. Composition of total working-age population (15+ years) across education groups (%), 2015



Source: Author's calculations based on Moldova LFS data.

Figure 5.3. Per Capita Expenditures on Education Sub-Sector (2005-2015)*



Source: Moldova BOOST database, NBS

* From 2013, funds that were generated by individual universities were no longer included in the budgetary data. Budget data for higher education before 2013 are thus not comparable with data from 2013 onwards.

5.2 Financing and external efficiency in Vocational Education and Training

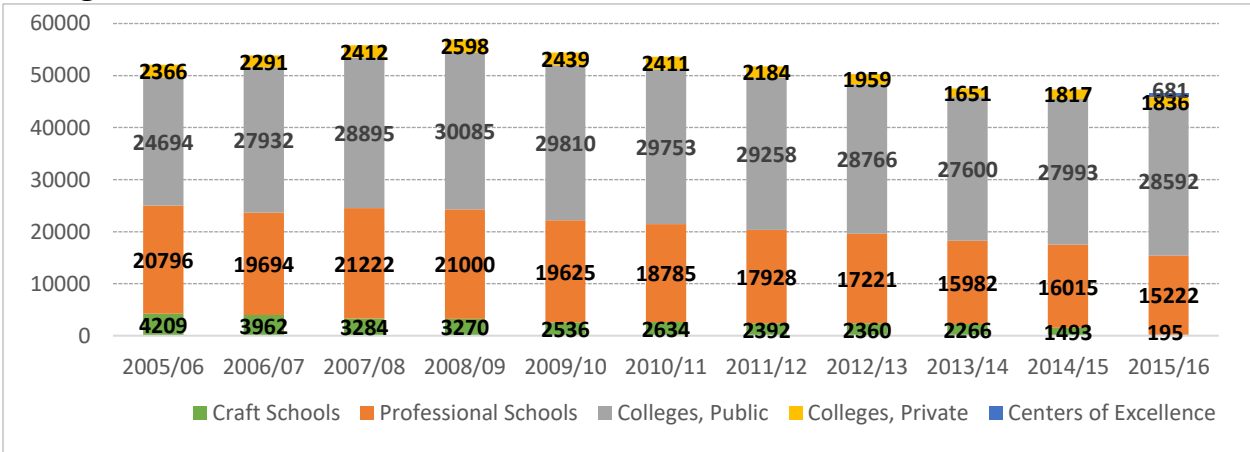
The allocation of annual budget to VET schools and vocational fields is envisaged to be guided by labor market considerations, but the mechanism in place is weak. In theory, the Ministry of Health, Labour, and Social Protection is envisaged to prepare a skill demand and supply analysis based on data from economic agents and VET institutions, and discuss this with the Ministry of Finance and the Ministry of Education, Culture and Research to allocate funding to schools and vocations according to needs. However, there does not appear to be a clear mechanism for analysis and decision making. Moreover, the "State Order" specifying the number of students for each vocation that schools should cater to, does not always correspond to school

capacity. Moreover, one may wonder whether decision making on skill needs and the offer of VET fields is not better made applying a longer-term perspective, rather than based on decisions that may change from year to year.

The government is in the process of introducing per-student financing in VET. With the support of a project financed by the European Union, the per-student financing is expected to be accompanied by increased school autonomy, like reforms that have been introduced in general education. The methodology used to determine the budget allocation includes a coefficient for the field of VET that is provided, thus allowing differentiation between fields based on for example the cost of training provision and the extent to which there are labor market shortages in particular specializations. Although VET providers were supposed to become self-governing from January 2017, the term 'autonomy' in the VET system is not yet fully clear, and many institutions have not moved to this model yet.

It is still unclear whether financing reforms will be sufficient to improve internal efficiency in VET, especially for professional schools. It is too early to assess the impact of the financing reforms in VET, but the implementation of similar reforms in general education (initiated several years earlier) provide relevant findings.[35] For example, the reforms can contribute to improving (internal) efficiency, but their positive impact may be off-set by developments that decrease efficiency, such as falling student numbers. This may be a particular risk for professional schools, which are experiencing a drastic reduction in student numbers, on contrast to the collegiums, where enrollment is remarkably stable in a context of overall demographic decline (Figure 5.4).

Figure 5.4. Number of students, 2005-2016



Source: National Bureau of Statistics

Changes in VET financing are part of a broader reform package aimed at promoting quality and relevant VET. Financing reforms, even when accompanied by increased autonomy, are unlikely to result in strong improvements in the quality and relevance of education provision. In general education, financing reforms were intended to promote school network optimization which was, in turn, expected to promote education quality through economies of scale of larger schools.

[35] For more information on the reforms in general education, see chapter 4 of this report, and the accompanying report: World Bank (2017), "Moldova Pre-School and General Education: Transitioning to a Decentralized Service Delivery Model."

Experience to date shows that particularly this last step (improving quality) requires additional interventions to address challenges related to, among others, school capacity and incentives, and to monitoring, accountability and quality assurance mechanisms. In VET, financing reforms are indeed a part of a larger package of interventions explicitly focused at increasing the quality of relevance of VET provision.[36]

There may be scope to improve the extent to which the financing mechanism contributes to providing quality and relevant VET. The coefficients and variables used in the formula to calculate budget allocations offers scope to promote the demand-responsiveness of VET, and this possibility might be further exploited in the future. Moreover, additional possibilities can be explored to increase the incentives for demand-responsive VET provisions that the financing mechanism provides. For example, the introduction of performance-based financing elements can be considered, using tracer studies (which are currently being piloted) or employer satisfaction surveys to determine external efficiency.

5.3 Financing and external efficiency in Higher Education

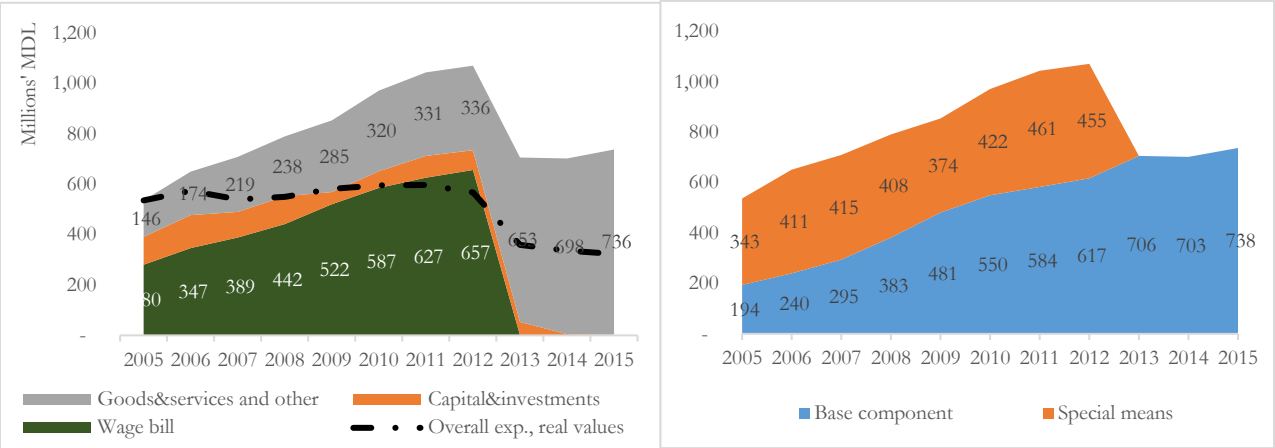
Universities have a high level of autonomy, including on financing. Universities decide, among others, on the organization and execution of educational and research processes; the fields of study to provide; tuition fees; curriculum content (in line with state educational standards); staff recruitment and management; property management; and resource generating activities. Public universities receive a block grant from the national government (private higher education provision receives no public resources). Among others due to a strong decline in student numbers, public expenditures per student have increased substantially in recent years. For example, national level allocations to universities in 2015 were over 9 percent higher than two years earlier, in 2013.

There appears to be no transparent formula determining the annual budget allocation to individual universities. While apparently related to the annual assignment of publicly funded student places (see the information on the 'admission plan' below), no approved and publicly available methodology is available highlighting how decision-making on the annual budget allocation to public universities is made.

No information is available on the level and nature of higher education expenditures, rendering it impossible to assess (internal) efficiency. Since 2013, information on revenue generation by higher education institutions is no longer reflected in the budget. In 2012, it comprised 42 percent of the overall budget of public universities (BOOST database). The share of own-revenue is assumed to still be significant, considering among others that 60 percent of students in public higher education institutions are tuition-paying (up from 48 percent in 2005). The nature of expenditures of universities is also unknown. The latest available data show that, before 2013, about 57 percent of the budget was spent on wages, followed by around 30 percent on goods and services (of which one third was allocated for scholarships) (see Figure 4.5).

[36] Supported by the European Union and various bilateral partners, ongoing VET reforms also include actions related to, among others, network optimization, quality assurance, partnerships with the private sector, and career guidance.

Figure 5.5. Government spending on higher education by budget type (left panel) and sources of expenditure financing over 2005-2015 (right panel).



The Education Code envisages a strong linkage between public financing and the *quality* of education, which does not yet occur in practice. In theory, universities are subject to an external quality assessment once every five years, in line with the methodology and criteria developed by the National Agency for Quality Assurance in Professional Education (NAQAPE). Based on the outcomes of these assessments, higher education institutions are to be ranked, and this ranking is to determine the number of places funded from the state budget for each university, and funds allocated for research and innovation. In 2016, the NAQAPE developed the methodology for external evaluations and classification, and it has commenced evaluation and accreditation processes. The intended process of using rankings to allocate funds is expected to play a role in the optimization of the network of (public) universities. The current number of 30 higher education institutions (of which 19 are public) for a student population of around 75,000 that is steadily declining, is considered too high.[37]

The current, and envisaged, financing mechanism does not include competition or performance-based funding elements that would provide incentives to universities to improve external efficiency. Elements that could be envisaged in this respect include financial incentives based on the job performance of university graduates, or that provide incentives for universities to collaborate with enterprises in, for example, curricula design or research activities. Such interventions are applied in various countries. For example, the graduate employment rate is a determining variable in the funding formula for higher education institutions to encourage them to take into account graduates' employment prospects in the Czech Republic, Finland, Hungary, Italy, Portugal, Romania, and Slovakia. Other alternatives include financing mechanisms to promote demand-based university-industry collaboration. Knowledge or innovation vouchers are simple and therefore easy to adopt, provided that firms have a minimum "absorptive capacity" towards university research, and that universities and public research institutions are willing to co-operate with industry. They have been used, among others, in the Netherlands, Ireland, the United Kingdom, Denmark, and parts of Germany, with promising results.

[37] By 2020, the number is expected to have fallen to less than 55,000 (see http://www.euniam.aau.dk/fileadmin/user_upload/EUniAM_WP4_Restructuring-HE-Moldova_v12.pdf)

In an effort to ensure that students study in fields with *relevance* for the labor market, the government determines each year the number of places in each field of study that public and private universities may offer. This 'admission plan' is based on analyses by the Ministry of Health, Labour, and Social Protection, and applies to public and private higher education institutions. For each public university in for each field of study separately, the admission plan determines how many publicly financed and how many tuition-based places may be offered. As private universities receive no public funding, the admission plan only determines the number of tuition-based places for each field. In addition to the question whether such procedure is an appropriate approach to promoting demand-responsive higher education, the labor market data and methodology used to determine the admission plan is opaque but likely insufficient (like is the case for TVET).

CHAPTER 6.
DIRECTIONS FOR POLICY REFORMS

The analyses presented in this report point to various conclusions and directions for policy reforms to improve the efficient and equitable provision of quality education services. The key reform areas are described below. In addition, the findings of this report highlight various areas that would merit further research to serve as a basis for further policy development. These aspects are described in Annex 1.

Sector-wide

1. **Ensure data consistency across key databases.** Sound analyses and evidence-based decision making in the realm of education are impeded by inconsistencies in key databases, including the EMIS Portal, NBS data, and personnel data from the Ministry of Finance. A reconciliation of these databases, based on an assessment and resolution of the underlying causes related to, for example, collection and processing, is recommended.

Pre-school education

2. **Develop and implement alternative measures to promote access to pre-school**. Substantial capital investments, especially in rural areas, have made a substantial and positive impact on pre-school enrollments. While justified due to the low initial infrastructure base, additional interventions to promote access can usefully be considered, especially those that are expected to be more cost efficient, and that promote access in urban areas, where there are clear signs of lacking capacity. The forthcoming education sector decentralization analysis recommends several areas to explore in this regard:[38]

    - *Make a sound assessment of where capacity expansion is needed, demand-side constraints are more pertinent, and optimization can be considered*. The most appropriate actions to promote access will differ across the country. In cities, capacity needs to grow, while in rural areas pre-schools often have over-capacity and addressing demand-side constraints may be more appropriate, while there may also be scope for network optimization.

    - *Introduce per-capita financing for pre-school*, to improve the efficiency of funding. Efforts to implement this reform are already under way, supported by the World Bank and UNICEF;

    - *Promote creative and cost-efficient solutions to expanding capacity*. In addition to capital investments, actions can include allocating unused spaces in (rural) primary schools for the provision of pre-school education; addressing regulatory constraints that prevent the private provision of pre-primary education; and reviewing zoning, sanitary and other

[38] World Bank (forthcoming), "Moldova Pre-School and General Education: Transitioning to a Decentralized Service Delivery Model."

regulations that unnecessarily complicate the creation of additional pre-school places in urban areas.

- *Take a gradual approach to expanding compulsory (ante-)pre-school for younger children*. While laudable in its intentions, expanding compulsory (ante-)pre-school to pupils from the age of 2 has cost implications that will overstretch the budget if it is introduced too quickly. A phased approach, starting with access for the older children and expanding to younger ones once capacity and financing allows, is appropriate to consider.

- *Consider moving the mandate for pre-school to raions*, to address constraints related to capacity, monitoring and consolidation. Fragmentation of the pre-school mandate to the 900 smallest administrations (villages and cities) complicates capacity building and monitoring, and likely reduces incentives for consolidating pre-schools across municipal boundaries. A move of the mandate to the raion level can help address these constraints.

- *Review human resource policies for staff in pre-schools.* To identify and address bottlenecks in recruitment, retention, and performance, a sound assessment could include regulations on required staffing numbers and qualifications; rules and practices for recruitment, retention, and promotion; remuneration; and continuous professional development. Since any reforms that raise expenses must go together with actions that save costs elsewhere, activities in this area should be carried out simultaneously with other reforms (such as optimization) that bring about efficiency gains

General education

3. **Step up efficiency and optimization efforts in general education, both in rural and urban areas, and ensure that efficiency gains are applied to improve the quality of education.** Optimization efforts are having effect, but their resulting efficiency gains are easily outpaced by the negative impact on efficiency of persistently falling student numbers. Continuing optimization efforts will this be needed for the foreseeable future, both in rural areas (where student numbers fall more rapidly), and in urban areas (where efficiency gains may be more easy to achieve). One way in which network optimization is having a positive impact on student performance is because students in larger schools have higher PISA schools. Optimization is also supposed to free up fiscal space to promote the equitable provision of quality education, and evidence that this is indeed happening is weak, considering that schools with the most disadvantaged students — despite slightly higher per-student expenditures — persistently achieve substantially lower scores on the national baccalaureate exam. The government, particularly through implementation of the MERP, is working to address this situation, including through improving monitoring and quality assurance, and building capacity at the school level. As is highlighted by the World Bank's decentralization analysis, these are highly relevant intervention areas, that could in the future be complemented with, among others, a clarification of mandates for general education beyond the existing Education Code and capacity strengthening of responsible local level authorities.[39]

[39] World Bank (forthcoming), "Moldova Pre-School and General Education: Transitioning to a Decentralized Service Delivery Model."

VET and Higher Education

4. **Adjust financing mechanisms for VET and Higher Education so that they promote transparency, relevance and efficiency.** The financing mechanisms for both VET and HE are opaque and are not an integral part of a well-established mechanism holding education and training providers accountable for ensuring that graduates acquire market-relevant skills in a cost-efficient manner. Nevertheless, international experience shows that financing mechanisms can play a substantial role in promoting internal and external efficiency. Financing reforms for VET are already under way with the introduction of per-capita financing. This is a good moment to further exploit the opportunities of the financial allocation mechanism to promote demand-responsiveness, for example by introducing performance-based elements relate to the relevance of skills acquired through VET (which would need to be accompanied by a sound mechanism to measure performance indicators). In higher education, the allocation mechanism for public funding does little to promote quality or relevance, nor do there appear to be systematic efforts to reform the financing mechanism to facilitate these aspects or to improve general efficiency, among others through network optimization. Substantial steps in this direction would be welcome, such as a sound assessment of the strengths and weaknesses of the current financing system (which would include the mechanism through which the number of annual study placements are determined), and the piloting and implementation of various reform options based on international best practices.

ANNEX 1. AREAS FOR FURTHER RESEARCH

The analyses carried out for this report have highlighted several areas on which knowledge gaps exist, and which would merit future analysis to strengthen the knowledge base that can serve to further strengthen Moldova's education the system. Identified areas include the following:

1. **Develop expenditure forecasts and scenarios based on projections of key indicators.** To aid future policy decisions, expenditure forecasts under various scenarios could provide essential information. Indicators on which projections could be based would include, among others, student numbers, and teacher numbers and salary levels (both for all levels and types of education). Expenditure forecasts would distinguish between capital and recurrent costs.

2. **Understand the causes of low net enrollment rates in primary and secondary education.** Although beyond the scope of this report, the net enrollment rates in primary (86.9%) and lower secondary (82.4%) education are low by international standards and merit further study. Enrollment in non-compulsory upper secondary education is also low and declining. Whether this is due to data issues (such as the overestimation of the size of the resident school-age population) or actual declines in enrollment among the population of appropriate age should be explored in depth and, if necessary, addressed through policy channels.

3. **Identify the determining factors of successful rationalization efforts.** Some raions have rationalized their school network and teaching force better than others. An understanding of the causes of differing performance across raions will open the way for replicating and scaling-up successful approaches across the country.

4. **Enhance the understanding on the linkages between optimization and the quality and equity of education.** Network optimization brings efficiency gains, but these are not necessarily translated in to improved quality and equity of education. An analysis of the key elements to ensure that efficiency gains result in improved education performance, especially for students from lower socio-economic backgrounds, would facilitate making sound evidence-based policy decisions in the future. The forthcoming education sector decentralization analysis, for example, points to the need to strengthen national-level monitoring and support mechanisms, combined with training at lower level administrations and in schools, to alleviate constraints across the board related to incentives and capacity.

5. **Expand the overall knowledge base on tertiary education financing and outcomes.** A review of funding and performance of tertiary education institutions could contribute greatly to developing well-informed policy reforms that would contribute to the efficient allocation of both public and private financing to fund universities. The opaque public funding mechanism combined with a lack of available information on the performance of universities and faculties, prevent the government from making well-informed decisions to promote the efficient delivery of quality and relevant higher education, and prevent students and their families to make well-informed choices on study and universities. In addition, a review of the mechanism to subsidize particular student places could result in recommendations to promote equitable access to higher education in a more efficient manner.

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