

Lessons Learned from the Coronavirus Pandemic and Possible Changes to Funding Mechanisms in Higher Education

T. L. Klyachko, A. V. Novoseltsev, E. V. Odoevskaya,
S. G. Sinelnikov-Murylev

Received in
October 2020

Tatyana Klyachko, Doctor of Sciences in Economics, Director of the Center for Life-long Learning Economics, Institute of Applied Economic Research, Russian Presidential Academy of National Economy and Public Administration (RANEPA), Professor, National Research University Higher School of Economics. Address: Bld. 1, 82 Vernadskogo Ave, 119571 Moscow, Russian Federation. Email: tlk@ranepa.ru (Corresponding author)

Alexey Novoseltsev, Vice Rector, National Research University Higher School of Economics. Address: 11 Pokrovsky Blvd, 109028 Moscow, Russian Federation. Email: anovoseltsev@hse.ru

Elena Odoevskaya, Senior Assistant to Rector, National Research University Higher School of Economics. Address: 11 Pokrovsky Blvd, 109028 Moscow, Russian Federation. Email: ekirilyuk@hse.ru

Sergey Sinelnikov-Murylev, Doctor of Sciences in Economics, Professor, Rector, Russian Foreign Trade Academy of the Ministry of Economic Development of the Russian Federation. Address: 6A Vorobyevskoe Hwy, 119285 Moscow, Russian Federation. Email: sinel@vavt.ru

Abstract This paper explores the organizational and economic response of higher education to the coronavirus pandemic and the emergency transition to distance learning. We analyze the situation across different categories of universities as well as how they respond to campus closures and to the urgent transition to remote student-faculty interactions in learning. We also assess the education system's need for additional public funding to promote digital learning environments, foster professional development of faculty members, and create job opportunities for students who have lost their jobs that paid their education and/or accommodation. Improvement scenarios are proposed for the funding mechanisms underlying the fulfillment of government contracts for education and science, which have been applied since 2013.

Keywords higher education system, distance learning, economic effects of the pandemic on universities, funding mechanisms, government contract, economic resilience of universities.

For citing Klyachko T. L., Novoseltsev A. V., Odoevskaya E. V., Sinelnikov-Murylev S. G. (2021) Uroki pandemii koronavirusa i vozmozhnoe izmenenie mekhanizma finansovogo obespecheniya deyatel'nosti vuzov [Lessons Learned from the Coronavirus Pandemic and Possible Changes to Funding Mechanisms in Higher Education]. *Voprosy obrazovaniya / Educational Studies Moscow*, no 1, pp. 8–30. <https://doi.org/10.17323/1814-9545-2021-1-8-30>

The SARS-CoV-2 pandemic changed the situation in higher education dramatically, affecting the majority of its mechanisms, including funding mechanisms underlying the fulfillment of government contracts for education and science by universities [Abankina et al. 2010; Abankina, Abankina, Filatova 2016; Klyachko, Mau 2015a; 2015b]. It also accelerated the development of digital learning environments in higher education institutions [Center for Strategic Research, Higher School of Economics 2018; Klyachko, Sinelnikov-Murylev 2018; Platónova, Kuzminov, Froumin 2019; OECD2020; Gouëdard, Pont, Viennet 2020], extending distance learning practices from isolated courses to entire Bachelor's, Specialist's, and Master's degree programs [Center for Strategic Research, Higher School of Economics 2018; Platónova, Kuzminov, Froumin 2019; DeBrock 2018]. Public funding for other components of education also joined the agenda, as research departments and administrative structures of universities had to embrace the new format [Abankina, Abankina, Filatova 2016; Center for Strategic Research, Higher School of Economics 2018; Klyachko, Sinelnikov-Murylev 2012].

The most important change, however, affected faculty members, regardless of whether they gave lectures, seminars, or lab classes [Barannikov et al. 2020]. The concept of student-teacher ratio was no longer relevant [Klyachko, Sinelnikov-Murylev 2018; DeBrock 2018], the boundaries between student groups became blurred, and teacher workloads had to be revised because lectures and tutorials in Zoom, Skype, Webinar, or MSTeams could be joined by students and learners from other higher education institutions [DeBrock 2018; Barannikov et al. 2020]. A prototype of virtual academic mobility for students and professors emerged, promoting inter-university networks and requiring new approaches to curriculum design and implementation as well as to public and private funding [Klyachko, Mau 2015a; 2015b]. All the innovations mentioned should be conceptualized within the framework of creating a higher education funding mechanism to be used not only and not so much in emergency situations like pandemics but rather when elaborating new blended formats of higher education development.

This paper explores the changes in higher education brought by the COVID-19 pandemic and the organizational and economic transformations (improvement of the funding mechanism) that are required to promote the system's efficiency and development.

**The New
Situation in
Higher Education**

Emergency transition to distance learning that took place in Russia and other countries in spring and fall 2020 due to the coronavirus pandemic needs to be conceptualized from both organizational and economic perspectives. On the one hand, it has become a new experience for universities; on the other hand, universities have to make progress amidst a dramatically changed, unsettled environment. Changes are

going to be both internal and external, as investments in higher education will hardly be the same as before.

Short-term organizational and economic issues at the beginning of the pandemic were caused by the imperative to ensure financial stability of universities in the face of cuts expected at least in private investments, an increase in contingency expenses on the transition to distance learning, and a drop in the limits of spending determined by the ruble exchange rate.

The COVID-19 pandemic and the economic crisis that it provoked have tangible financial and economic consequences for universities. Obviously, it will take a while to restore the level of non-public revenues. Furthermore, the lack of investment in faculty adaptation to new working conditions and technologies may reduce workforce capacity and degrade the quality of teaching. Finally, the recent-years' standard level of public spending on government-funded students will be insufficient to tackle the new problems [Center for Strategic Research, Higher School of Economics 2018].

A shortage of resources for higher education development during the pandemic and in the foreseeable post-pandemic future is not specific to Russia: similar processes have been affecting universities in many developed as well as developing economies¹.

**Increased
University
Differentiation
Following the
Transition
to Distance
Learning**

Nearly all universities in Russia switched to distance learning during the pandemic. However, institutions differed greatly in their organizational approaches, distance learning technologies, and, consequently, the quality of distance instruction. As of the date of publication of this article, those differences persist.

A number of universities, mostly the leading ones, organized distance learning by rapidly enhancing the opportunities of digital learning environments (DLE) and at the same time strongly intensifying the use of fully online courses in the learning process. Faculty members at such universities started sharing study materials online and giving online lectures and webinars. They used (and continue using) such videoconferencing platforms as Moodle, Zoom, MSTeams, Webinar, and some others for their classes. Universities that moved 100% of their activities online accelerated sharply the development of modern online courses and online exam proctoring software.

Many institutions without advanced DLEs basically switched to extramural education instead of distance learning, their students receiving and submitting assignments by email.

The major problems faced by universities in their transition to distance learning included the lack of necessary infrastructure and

¹ See, for instance, <https://russiancouncil.ru/analytics-and-comments/analytics/covid-19-chto-budet-esli-otpraviv-vsekh-domoy/> or <https://knife.media/universities-and-covid/>

software, the need to adapt courses to the distance learning format, underqualified faculty with no remote teaching experience, and unavailability of hardware and technology required for distance learning (personal computers and/or laptops, tablets, broadband access, and Wi-Fi connection) among some students and instructors.

The leading universities, accounting for about 15–20% of all higher education institutions in Russia, solved the problems described above quite quickly. They promptly built up the necessary hardware infrastructure, improved their DLE services, and ensured mass installation of software to support distance learning. They were able to provide students and faculty with personal computers, laptops, and scanners for home use. In addition, instructors were granted subsidies to modernize their home computers (laptops, tablets) and update the software required for distance learning. Such universities also promoted IT volunteering among students and experts who assisted instructors in setting up and using DLEs and solved any emerging problems. Instructional guidelines and recommendations were issued to facilitate faculty adaptation to the new conditions, and IT departments helped faculty members with distance learning classes (platforms, schedules, syllabus, deadlines, development of study materials, etc.) and communication platforms such as Zoom, MSTeams, LMS, and others.

It became clear very soon that even DLEs created by the leading universities could not support the entire learning process as their capacity was not enough to handle thousands of concurrent users. Prior to the mass transition to distance learning, this technology was used to implement a small number of courses or modules. According to statistical data collected using the form FSN No.VPO-2, only 58.7% of Russian universities had experience of using distance learning technology in 2019. To organize distance learning at the same level as traditional classroom-based learning, universities will have to spend significant extra sums of money in the nearest future on equipment, development and procurement of software, training for faculty and administrators, production of online courses required for the learning process or adaptation of some existing MOOCs, organization of webinars, etc. Meanwhile, faculty workload in distance learning is currently not lower but considerably higher than in classroom-based instruction, as faculty members are required to learn new skills, prepare new study material and present it in a different way.

Distance learning in every course is nearly impossible to organize in practice-oriented (medical, agricultural, transport) universities and art schools as well as in most vocational schools that are part of universities. For such institutions, transition to distance learning is the most challenging and may have a negative impact on their activities.

This way, the pandemic increased the gap in educational quality between the leading universities, which switched to distance learning

without significant losses in quality, and all the other institutions of higher education. In addition, it accelerated the differentiation of universities by resource and technology infrastructure.

Universities have to invest heavily in fulfilling their socioeconomic function of preventing mass youth unemployment during the pandemic. As the pandemic and the economic downturn continue, the higher education system may have to increase student enrollment essentially in Bachelor's, Specialist's, Master's, and doctoral programs, first of all for government-funded students. These measures are socially and economically justified: not only do they reduce youth unemployment but they also make it possible to preserve and expand human capital, thereby creating the potential for an effective recovery from the economic crisis after the pandemic is over. In 2020, enrollment to government-funded programs increased by 33,000 students. In addition, universities had to create jobs for students who became unable, for various reasons, to pay for their education or associated expenses (household income declined; students lost their jobs and earnings that covered their education- and accommodation-related expenses in full or in part) as well as assist their graduates in finding jobs and internships.

The pandemic exposed the digital divide: the year 2020 revealed that many students from low-income families had no hardware required for distance learning. Digital inequality contributes to the stratification of Russian households by income, reducing the role of higher education as a social elevator in modern society. To a certain extent, this problem is solved by employing students at the university, yet other measures of support are required as well, such as providing students from socially disadvantaged backgrounds with personal digital devices (laptops, tablets, etc.) and financial allowances to pay for accommodation and academic mobility. In the new context, preferential student loans as a long-term support initiative for such student categories have been put back on the agenda.

Accelerated implementation of today's distance learning model may increase the load on universities, as they will be able to teach more students than before. In this case, a specific range of measures will have to be introduced in higher education. First of all, virtual student mobility and remote inter-university cooperation should be ensured along with increasing admission quotas for Bachelor's and Master's degree applicants. Students should be allowed to study at a distance during the entire academic term or even year with universities providing fully online programs. Students should also be allowed to choose specific courses (modules) at such universities with subsequent transfer of course (module) credits to the institution at which they are enrolled or admitted. Given the situation, virtual mobility should not involve transfer of funds from the student's institution to the host university providing fully distance learning. Furthermore, a national learning management system should be developed to provide:

- Individualized instruction
- Assessment of faculty members and their participation in academic mobility programs (involvement of faculty members in course development, assistance to leading university, tutoring, etc.)
- A funding mechanism to support academic mobility of students and faculty, including virtual mobility

Obviously, promotion of virtual student mobility will increase faculty workload at universities offering fully distance learning programs, since the number of students per faculty member will increase. Besides, the competition for strong teachers will grow up. This will make it imperative to create a national platform of open online courses, invite faculty members from universities losing their students to assist instructors at universities with increasing enrollment in reviewing homework and tests, preparing presentations and assignments, and tutoring. At the same time, professional development opportunities should be provided for such faculty members. All these measures are critical for maintaining social stability in regions as the pandemic and the economic crisis carry on.

**Achieving
Financial Stability
of the Higher
Education Sector
and Creating a
New Financial
Model**

The COVID-19 pandemic will have educational as well as economic effects on the higher education sector. Advancement of distance, online, and blended learning technology will require changes to the management and financial models further into the pandemic and during the recovery period.

According to the federal budget of Russia for 2020 and the planned budget for 2021–2022, an increase in the number of government-funded students would reduce public spending per student, adjusted for inflation, even without the coronavirus pandemic. With the pandemic, public spending per student may decline even further. Besides, a possible drop in the number of self-funded students may lead to reductions in tuition fees, worsening the situation of many public and private institutions. Distance learning is often regarded by students as inferior in quality to traditional classroom-based learning, which is fraught with demands to reimburse part of tuition fees and reduce tuition for students in the second and subsequent years of study. Petitions with such demands are filed by students in most Western universities [Klyachko, Sinelnikov-Murylev 2018; 2012].

Due to a sharp economic slowdown, financial and operational stability of universities should be a priority. A lot of them may lose a substantial portion of their revenues from non-public sources. Reasons for this may include the decrease in self-funded student enrollment levels in 2020 and the subsequent years following the dramatic reduction in effective demand for education on a fee-paying basis caused by increasing uncertainty and declining incomes; a reduction in international enrollments due to travel restrictions; growing tuition debts

caused by, among other things, the loss of jobs by most students who combined work and study in the shrinking labor market; cutbacks (suspension) of corporate and regional public funding for research and expert evaluations, which will entail stagnation of or reduction in university revenues from contract research and innovation activities within the next 2–3 years. At the same time, a number of leading universities increased their number of self-funded students and revenues despite keeping their tuition fees at the level of 2019, analysis of the 2020 enrollment campaign shows.

Universities that will lose some of their private investments will have to cut salaries, which will lead to high social tension among faculty members. There is an actual risk of non-achieving the key indicators stipulated by the Order of the President of the Russian Federation No. 597 of May 7, 2012. To this end, it makes sense to maintain the size of subsidies for the fulfillment of government contracts in 2021 regardless of the risks of non-fulfillment in cases where contracts are not fulfilled for reasons such as failure to meet international student enrollment quotas or suspension of research caused by the lack of access to research equipment during the lockdown. Furthermore, conditions should be created for adopting federal initiatives to compensate for the shortfalls in universities' non-public revenues.

Financial stability of universities could be achieved with grants for dedicated projects designed to promote technology modernization and human resource development, project-based forms of learning, participation in regional development projects, exploratory research and publications, integration with industrial partners and Russian Academy of Sciences institutes, etc. Estimated funding for this measure is about 25 bln rubles.

Stabilization of universities' financial situation could also be promoted by allowing them to apply the effective income tax relief. Currently, most universities cannot apply the zero percent income tax rate because the fraction of their income not accounted as gains from educational and research activities, in terms of the relevant list approved by the Government of the Russian Federation, exceeds 10%. In particular, this list does not include such activities as experimental implementation, expert analytics, or innovative research that make an inherent part of universities' research and educational activities. Not only does the reduction in educational institutions' non-public revenues worsen their overall financial situation, but it also entails changes to the structure of such revenues, rendering the application of the effective income tax relief essentially impossible. An adequate measure would be to extend the list of activities classified as core for calculating the tax exemption thresholds by including related activities as well, primarily those associated with intellectual property commercialization. Furthermore, the existing threshold should be lowered from 90 to 75%. This measure alone will free up at least 5 bln rubles of universities' funds.

To stabilize the financial situation of universities, it would make sense to introduce a look-ahead schedule of subsidies for the fulfillment of government contracts. This measure would help universities that have temporary cash gaps while remaining financially stable overall.

In addition to the measures described above, financial stabilization of universities at risk may be achieved tactically by providing them lump-sum financial aid from the federal budget in the amount sufficient to cover the emergency pandemic-related expenses (cleaning and disinfection costs, costs associated with infrastructure management during the idling period, recovery of the costs of remote teaching, etc.), allowing them to regain solvency and avoid cash gaps.

At the same time, restructuring is unavoidable in a number of cases. Such measures can be considered viable by the founding members if the university has lost its financial stability and the founding members do not agree with the bailout plan proposed by the management.

Distance Learning Technology and Online Education: Development and Funding

Development of distance learning technology and online education is impossible without improving the information and communication infrastructure of universities, development (or procurement) of dedicated software, centralized (for all universities) development of new software solutions, and installment of compatible DLE systems across universities. Heavy investments will be required into the accelerated advancement of DLEs in universities with low levels of digitization, IT staff expansion, and emergency expansion of broadband and 5G networks to all regions. All of these measures will be critical for the advancement of not only the higher education sector but also education as a whole, giving a tangible impetus to economic activities across the regions of Russia.

We estimate the overall amount of public funds required for the accelerated development of DLEs and open-access digital platforms to be 19 and 11 bln rubles, respectively, in the academic year 2020/21. Provision of students and instructors with personal computers and laptops (tablets) will require another 15 bln rubles (given the projected increase in the number of government-funded students).

Total costs of accelerated DLE development and implementation in universities can thus be estimated at 35 bln rubles—this is the amount to be added to expenditures under the Digital Economics national project.

Maintaining Access to Higher Education and Promoting Student Employment

In order to keep social protection programs and ensure financial stability of educational institutions, a set of public support measures is needed:

- Gradually raise the quotas for government-funded students in Bachelor's, Specialist's, and Master's degree programs

- Improve access to subsidized student loans
- Develop and implement student employment promotion initiatives
- Provide social benefits for students

Let us dwell on these four measures in more detail. Raising the quotas for government-funded students may become one of the key forms of maintaining access to higher education for young people. In 2020, target enrollment in government-funded programs increased by more than 33,000 students. The targets are scheduled to grow even higher, which may contribute to the stabilization of social situation in regions of Russia, in particular during the post-pandemic period.

Access to subsidized student loans can be improved by reducing the effective interest rate on such loans from 8.9 to 3% per annum (or 1/2 of the Central Bank's discount rate) and extending the repayment period from 10 to 15 years after graduation. This measure will solve payment issues for 15% of self-funded students (100,000 students yearly). Its actualization requires 11 bln rubles of federal funds in 2020–2022.

The government has already embarked on implementing this measure by sharply improving the student loan terms and conditions: the Resolution of the Government of the Russian Federation No. 1256 “On Amending the Rules of Subsidizing Student Loans” of August 19, 2020², shrinks the interest rate on student loans to 3% and extends the loan repayment period and the grace period, just as it was proposed. As a result, we already observe a snowballing growth in the number of student loans granted (Sberbank reports over 3,000 new loans in one month, which is nearly five times more than the same period last year).

Initiatives to promote employment of students at the universities where they are enrolled should be funded from the federal budget in 2021 as an effective measure to maintain student employment and at the same time stimulate effective demand. Remuneration should be equal to at least the living wage in the respective region (at least twice as much for jobs requiring high qualifications). Assuming that this measure affects up to 120,000 students, the required amount of federal funds in 2020–2021 is estimated at about 20 bln rubles.

The ongoing economic slowdown is projected to reduce the number of jobs and job openings in the labor market dramatically (by up to 15% of the employment level), escalating the competition and making it objectively unsurpassable for the majority of 2020 and 2021 graduates who won't be able to obtain employment after graduation. Paid internships are one of the effective methods of introducing graduates to the labor market. This measure is implemented via grants to businesses hiring final-year students for six-month internships in relevant fields of study (compensation of up to 90% of remuneration for student interns,

² <http://publication.pravo.gov.ru/Document/View/0001202008250021>

at least twice the living wage per student). Provided that this initiative is applied to 25% of 2021 graduates (around 140,000 students), it will require about 28 bln rubles from the federal budget in 2021.

Declining household incomes will essentially increase the number of students eligible for bursaries, entailing deficiency of scholarship funds granted to universities from the federal budget. As of now, the total level of scholarship subsidies should be increased by 9.5 bln rubles per year to enable universities to keep offering bursaries in the established amount with due regard to the number of beneficiaries.

The overall costs of supporting the youth by improving access to higher education to prevent mass youth unemployment are estimated at 165 bln rubles at the maximum, at least for the academic year 2020/21. As long as the economy recovers from the pandemic, these costs will go down.

Expenses associated with implementing the measures described above could be reduced to some extent by inviting Master's degree, doctoral, and senior Specialist's degree students to work as teacher assistants and tutors. This way, students will also benefit by getting jobs that are socially attractive amidst an economic crisis.

**Funding for
Initiatives
Designed
to Support
Universities or
Higher Education
Activities**

Additional funding will be required for the following initiatives:

- *Design of development programs* for all universities, especially financially challenged and low-resource institutions if their programs are indispensable for the country's socioeconomic development. Public funds required for this initiative are estimated at 1–1.5 bln rubles
- *Expansion of basic and applied research in all universities*; promotion of the scientific progress according to theme-based roadmaps; purchase of educational, laboratory, and research equipment (on average 50 to 150 mln rubles per institution, or at least 10 bln rubles per 200 institutions)
- *Development of online courses by the leading universities for use by all institutions* (the costs of developing a single fully online course is estimated at 1.2 mln rubles; 6 bln rubles will be required to develop 5,000 courses)
- Centralized procurement of digital libraries of books and academic journals at the national level and provision of free access to them for all universities, whether public or private (at least 3 bln rubles per year)
- *Professional development for faculty members*, particularly distance learning technology training programs (about 700 mln rubles extra)
- Training and professional development of university management teams by the leading universities (about 300 mln rubles extra)
- Engagement of faculty members from other universities in research and development projects administered by the leading uni-

versities (on average 10 mln rubles per institution, or at least 2 bln rubles per 200 institutions)

- *Development of a modern life learning system by the leading universities*, including promotion of boarding schools for highly gifted students and lyceums for high school students, including distance learning lyceums; selection of talented high school graduates through subject Olympiads; and selection of graduates from Bachelor's degree programs (including international students who are graduates from foreign programs) to Master's degree programs through dedicated Olympiads (1–1.5 bln rubles per year for 3–5 boarding schools and yearly Olympiads).

The overall amount of additional public funding for the initiatives listed above is estimated at 24–25 bln rubles.

The entire package of support measures to address the crisis in 2020/2021 will require approximately 165–170 bln rubles, according to our estimates.

Modifying the Per Capita Funding Model

The new situation created by the pandemic brought a lot of problems in higher education, but it also revealed the necessary directions of development implying the use of distance learning technology. Heavy investments are going to be required in university infrastructure, faculty professional development, and elimination of the digital divide among students as well as instructors. However, allocation of extra funds from the federal budget will not be enough: the existing university funding mechanism should undergo a major change.

Per capita university funding has been applied in Russia since 2003 with a purpose to create a quasi-market of higher education and quasi-incentives to motivate institutions for efficiency improvement [Klyachko, Sinelnikov-Murylev 2012].

In this model, the university is awarded, on a competitive basis, a government contract, a subsidy for its implementation, calculated based on per capita spending and including almost all operating expenses (payment for utility services, repairs costs, etc.), and a subsidy for other purposes, including overhaul and purchase of equipment and software. Construction of new university buildings is financed under the Federal Targeted Investment Program.

This approach to public funding in higher education ignores the fact that education is a public good that is highly differentiated because every university has a niche and a market power of its own [Klyachko, Sinelnikov-Murylev 2018; 2012; Belyakov, Klyachko 2013, Klyachko, Mau 2015a; 2015b].

Higher education has been growing more and more individualized over the recent decades, and universities come to differ greatly in the complexity of their programs. At the same time, far not all the university expenses depend on the size of enrollment, so per capita fund-

ing for expenditures unaffected by the number of government-funded students results in a significant imbalance in financing [Klyachko, Sinelnikov-Murylev 2012].

The use of economic levers in an attempt to force weak universities out of the market only degrades the quality of education and leads to inefficient use of state-owned assets [Klyachko, Sinelnikov-Murylev 2018; 2012]. If professionals trained by a weak university are demanded by the economy and society, such university should be supported (perhaps by replacing the leadership and faculty)—and if they are not, the university should be shut down [Klyachko, Sinelnikov-Murylev 2018].

**The Main
Directions for
Reforming the
Model of Public
Funding in Higher
Education**

The need for a budget maneuver to increase public funding for university infrastructure development has been discussed by the professional community over the past 10–15 years. The issue has gained even more ground with the outbreak of the COVID-19 pandemic, as the university funding model was undergoing a reformation. First of all, universities' demand for public funds became even more differentiated; second, as distance learning technology advances and will find ever broader applications even in the post-pandemic period, universities' expenses will become less and less contingent on the number of students enrolled [Abankina, Abankina, Filatova 2016; Center for Strategic Research, Higher School of Economics 2018].

The key fork in the road of reforming the model of public funding in higher education occurs when it comes to the proportions of government contract subsidy and subsidy for other purposes in the total amount of public funds allocated to universities. Accordingly, two major scenarios to modify the existing funding mechanism are proposed.

Scenario 1. The percentage of government contract subsidy is reduced, and standard per capita funding rates apply only to expenses directly associated with providing educational services, primarily the number of students enrolled. Such expenses are mostly represented by faculty remuneration, including an increase in the number of teacher assistants and tutors interacting with students remotely.

Meanwhile, the proportion of subsidy for other purposes is raised to cover all expenses that are not directly associated with student population, including those on the development and maintenance of DLEs, creation of online courses, development of campus infrastructure (except construction of permanent buildings), improvement of access to study and laboratory equipment, etc.

Scenario 2. The proportion of government contract subsidy is increased as per capita funding is applied to more and more university expenses, including those related to DLE development; correspondingly, the proportion of subsidy for other purposes is reduced.

**Key Measures
Implied by the
Two Scenarios
of Funding
Mechanism
Modification**

Scenario 1 implies that target enrollment is determined for every university by the Ministry of Science and Higher Education with the participation of founding members (on a non-competitive basis) for three years based on a sliding scale (competition for the distribution of a certain number of government-funded places is held among private universities only); the basic public funding standards apply to variable costs only (few components: salary, social payments, expenses on textbooks and other study materials including digital resources); all the other expenses of universities, account being taken of their newly emerged needs, are financed using the calculation of standard costs by the type of expenditure (utility services, repair works, DLE development, purchase of expendable supplies, expenses on academic exchange (including virtual programs), transport and communications, and other expenses); university development programs are financed based on cost calculation by item of expenditure. University development program indicators are negotiated with the founding members of universities; universities are allowed to change their business plan at their own discretion and redistribute their expenses among the items of expenditure depending on the economic context, if necessary; the size of tuition for self-funded students is determined by the university, the “at least the standard rate for a government-funded student” restriction being abolished.

Methods of calculating the per capita funding standards should be changed. The new model of public funding in higher education suggests keeping the basic standard only for remuneration of faculty and other staff directly involved in providing public services as well as expenses on the purchase of study literature, periodicals, publishing and printing services, and electronic publications directly related to the provision of the relevant public services.

In the new model, the basic standard of faculty payroll costs (including taxes) should be uniform within every level of university education, the lowest one being in Bachelor's and Specialist's degree programs, 10% higher in Master's degree programs, 30% higher in doctoral programs, and 25% higher in postdoctoral programs, percentages being taken from the previous level.

All the other components in the structure of basic standard expenses should be transferred to the subsidy for other purposes, which is calculated with regard to the current prices of goods and services in the regions of Russia.

Expenses on salaries (including taxes) to staff members who are not directly involved in providing public educational services are also estimated on the basis of cost calculation, as administrative staff salaries are contingent on maintenance of buildings and facilities, organization of repair and overhaul works, etc.

Expenses on salaries (including taxes) to teaching assistants and auxiliary personnel are tied to the basic standard of faculty payroll

costs, since these employees ensure organizational support of the learning process.

All the existing sectoral adjustment coefficients should be preserved, but coefficients of university effectiveness may be changed.

The part-time and extramural learning coefficients should be raised, considering that these formats will be gradually converted to distance learning based on network forms of learning organization: the part-time learning adjustment coefficient should increase from 0.25 to 0.5 in 2021–2022, and the extramural learning adjustment coefficient should increase from 0.1 to 0.15 if the proportion of extramural students reaches 20% in 2021, and to 0.25 if the percentage of distance learning goes up to 30% in 2022–2023.

Of the two existing regional adjustment coefficients applied to faculty remuneration, only the one that makes allowances for average regional salaries should be preserved for public services in higher education (determined for every region of Russia), irrespective of the office to which the university is subordinate.

The per capita funding standards calculated as described above along with normalized annual average enrollment determine the total amount of the government contract subsidy.

Maintenance of a public university's facilities and resources, including repair and overhaul works, purchase of equipment, etc., is performed based on cost calculation and is included in the subsidy for other purposes because the property of such universities belongs to the state. All property and land taxes are also accounted to the subsidy for other purposes without making allowances for the gainful activity coefficient, which should be cancelled.

The rest of the subsidy for other purposes, as before, should go to scholarships.

Calculation of funding for university development programs makes allowances for efficiency of previous development programs or some of their components. Funds are provided to universities as a subsidy for capital investments (within the investment part of the development program) or are included in the subsidy for other purposes.

Scenario 2 suggests fewer changes to the existing funding mechanism and implies the following set of measures:

- Expand the use of sectoral coefficients to all universities (as of now, they only apply to universities entitled to develop their own learning standards pursuant to Article 11 of the Federal Law "On Education in the Russian Federation")
- Enable universities to apply for higher funding standards as a reward for high efficiency and achievements in education and science. Thereby, transparent and powerful incentives will be created to motivate every university to improve their strategies, increase their human resource potential, and foster technology innovation

- Fix the funding standards for the whole period of study instead of calculating them yearly for the whole student population—in the same way as total tuition is fixed by universities for the whole period of study under the Law on Education. In particular, this measure will smooth the transition to higher funding standards when quality coefficients come to be applied by all universities
- Adapt the structure of education funding standards to modern educational technology, i. e. consider the costs of providing IT support services, developing and maintaining digital learning resources (in particular through amortization), and increasing the proportion of the payroll budget for teaching assistants and auxiliary personnel (including organizational and methodological support of on-line processes).

Along with improving the funding standards that maintain the essential functioning of the system of higher education, the mechanisms of project-based and special-purpose funding should be worked out to provide a targeted response to specific challenges in the evolution of the education sector, such as further reorganization of university property by developing the standards of property allocation and optimizing the range of property assets that are not used in universities' core activities; retention of scientists with internationally recognized research findings in Russia by compensating for the universities' expenses on creating competitive working conditions for research; providing accommodation to non-resident and international students by integrating a residence hall construction program and civilized mechanisms of assisting students in the rental housing market with due regard to specific contexts. In addition, support should be given to network forms of education programs and student mobility, in particular by removing the regulatory and economic barriers to inter-university and inter-sectoral cooperation in higher education. Furthermore, a motivation-based model of student scholarships should be elaborated to create effective personal incentives for students. Scholarships should enable undergraduate and postgraduate students to spend their free time on self-improvement instead of searching for ways of providing for themselves and their young families. Bringing student scholarships to the level of average starting salaries in the relevant field will broaden learning opportunities for students. Another advisable measure would be experimental integration of targeted funding mechanisms for public educational services based on social certification. The experiment should begin with offering government-funded places to prize winners of the All-Russian School Olympiad on the basis of such certificates.

Both scenarios of funding mechanism modification involve financial measures to promote research in higher education. The key incentives should be the following:

- *Introduce long-term research programs as a form of planning to fulfill the government contract.* Such programs should be developed for the period of six years with prolongation upon achieving the target indicators. The price of government contracts for university research should reach at least 50% of the price of government contracts for education by 2024, and at least 100% by 2030. Allocation of government contract subsidies among universities and national research institutes should be performed on a competitive basis as well as under the Strategic Academic Leadership Program. Applications and research findings should be subject to independent evaluation by experts from the national panel of experts
- *Launch a new competition for institutional grants* for the development of universities' scientific potential. According to our estimates, each grant should be at least 100 mln rubles and should be provided for a period of at least five years. The competition should be administered by the Russian Science Foundation
- *Add research team support tools* to the structure of RFBR³ or RSF⁴ grants (depending on whether RFBR will be merged with RSF). Grants should be at least 10 mln rubles and should be provided for at least three years, and the proportion of grants in the total budget of the National Program for Scientific and Technological Development should be increased to 12% (from 6.5% in 2020)
- *Attract and retain scientists with internationally recognized research findings.* For this purpose, universities (and research institutes) should be compensated up to 50% of their researcher payroll costs in Moscow and Saint Petersburg, and up to 100% of such expenses in regions. In total, compensation for expenses on salaries to 1,500 internationally recognized scholars is suggested;
- *Implement a support program for young researchers* including Russian postgraduates.

It would also make sense to add equipment for new and promising research areas to the existing equipment upgrade program, thereby also promoting the development of research equipment in Russia. Programs for scientific, technological, and academic cooperation of universities with corporations, regional clusters, and specialized research institutes should be prolonged. At the same time, innovative entrepreneurship should be supported and encouraged as an independent mission.

Both scenarios of modifying the university funding mechanism imply that the new model will feature a flexible combination of per capita funding for educational services and project-based and special-purpose funding for development and reformation. Such an approach is

RUSSIAⁿ Foundation for Basic Research
RUSSIAⁿ Science Foundation

expected to ensure a breakthrough growth in higher education quality within acceptable budget constraints.

Conclusion The COVID-19 pandemic changed the format of learning in higher education and revealed a considerable differentiation of universities by the quality of digital learning environment and the level of digital infrastructure development, exposing digital inequality among both students and instructors. Heavy public investments are required to increase higher education funding in order to bridge the gaps in university infrastructure and overcome the digital divide. Further discussion is required on the funding mechanism of ensuring access to distance learning for students, yet institutional methods appear to be the most effective ones, as with bursaries.

At the same time, transition to distance learning during the pandemic showed that granting extra public funding to universities is not enough: the existing funding mechanism underlying the fulfillment of government contracts should be restructured. Two scenarios of restructuring are proposed: the first one suggests preserving per capita funding standards for faculty remuneration only and accounting all the other university expenses to the subsidy for other purposes, while the second one, on the contrary, suggests extending the range of per capita funding items and removing part of the costs from the list of expenses covered by the subsidy for other purposes.

Both scenarios imply changing the principles of university research funding, raising bursaries, integrating social certificates that will benefit prize winners of national school Olympiads at the first stage, and creating financial conditions for attracting and retaining internationally recognized scholars in Russia. It means that project-based and special-purpose funding should be used along with per capita funding standards to achieve a more effective handling of the new problems faced by higher education.

Translated from Russian by I. Zhuchkova.

- References**
- Abankina I.V., Abankina T.V., Filatova L.M (2016) Lovushki differentsiatsii v finansirovani rossiyskikh vuzov [The Pitfalls of Differentiation in the Financing of Russian Universities]. *Actual Problems of Economics and Law*, vol. 10, no 2, pp. 38–58.
 - Abankina I.V., Abankina T.V., Nikolaenko E.A., Seroshtan E.S., Filatova L.M. (2010) *Ekonomicheskoe polozhenie vuzov v usloviyakh byudzhetnoy reform, povysheniya avtonomii i vvedeniya EGE* [The Economic Situation of Universities in the Context of Budget Reform, Increasing Autonomy and the Introduction of the Unified State Exam]. Moscow: HSE.
 - Belyakov S.A., Klyachko T.L. (2013) *Rossiyskoye vyssheye obrazovaniye: modeli i stsennarii razvitiya* [Russian Higher Education: Models and Development Scenarios]. Moscow: Delo.
 - Barannikov K.A., Leshukov O.V., Nazaykinskaya O.L., Sukhanova E.A., Froumin I.D. (eds.) (2020) *Uroki "stress-testa". Vuzy v usloviyakh pandemii i posle nee. Analitich-*

- eskiy doklad* [Lessons Learned from the Stress Test: Universities amidst and after the Pandemic. Analytical Report]. Available at: https://drive.google.com/file/d/1G-McB1oP8ITzE_WDVh4nFksX6lceotZY3/view (accessed 13 January 2021).
- Center for Strategic Research, Higher School of Economics (2018) *Dvenadtsat resheniy dlya novogo obrazovaniya. Doklad* [Twelve Solutions for a New Education. Report]. Available at: https://www.hse.ru/data/2018/04/06/1164671180/Doklad_obrazovanie_Web.pdf (accessed 12 January 2021).
- DeBrock L. (2018) Novaya era ochного obrazovaniya: mashtabiruemaya sistema interaktivnogo vzaimodeystviya [The New Face-to-Face Education Scalable Live-Engagement]. *Voprosy obrazovaniya / Educational Studies Moscow*, no 4, pp. 44–59.
- Gouédard P., Pont B., Viennet R. (2020) *Education Responses to COVID-19: Shaping an Implementation Strategy*. Paper presented at the 2nd Meeting of Country Representatives for the Implementing Education Policies Project (Virtual meeting 2020, June 10–11). Available at: [http://www.oecd.org/officialdocuments/publicdisplay_documentpdf/?cote=EDU/EDPC/RD\(2020\)9&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplay_documentpdf/?cote=EDU/EDPC/RD(2020)9&docLanguage=En) (accessed 12 January 2021).
- Klyachko T. L., Mau V. A. (2015) Budushchee universitetov. Statya 1. Globalnye trendy. Obshchestvo i reform [The Future of Universities. Article 1. Global Trends. Society and Reforms]. *Social Sciences and Contemporary World*, no 3, pp. 5–18.
- Klyachko T. L., Mau V. A. (2015) Budushchee universitetov. Statya 2. Rossiyskie tendentsii [The Future of Universities. Article 2. Russian Trends]. *Social Sciences and Contemporary World*, no 4, pp. 5–25.
- Klyachko T. L., Sinelnikov-Murylev S.G. (2018) *Strategiya dlya Rossii: obrazovanie* [Strategy for Russia: Education]. Moscow: Delo.
- Klyachko T. L., Sinelnikov-Murylev S.G. (2012) O reformirovanii sistemy finansirovaniya vuzov [About the Higher Education Financial Reform]. *Voprosy ekonomiki*, no 7, pp. 14–32.
- OECD (2020) *Remote Online Exams in Higher Education during the COVID-19 Crisis*. Paris: OECD. Available at: <https://www.oecd-ilibrary.org/docserver/f53e2177-en.pdf?expires=1608971675&id=id&accname=guest&checksum=4A619EF7DB121EE-17585FA51ED5DD77C> (accessed 12 January 2021).
- Platonova D. P., Kuzminov Ya. I., Froumin I. D. (2019) *Universitety na pereputje: Vysshee obrazovanie v Rossii* [Universities at a Crossroads: Higher Education in Russia]. Moscow: HSE.