11

University-Based Research and Development in Georgia

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Introduction

The production, transfer, and dissemination of new knowledge through teaching and research lies at the heart of the mission of higher educational institutions (HEIs) (Jain et al., 2010). Hence, university-based research and development are critical issues for HEIs. This is particularly true for universities in post-Soviet countries. After the collapse of the Soviet Union, these institutions had to build their university-based research capacity from the ground up (Gokhberg, 1996). Because of economic hardships and political instability, Georgia's higher education system, including research and development, entered a period of stagnation. Years later in 2004–2005, the new Georgian government launched major

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reforms in research and development (Chakhaia & Bregvadze, 2018) whose central element was the transfer of research institutes, formerly constituent parts of the Academy of Sciences, to universities. Another aspect of these reforms was the government's introduction of a national accreditation system with internal and external quality assurance mechanisms, a three-cycle degree system, a per capita funding system, and a differentiation between colleges, institutes, and universities (Chakhaia & Bregvadze, 2018; Tabatadze & Gorgadze, 2013; Tabatadze & Gorgadze, 2017). All of these reforms influenced and shaped university-based research management and development in Georgia significantly.

University-Based Research and Development in Georgia

The origins of research and scholarly work in Georgia date back to the fourth century. This educational and scientific heritage was revived in 1918 with the establishment of Tbilisi State University (TSU) (Gamkrelidze, 2011). The opening of the first university in the Caucasus coincided with the declaration of Georgia's independence. Hence, TSU played a key role in building the independent Georgian state (Mgaloblishvili, 2003). As in other Soviet republics, the central institution in charge of research in Georgia was the Academy of Sciences of the Georgian Soviet Socialist Republic, established in 1941. By the end of the Soviet era, the number of research institutes had grown to 64. There were 9137 researchers in Soviet Georgia in 1960 and as many as 28,983 in 1988 (Gzoyan et al., 2015).

Despite this impressive growth, the Georgian research sector was a relatively minor element of the Soviet research system. According to 1991 data, Georgian research institutes accounted for only 1.7% of all research institutes in the Soviet Union. Similarly, their research personnel constituted only 1.2% of the Soviet total. The state funding for Georgian research institutes amounted to as little as 0.5% of the total budget for research, technology, and development in the Soviet Union (Gokhberg, 1996).

According to Web of Science (WoS) data, during the last two decades of the Soviet era (1972–1991), Georgian researchers were particularly active in such fields as physics (36.3% of Georgian publications in WoS-indexed journals), chemistry, biology, and mathematics. The total number of publications by Georgian scholars in WoS-indexed journals peaked in 1984 with 406 articles—a figure that was not surpassed until 2006.

Today Georgia has a fairly diverse institutional framework for academic research. First of all, there are quite a few university- and faculty-level research centres and institutes. Secondly, research is conducted at 64 research institutes that were integrated with 7 Georgian HEIs in 2010–2011. Three research institutes are public organisations that are not affiliated with any university. Finally, the system also includes two academies of sciences that engage in minimal research activities. The National Academy of Sciences of Georgia is a consultative body of the Georgian government. Another research entity, the Academy of Agricultural Science, supports research in agriculture by bringing together stakeholders, sharing knowledge, and engaging in other expertise-related activities.

After the collapse of the Soviet Union, research institutes experienced major problems due to the cessation of generous state subsidies these institutes had previously enjoyed. Furthermore, the research networks existing within the Soviet Union fell apart, much of the research infrastructure was destroyed, and English replaced Russian as the primary language of scholarship. In addition, members of the research community began to emigrate abroad (Gibradze, 2004). As a result, Georgian science found itself in a difficult situation in the 1990s after the collapse of the Soviet Union. To support and regulate research activities, the government passed two laws in 1994—one on science, technology, and development and another on grants. These realities led to the emergence of new research trends. First of all, the higher education system became more accessible, and the private sector took advantage of this new window of opportunity. The emergence of private universities and independent research centres outside of the Academy of Sciences gave a major impetus to the development of research in Georgia, especially in social sciences. Research was funded by different donor organisations, including the Soros Foundation, the US government, and the European Union.

Consequently, research management became less formalised in Georgia. Opportunities for international collaboration expanded, and Georgian researchers began to build networks in the West rather than the former Soviet Union (Gibradze, 2004).

In 2005, Georgia launched another round of reforms in the science, technology, and innovation sector (EPPM, 2008). The next section of this chapter explores both successful and problematic aspects of these developments across structural and institutional domains. The former refers to structural reforms (e.g., policies of the central government that affect the entire system), and the latter to reforms and regulations that HEIs adopt at the institutional level, such as integrating research and teaching, supporting faculty in research and publication, and establishing performance-based promotion systems. The study's findings will be discussed from the standpoint of these two major domains of higher education reform.

Research Methodology

This study was guided by the following overarching research question: to what extent have universities in Georgia internalised their research mission and developed the capacity to carry out this mission in a sustainable way? To answer this question, the study explored both national structural and institutional policies that have hindered or supported the development of the research capacity of HEIs. Particular emphasis was put on unpacking the challenges that accompanied the implementation of these reforms.

We employed several data collection and analysis methods. First, we analysed secondary qualitative data from the self-assessment questionnaires of five public HEIs. According to existing regulations, HEIs are required to fill out self-assessment questionnaires for obtaining government certification. We also used semi-structured interviews for data collection. A total of 16 interviews were conducted with the top administrative and academic staff of two regional and three Tbilisi-based universities. In all, one rector, three deans, one research department head, one dissertation council chair, and ten academics were interviewed at these five universities. Finally, the study also drew on secondary quantitative data obtained from the WoS and SCIMAGO databases.

Challenges of Transition from Soviet to Modern Research and Development in Georgia: Structural Domain

Integration of Research Institutes and Universities

As part of the reforms, all research institutes were separated from the Academy of Sciences in 2005. In 2010–2011, approximately 70 research institutes were integrated into HEIs. The majority of the participants of our study acknowledged that this was an important strategic decision that allowed teaching and research to be integrated into the higher education system. However, they also mentioned challenges that have accompanied the process of integration. A professor at TSU remarked, "As an idea, it [the integration of research institutes into HEIs] is acceptable; however, I think its implementation went badly."

As our analysis suggests, the major problem of the integration reform was the fact that it mostly remained on paper rather than translating into actual practice. As one academic said, "Everything takes place formally. […] I have no idea what they [the research institutes] do. They are on their own." A State Audit Office[1] report also pointed to the formal nature of this reform. According to the 2014 report, "The integration took place only physically, while no complex measures were taken for producing synergy effectively" (p. 37). Such challenges to implementation were further exacerbated by the lack of formal regulations in certain areas. For example, after joining HEIs as a result of the integration policy, former staff members of research institutes had no officially defined status under the new organisational structure. They obtained the official status of researchers only in 2015 when revisions were made to the law on higher education (Gorgodze, 2016).

[1] The State Audit Office of Georgia is a public institution that monitors the implementation of state programs and oversees the legal and efficient spending of public funds.

Although additional reform initiatives such as defining and categorising the status of former staff members of research institutes within universities and defining their salaries based on the new categorisation were introduced in 2015, the process of integrating research institutes into HEIs has not changed or improved a lot. Several factors can explain its shortcomings. The first is related to the allocation of financial resources. Thanks to the reforms, HEIs became responsible for financing research institutes. For this purpose, HEIs receive additional funds from the Ministry of Education, Science, Culture, and Sport and then transfer these funds to the respective institutions automatically. The bulk of these resources (90%) are allocated for researchers' salaries. The little that remains covers such expenses as business trips and the development of research and research infrastructure. The share of non-salary expenditures has increased slightly over the past several years. Nevertheless, the current amount and structure of spending do not allow these institutions to conduct high-quality research, if any at all.

Several other factors explain the formal nature of the integration of research institutes and HEIs. One is the research personnel's lack of opportunities to engage in teaching. Although universities and research institutes have been formally integrated, research and academic staff are still separated. By the formal regulations, the academic staff has both teaching and research-related responsibilities. However, it is expected only to teach in practice. As one of the study participants from a research department of a Tbilisi-based university pointed out, it is too ambitious to expect academics to engage in both high-level teaching and research. The same individual explained that universities do offer incentives to facilitate a dual engagement in research and teaching. For example, academic staff who participate in a research project or publish in peer-reviewed journals may receive bonuses. However, the scope of work of academic personnel does not specify or describe research-related roles and responsibilities. Further, their compensation is based solely on their teaching workload.

At the same time, the research staff's primary duty is to conduct research, and neither financial nor institutional mechanisms encourage or require it to engage in teaching. As an academic from a Tbilisi-based university indicated, "What is the idea of this integration? If it is the

integration [of researchers] into the teaching process, that is not happening. In other words, it's up to the [researchers] themselves to [teach] or not. Institutes integrated with universities receive funding for research only. We don't have enough teaching hours to share with them." Thus, the research staff is totally isolated from the teaching process in practice.

The absence of collaboration between students and research institutes can also explain the formal nature of the integration. Because the research staff is not engaged in teaching, students have limited opportunities to participate in joint research projects. Similarly, they have trouble receiving support from research staff or using the facilities of research institutes for their research projects. Moreover, the research staff has no incentives to engage students in research. Nor are there any institutional assessment mechanisms to evaluate the results of student research conducted under the supervision of researchers from these institutes.

The integration of research institutes into universities has also been jeopardised by the insufficient funding allocated for the reform and delays in modernising property and infrastructure management. The funding model for HEIs and research institutes has remained the same as before, and no real integration mechanisms have been put in place. A State Audit Office report emphasises the need for accompanying support measures: "The synergy of research and teaching in higher education will hardly be achieved without clearly defining the framework and objectives and taking other steps for integrating research institutes into HEIs" (State Audit Office, 2014, p. 37).

The Three-Cycle System and the Integration of PhD-Level Programmes into HEIs

The introduction of the three-cycle system and doctoral-level programmes into HEIs was a significant reform of higher education and research in Georgia (EPPM, 2008). Many students in Georgia have pursued PhD degrees since 2007 with 3963 PhD graduates (in 2007–2019) and 3976 PhD students as of 2020. Interestingly enough, the total number of PhD students over this period exceeded the number of researchers with doctorates: 7730 researchers with PhD degrees were working in Georgia's

HEIs and research institutes in 2020 (National Office of State Statistics, 2020). Tuition fees are quite high in Georgian doctoral programmes, with very few, if any, scholarship opportunities. Therefore, universities try to maximise revenues by attracting a high number of doctoral students.

The excessive emphasis on the number of doctoral students creates quality-related problems. On the one hand, not all doctoral students possess adequate skills to conduct high-quality research. On the other, universities do not have a sufficient amount of qualified academic staff that can provide rigorous training and skilful guidance to so many students. A comparison of the number of publications in Scopus-indexed journals with the number of doctoral students and academic staff members suggests that doctoral programmes are of low quality. According to the National Office of Statistics of Georgia, 1459 individuals graduated from doctoral programmes in the social sciences (including education, law, and business) in 2007–2011, while 1962 students are enrolled in such programmes currently. Additionally, 2545 academic and research staff members work in the social sciences today. Although universities formally have introduced quality assurance mechanisms such as the requirement for a minimum of two publications in Scopus-indexed journals before the defence of the doctoral dissertation (TSU and Ilia State University regulations for doctoral programmes), the number of published studies fall behind. In 2007–2018, a total of 2545 academic and research staff members in the social sciences as well as 3421 current and former PhD students from Georgia authored or co-authored only 833 publications in Scopus-indexed journals in the social sciences, education, business, and law. Thus, a comparison of the number of PhD graduates and students and academic and research staff members to the number of publications in Scopus-indexed journals presents disappointing evidence of the quality of the country's doctoral programmes. It also reveals the failure to take quality-oriented approaches. The existing requirement of publications in Scopus-indexed journals may be different from the international practice. Nevertheless, one of the participants of the study explained the importance of this requirement as follows:

> *In my opinion, this is a better way [of quality assurance]. This is similar to a qualification exam for a doctoral student and better than [an exam by] the dissertation committee. The research community in Georgia is very small.*

Everyone knows each other. Therefore, I will always question the objectivity of any assessment: it may be much higher or lower than the doctoral dissertation deserves. These decisions tend to be driven by personal factors.

Another problem is related to the uneven distribution of doctoral students across disciplines and the insufficient supervision of students in high-demand fields. According to the 2019 data of the Office of State Statistics of Georgia, many doctoral students specialise in social sciences (36.7% of graduates and 47.7% of current students) and arts and humanities (16.75% of graduates and 14% of current students), while the number of students in math and science is much lower (16% of graduates and 12% of current students). As a result, professors in some fields are assigned as many as 18, 20, or even 35 students simultaneously. Because of such overloads, academics cannot provide their students with high-quality guidance and supervision (Gurchiani et al., 2014). As one study participant remarked, "I have 12 students, and it is difficult to handle so many. Even working with one PhD student is a huge responsibility."

Finally, the lack of financial resources to support fieldwork and other aspects of research projects also jeopardises the quality of PhD programmes. Tuition fees for doctoral programmes equal or fall behind the fees for bachelor's and master's programmes (Javakhishvili et al., 2012). In comparison with the country's per capita income, university tuition is quite high in Georgia (Chankseliani, 2013). Nevertheless, the amount of tuition-generated funds does not allow HEIs to finance doctoral-level research. As one study participant explained, state agencies cannot allocate sufficient funds for graduate student research, either: "We have no financial resources for PhD students to conduct fieldwork. The Rustaveli Foundation used to finance such activities; however, it was subsequently shut down as far as I know." The Rustaveli Foundation had indeed made efforts to address these financial problems. In 2013, it launched a research grant programme for doctoral students. In 2013–2020, the foundation funded 448 projects. However, the figures show a decline in the number of funded projects. For example, the foundation funded only 56 projects in 2019 in comparison to 135 projects in 2013. Moreover, it stopped offering research grants altogether in 2020 (SRNSFG, 2020). Despite their importance, such initiatives cannot provide sufficient funding for doctoral research.

Absence of Research Performance Assessment Tools in the External Quality Assurance System

To enhance the quality of higher education, the Georgian government established a new accreditation and authorisation system in 2005 (EPPM, 2008). The Authorisation Standards for Educational Institutions of the National Education Quality Enhancement Centre (NCEQE) set down three major standards for (1) human resources, (2) academic programmes, and (3) material and technical infrastructure. As a result, HEI quality assurance departments began to focus on assuring compliance with the accreditation and authorisation standards. HEIs and the NCEQE consolidated their efforts to assess and improve teaching at universities. Programme accreditation requirements did not take into account the importance of the research component in doctoral programmes, however: identical evaluation methodologies were used to assess doctoral, master's, and bachelor's programmes. For the most part, quality assurance departments at HEIs did not monitor and/or evaluate research conducted by their units and staff, as they had no mechanisms in place for this (Chakhaia, 2013).

Mechanisms of university-based research assessment first appeared in the national accreditation and authorisation procedures in 2017. Subsequently, the research component was included in the self-assessment questionnaires for HEI authorisation. As a result, universities began to develop different research activities as well as policies supporting university-based research and its internationalisation. Moreover, universities had to incorporate research and development into their mission, structure, and strategic documents. As a study participant from Batumi State University pointed out, "three years have passed since our university declared research to be a key priority. This has made it both possible and necessary for us professors to publish in high-impact journals. We have to participate in academic conferences, too."

Despite these promising developments, some obvious problems remain. HEIs in Georgia have no external or internal mechanisms and instruments to evaluate the quality of their research. The task of research quality assurance is delegated formally to the National Academy of Sciences of Georgia in its capacity as a consultative body to the government. According to its regulations, all educational institutions are expected to submit reports on their research projects; however, the review process is mostly a formal and inefficient bureaucratic procedure. The State Audit Office report also acknowledges the formal nature of this reporting and assessment system: "The monitoring and assessment system cannot assure the timely and rigorous evaluation of existing research projects. The annual evaluations conducted by the Academy of Sciences of Georgia are a mere formality" (2014, p. 4).

Competitive Public Funding for Research

The introduction of a competitive public funding system was a key step towards improving the quality of research and research management in Georgia. The National Science Foundation and the Foundation for Georgian Studies, Humanities and Social Sciences were established in 2005. Five years later, these two institutions were merged into the Shota Rustaveli National Science Foundation of Georgia (SRNSFG). This was the first organisation in Georgia to fund research projects on a competitive basis. The majority of study participants spoke highly of the SRNSFG, comparing it to "a candle in a dark room" and arguing that it provides enormous support for the development of research in Georgia. The amount of funding of the SRNSFG has increased annually, amounting to a tenfold growth in ten years. Nevertheless, study participants said that the amount of funding was still insufficient and suggested that it should be increased by a factor of four or five.

The SRNSFG allocates funding based on a rigorous evaluation of the quality of proposed research and the qualifications of the researchers. An analysis of grant distribution shows that most of the grants are awarded to scholars in fields with the highest research output according to WoS. In 2011–2018, researchers in the fields of mathematics and natural science

received approximately 41% of all grants for basic research (SRNSFG, 2020). Grants are concentrated not only in specific fields but also in specific HEIs. The number of grants received by universities is closely associated with their research productivity. For example, 52% of university grants were awarded to TSU, which also has the highest share in WoS publications in Georgia (over 40%).

While the majority of study participants expressed satisfaction with the SRNSFG's competitive funding mechanism, they remained critical of the bureaucratic hurdles in the grant application process. One participant noted that "the preparation of the proposal is extremely time-consuming. It is such a complicated process that I find it difficult to concentrate on my ongoing research and innovation projects. I agree that it is important to assess the aim of the project and the possibility of its implementation. However, they seem to be evaluating our bureaucratic skills to an even greater extent." The SRNSFG uses a variety of bureaucratic instruments to manage and monitor research projects. In particular, it follows state procurement regulations that are designed for governmental agencies. Such complex and rigid procedures require a lot of amount of time from academics who would have preferred to spend it on their research instead. A professor participating in the study remarked, "The management of the grant project is a nightmare. I have just finished my project and submitted a report. However, I am not planning to apply in the future again." As other participants explained, they are expected to manage both administrative and research tasks, which results in the ineffective use of time. Moreover, as some researchers lack managerial and procurement skills, the presence of such regulations may discourage them from applying for these grants at all.

Among their other concerns, the study participants spoke of the SRNSFG's unrealistic expectations for grant recipients to produce tangible outputs within the limited timeframe for grant implementation. Quite often, it takes a lot of time to complete all the stages of a research project. Unfortunately, the grant programmes tend to fund the initial stages of a research project, making it unrealistic for researchers to produce rapid results for projects that entail lengthy and rigorous data collection and analysis. The same concern applies to quality assurance regulations. For example, according to one grant requirement, grantees

should publish their results in research journals. This requirement is intended to enhance research quality. However, it is not always feasible in the short time allotted. Therefore, grantees are forced to publish in less prestigious journals to comply formally with these grant requirements. Such an approach results in low-quality publications that nevertheless require a substantial amount of time that scholars could have used to implement the research project more rigorously. As one participant explained, "My students [involved in the grant project] are trying now to publish an article somewhere, because they [the foundation] threaten to take the funds back unless [the study] is published before the deadline."

The 2017 amendments to the university authorisation standards made university-level research a key component of university evaluation, facilitating the introduction of a competitive funding system for research activities within universities. Both public and private HEIs (e.g., Batumi State University, East European University) allocated funds for research and introduced competitive grants for their staff members. The majority of our study participants claimed that, as scholars, they welcomed this opportunity and enthusiastically participated in university-based grant competitions. Thus, unlike the other reform initiatives, the research-related amendment to authorisation standards resulted in institutional changes at HEIs. The introduction of a competitive funding system significantly strengthened research efforts among university staff members.

Challenges to Implementing Reforms at HEIs: Institutional Domain

Integration of Research and Teaching

The integration of research and teaching has been a policy priority in Georgia since 2005. Institutional efforts to achieve integration have been reflected at all levels of higher education (Chakhaia, 2013). Our interviews suggest that HEIs urge or even require staff members to incorporate research components into courses. While this requirement is clearly stated, it is not always fully met. The gap between regulation and practice

may be due to several factors. Some professors try to integrate research into teaching by including research-based literature on the reading list. Others are unable to do so, as most of the relevant literature is in English, while they cannot read English or use English-language publications in the teaching process. Naturally, students who lack English language skills cannot use English-language learning materials, either.

In addition to incorporating research articles into reading lists, professors also include research-related skills, competencies, and assignments in course syllabi. Study participants explained that, insofar as students are expected to develop research skills, university quality assurance departments often inspect syllabi to see whether courses teach and assess research skills. Nevertheless, the implementation of research-oriented activities does not always occur in practice. "I would not claim that all professors teach and assess research skills," a study participant from a Tbilisi-based university said. "Some professors do this. Nevertheless, this depends on their competencies and possibilities. Not everyone can teach research skills." In addition, there are few, if any, efforts to engage students in research activities. This is particularly true for bachelor's students. According to one university professor, "writing a bachelor's thesis remains optional. It would be great if it were a mandatory requirement. Then researchers would be able to engage their students in research and help them to learn to conduct research."

The absence of coordination and collaboration between research institutes and PhD programmes is another factor hindering the integration of research and teaching. There are no established mechanisms or rules that encourage scholars from these institutions to supervise doctoral students. The law on higher education, as well as the statutes of university doctoral programmes, gives researchers the right to supervise students, albeit with some restrictions. Academic staff members, that is, professors and associate professors, are eligible to act as the primary supervisors of PhD students, while researchers can serve only as co-supervisors with special approval from the faculty's academic council (GTU, 2018; ISU, 2014; TSU, 2018). As our interview data suggest, researchers rarely act as co-supervisors of doctoral theses, however. A study participant from one Tbilisi university explained,

Scholars based at the research institutes that are part of this university today could be a valuable resource for the supervision of bachelor's, master's, and PhD students. They could also engage students in their research projects. Nevertheless, these opportunities are not used.

The absence of additional support mechanisms, such as incorporating supervision activities into the work contracts of research staff, allocating funding, and introducing an incentive system for research staff advising PhD students, may explain the reluctance to involve researchers from research institutes in the supervision of doctoral students.

Research Environment, Publications, and Research Impact

To assess the productivity of university-based research activity in Georgia, we analysed both WoS and Scopus publications. Our findings debunk claims about the low number and influence of Georgian publications that are often found in the literature (see State Audit Office, 2014; Bregvadze et al., 2014; Gzoyan et al., 2015). Our analysis of publications revealed some promising trends. First of all, the number of publications from Georgia has been increasing steadily since 2005 in both the WoS (Fig. 11.1) and Scopus databases. To illustrate, the number of articles published in Scopus-indexed journals increased from 507 in 2005 to 2112 in 2019.

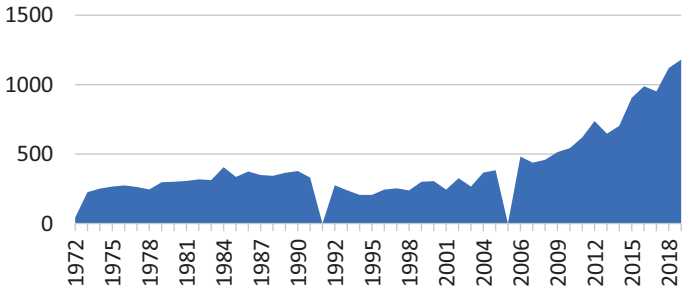

Fig. 11.1 Number of Georgian publications between 1972 and 2019 (WoS)

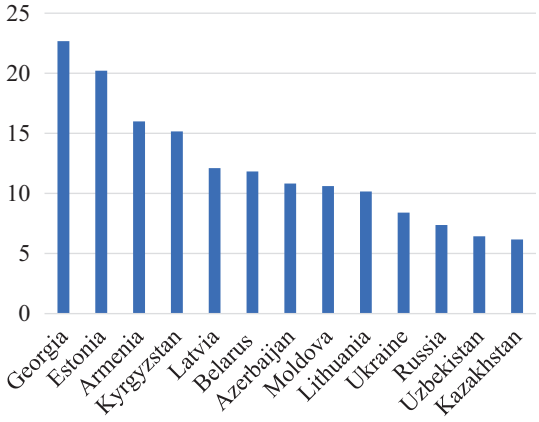

Fig. 11.2 Average citations per document in post-Soviet countries 2019 (WoS)

An analysis of WoS and Scopus publications also points to a fairly high citation index of Georgian scholars. As Fig. 11.2 shows, Georgian academics have the highest citation indices in the WoS database among all scholars from post-Soviet countries. Furthermore, they rank third in the SCIMAGO country ranking among post-Soviet states. Nevertheless, the performance of Georgian scholars in such indicators as citation index and values of research output are limited by such factors as the imbalance between fields, different values of research outputs in different disciplines, and the WoS database's low coverage of journals in some fields (Bregvadze et al., 2014); still, this is a noteworthy achievement, as the citation index measures the influence of researchers' publications and their reputation among their peers.

Alongside significant improvements in the quantity and quality of publications that can be attributed to structural and institutional reforms, this study also identified several problems at the institutional level. First of all, the number of researchers conducting high-quality research and regularly publishing in Scopus-indexed journals is relatively low. Moreover, these researchers are concentrated in a narrow set of disciplines (Bregvadze et al., 2014; State Audit Office, 2014). As some participants acknowledged, most academic and research staff members lack the skills

to conduct research and publish their findings in international journals. For this reason, university regulations requiring staff members to publish a certain number of papers tend to be treated as recommendations rather than being strictly enforced.

Secondly, as the data suggest, the growing citation indices of Georgian scholars stem more from international collaboration than from local individual research practices. Over 70% of publications in Scopus-indexed journals authored by Georgian scholars are the result of international collaboration (Bregvadze et al., 2014; Scimago). However, the share of international collaborative publications in such disciplines as arts and humanities, social sciences, and mathematics is relatively low. The citation indices are also lower in these fields. The unequal distribution of publications is observed in universities as well. HEIs with more intense international collaboration tend to have a greater number of publications and a higher citation index (SCIMAGO). As some participants indicated, the number of publications and the impact factors of these publications do not always accurately reflect the researcher's competence level. In collaborative projects, local academics are largely engaged in data collection processes, while their international colleagues conduct data analysis and write up the results. Study participants emphasised that, while international collaboration is very important for the development of university research, it can be misleading to use only publication-related indicators to evaluate an individual professor's research performance and productivity.

Thirdly, HEIs tend to retain relatively low-skilled academic staff rather than recruiting the best candidates available for academic positions. As one participant explained, "The [university] departments always try to keep their existing academic staff. It is difficult to fire a person knowing that he might face starvation. HEIs believe that it is their responsibility to retain [their staff]." The existing employment regulations also make it difficult to improve the quality of university staff. One study participant noted,

> *Professors are selected for a ten-year term. Suppose a more qualified candidate expresses interest in joining the university … We cannot create a new academic*

position. Therefore, this candidate has to wait. This may mean waiting several terms or even a whole lifetime if no one wants to retire.

As we mentioned earlier, some universities have recognised the consequences of such rigid employment regulations and so have also put performance-based requirements in place. However, these rules have limited effectiveness as they are not mandatory. As a study participant from a Tbilisi-based university said,

We have developed certain research productivity requirements or 'standards' for our professors. [One] standard requires academic staff to produce a certain amount of research outputs … However, these standards are used as recommendations only. There [are] plans to make them mandatory in 2021.

Finally, researchers in some fields, particularly medicine and science, lack the necessary infrastructure to conduct research. Many scholars in these fields are highly skilled in conducting research. However, such circumstances as the lack of research facilities prevent them from conducting high-quality research and remaining competitive in their fields. For example, some participants mentioned that they could not conduct research in molecular biology as there was only one scanning microscope available in Tbilisi. Similarly, a professor in the field of medicine described how difficult it is to design and conduct experimental studies, as laboratories are very expensive, and neither the universities nor the state can afford to purchase equipment for them.

Conclusion

After gaining independence from the Soviet Union, Georgia began to transform its national higher education and research system through a series of structural and institutional reforms. Overall, these reforms significantly contributed to the development of the country's academic and research capacity. As a result, research has become a key aspect of the activities of all higher educational institutions of Georgia, which is reflected in their missions, strategic plans, structure, and activities.

However, one should not overlook the problems that have accompanied these reforms. For example, structural policies such as introducing a three-cycle system and creating doctoral programmes have led to certain positive developments such as the internalisation of research missions by universities. At the same time, these reforms have not assured the enforcement of quality assurance systems for doctoral research, the intensification of collaboration between scholars from research institutes and doctoral students, and the allocation of sufficient funding to research. In addition, the sustainability of these changes is threatened by the limited participation of scholars from research institutes in student supervision and guidance. Other sustainability risks include the failure to create equal conditions for academic and research staff at universities and incorporate both teaching and research into staff workloads. The reforms have also failed to expand competitive grant systems with transparent selection mechanisms and simplify administrative red tape.

Our study also sheds light on institutional policies supporting the development of university research capacity in Georgia. Institutional efforts to promote the integration of research and teaching have affected all levels of higher education. These policies have also improved the research environment for university professors and scholars, eventually resulting in higher research productivity and an increasing number of publications. Nevertheless, the successful implementation of these promising institutional initiatives has been constrained by such problems as the insufficient weight of the research component in the process of selecting, promoting, and rewarding university staff and the lack of a balance between teaching and research in the staff workload. In addition, HEIs have not managed to introduce performance-based compensation for both research and teaching components or to create transparent, merit-based competitive human resource policies in all research fields. Other problems include poor access to infrastructure and research databases and insufficient internal financing of research activities. These constraints have significantly diminished the overall effectiveness of the reforms of higher education and research.

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