Building Research Capacity at Universities

Insights from Post-Soviet Countries

Edited by
Maia Chankseliani
Igor Fedyukin
Isak Frumin

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Alexander Klyagin is a leading expert of the Laboratory for University Development at the HSE University in Moscow. He was responsible for leading the project "Comprehensive evaluation of the effectiveness of using the research capacity of leading Russian universities in the R&D sector" at National Training Foundation (2014–2016). Previously, Alexander Klyagin served as the Deputy Coordinator of the Innovative Educational Program (2005–2009) at Plekhanov Russian University of Economics, where he received PhD in Economics (2006). His interests include issues of strategic development and management of universities.

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Introduction

Maia Chankseliani, Igor Fedyukin, and Isak Frumin

This volume was prepared as a collective contribution to the current debates on developing university research capacity. The chapters in this volume offer empirical case studies from the former Soviet countries which share a common history, common policies and practices of higher education. These commonalities make the regional focus meaningful and analytically valid. Empirically grounded case studies on developing research capacity at universities in the former Soviet countries offer

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important insights into mechanisms of institutional and policy change in higher education more generally.

Global society has seen a proliferation of university-based research. Higher education institutions are engaged in improving our understanding of life, offering research-informed teaching, and supporting sustainable development (Chankseliani & McCowan, 2021). Generation of new knowledge has been recognised as a fundamental mission of universities. Yet, in many countries, including Germany which is the birthplace of the research university, the large public research sector remains institutionally separate from higher education (Dusdal et al., 2020). The popularity of research universities stems from the successful experience of American universities; in the United States, a research university remains an exception rather than the norm with only about 200 out of 3500 universities and colleges being considered as knowledge producers (Castells, 2017). Building research capacity within the university sector has become a national priority in many countries. Recent studies show that even significant resources and aggressive construction of new research universities do not always lead to a fast growth in research capacity and research productivity (Altbach et al., 2018).

The Soviet Union represented an extreme case of the organisational separation of higher education and research. The bulk of research was carried out by the institutes of the USSR Academy of Sciences and the republican academies, as well as, on the applied side, by the industry research institutes. There used to exist a number of research-intensive higher education institutions which were seen as exceptions, and many individual researchers from the Academy of Sciences routinely held part-time jobs as university professors. Yet, universities played a minor role in the development of the Soviet science, as higher education institutions were mostly thought of as teaching establishments. This volume opens with a chapter that offers a critical overview of the separation between higher education and research in the Soviet Union and serves as a common point of departure for individual country case studies.

The dissolution of the Soviet Union brought radical changes. In effect, all post-Soviet countries started from a common institutional legacy and have undergone a natural experiment in the subsequent decades. These countries have chosen heterogeneous pathways of economic, political,

and social development which have been reflected in and sometimes impacted by higher education transformations (Chankseliani, 2018; Chankseliani & Silova, 2018; Huisman et al., 2018).

Literature that looks at the transformation of higher education in post-Soviet countries largely centres around the educational mission of universities and how universities as educational institutions have changed in the years following the dissolution of the Soviet Union (Balasanyan, 2018; Chankseliani, 2016, 2021; Chankseliani et al., 2020, 2021; Heyneman, 2008, 2010; Huisman et al., 2018; Oleksiyenko et al., 2018). While there exist studies on research universities and research capacity in selected former Soviet countries (Abramova & Krasheninnikov, 2017; Hladchenko, 2020; Hladchenko et al., 2016; Jonbekova, 2018; Kataeva & DeYoung, 2018; Lee & Kuzhabekova, 2019), this is a much smaller body of literature which points to the fact that the research mission of universities has been somewhat neglected. This is hardly surprising as universities have been seen as primarily educational institutions in this region. Another reason of the relatively limited scholarly attention to university-based research is that the research mission pertains to the global dimension of university operation.

> The research university is a national project whose field of operation is often global. The global and national dimensions are heterogeneous in form and purpose. In the national dimension the purpose is the nation as an end in itself. The global dimension has no purpose. There the university is its own purpose. (Marginson, 2011, p. 412)

The research mission is largely about global knowledge creation and is, to a certain extent, detached from the immediate needs of local economies. At the same time, universities need to be autonomous institutions in order to be able to create research culture oriented on intellectual curiosity and the expansion of knowledge. Due to the traditions of top-down management, limited institutional autonomy and academic freedom, embracing the global dimension, where 'the university is its own purpose' has proven to be challenging in most former Soviet countries. This is especially problematic in the neoliberal times where market considerations are paramount.

In most post-Soviet countries, universities have been developing their research activities by looking at new sources of research funding, adjusting the ways in which they paid academics and motivated them to do research. Selected universities and governments started to acknowledge the importance of the research mission for the international legitimation of their universities and for building knowledge-based economies. By recognising universities as central actors in producing research, several of these countries managed to transform the institutional structures centred around the Soviet-style Academies of Science and started developing research capacity at universities.

Research capacity is a central concept in this volume. Research universities are defined here as universities that have internalised their research mission and developed the capacity to carry out this mission, irrespective of whether they are formally designated as research universities. There has existed an institutional status of 'research university' in Kazakhstan since 2007 and in Russia since 2009 (Government of Kazakhstan, 2007; Skvortsov et al., 2012). The governments in these countries confer this status on universities which have been strategically designated to become research-active universities. In most other countries, the term research university is not part of the policy discourse, as all universities are expected to engage in research activities. Therefore, the development of research capacity rather than research universities appears to be a common concern for universities and governments in all countries, albeit in varying degrees. Building on the definitions offered by Charles Desforges, Donald McIntyre and Anne McIntyre, university research capacity is conceived as the most and best research which could be undertaken now if there were the will and the necessary resources for it to be done. Research capacity is dependent on the presence of adequate expertise, motivation, and opportunity (McIntyre & McIntyre, 2003; Murray et al., 2009). Despite broadly similar initial conditions, the university research capacity in post-Soviet countries developed along different trajectories. These different trajectories reflect diverse pathways of the overall economic and political development, as well as the variation in traditions pertaining to higher education and research.

The present volume is unique in terms of its focus and scope. This volume is the first of its kind to offer historical, sociological, and political

analyses of how and in what ways universities in former Soviet countries internalised their research mission and developed the capacity to carry out this mission in a sustainable way. The volume contains country case studies that examine empirically the ways in which research universities have been imagined in this diverse region. The role of national and institutional resources, political will, and individual agency are analysed to understand how these influenced universities' motivation, expertise, and opportunities of undertaking research since the early 1990s, and how universities changed their structures and practices under these influences.

This multi-country research project was funded by the Institute of Education of National Research University 'Higher School of Economics'. The topic of higher education and research is of central interest for the Institute of Education of National Research University 'Higher School of Economics'. Since 2013, the development of education (at all levels) in post-Soviet countries became one of the central research topics for the Institute of Education. The Institute of Education created an informal network of researchers who are interested in post-Soviet—and more generally, in post-socialist—educational development, and published a number of articles and books about post-Soviet education transformation including a volume titled *25 Years of Transformations of Higher Education Systems in Post-Soviet Countries—Reform and Continuity* (Huisman et al., 2018).

The present project on the development of university research capacity in post-Soviet countries involved three editors and twenty country case authors. The idea of this comparative, international research project was born in the conversations between two co-editors—Maia Chankseliani and Isak Froumin—who were interested in creating new knowledge about the development of university research capacity in the region. Soon the editorial team expanded to include Igor Fedyukin, historian and former Deputy Minister of Education and Science of Russia. Initially, it was planned to conduct face-to-face workshops at different stages of the research project. Unfortunately, the global pandemic disrupted these plans. Two face-to-face events had to be cancelled and all collaborative work was conducted entirely remotely. Some colleagues who initially agreed to prepare empirical case studies left the project. However, collective efforts created a relatively full picture of this diverse region. The

editors are extremely grateful to all collaborators of the project and its two managers—Farida Zagirova and Anna Polyanskaya.

The volume includes case studies covering 13 former Soviet countries, as well as a chapter that overviews the Soviet model of managing university research on the eve of the breakout of the USSR. The case studies are organised by geographic area into three sections: Research Capacity in Eastern Europe and Russia, Research Capacity in the Caucasus, and Research Capacity in Central Asia.

The section on research capacity in Eastern Europe and Russia includes the case studies of Belarus, Latvia, Lithuania, Moldova, Russia, and Ukraine. The chapter on Belarus explores the specifics of institutional policies and practices related to research and the research environment, as well as the ways in which they manifest themselves in research management and funding models at universities in Belarus. The country has been trying to preserve the Soviet tradition of higher education and research, as the best in the world. At the same time, Belarus has sought to integrate into the global and regional spaces of innovation-driven development. This chapter looks as how Belarussian higher education has balanced the Soviet legacy and post-Soviet reform agendas.

The Latvian case study maps the controlling narratives that have organised research governance reforms in this country. Drawing on interviews with policy makers, researchers, and university administrators, as well as document analysis, three main controlling narratives are identified: democratisation and Westernisation, knowledge economy and innovation, and internationalisation and global excellence. The chapter reveals how the reform of the Latvian research system was initially framed as part of the democratisation and Westernisation process that Latvia embarked upon after regaining independence from the Soviet Union. However, with the proliferation of a neoliberal discourse of the knowledge economy, integration of research and higher education has increasingly been viewed as a means to increase the global competitiveness of Latvian universities.

The chapter on Lithuania describes how research institutes were incorporated into universities in the 1990s, with independent institutes now making up only 15% of the total scientific potential. The academic staff at universities are primarily focused on research and teaching, but leaning

more towards research. Western countries are most attractive for academics when they seek collaboration opportunities, and research publications in English started to outweigh national publications. Funding for R&D remains limited. In the period of 2007 to 2017, the R&D funding increased by 60%. Yet, it is still less than half of the EU average. The chapter argues that recent governmental initiatives to support R&D give sound reasons for anticipating further development of university research capacity.

The Moldovan chapter explores how Moldovan universities are only at the start of internalising their research mission, with university leaders and staff continuing to face barriers in being able to carry out globally-competitive research. Advances include recent national policy reforms and a few innovative leaders and ambitious researchers, along with international university partnerships. Shifting governments with changing priorities and an absence of competitive and transparent public funding schemes have been among the main challenges identified by university leaders and academics. This chapter argues that consistent, significant reform is needed to advance the research capacity of Moldovan universities.

Promoting research at universities has been one of the key elements of higher education and research policy in Russia since the collapse of the USSR, and especially so since the late 2000s. The chapter on Russia maps out the most important policy initiatives designed to incentivise research at universities and to boost university research capacity, including measures to recognise and support 'research universities' as a separate category. As a result of various policy efforts, a notable number of leading Russian universities have internalised their research mission. At the same time, the chapter also raises concerns about the growing stratification of higher education institutions.

The Ukrainian case study explores how public universities have internalised their research mission. This chapter delves into two conceptualisations rooted in the new institutional theory—policy transfer logic and organisational identity. It is argued that research university discourse has been transferred into the Ukrainian higher education context through three main policy approaches: vertical system differentiation, competitive research funding, and the research evaluation framework. As external

concepts, these policy logics acquired noteworthy variations in Ukraine due to its historical legacies and broader socio-economic transformations. While a new law on higher education requires all public universities to conduct research, this chapter shows that diverse levels of research capacity, organisational traditions and culture shape the range of strategies undertaken by Ukrainian universities when developing their research mission.

The section on the research capacity in the Caucasus includes the case studies of Armenia, Azerbaijan, and Georgia. The chapter on Armenia offers reflections on changing priorities in higher education and research system. Describing challenges that the universities have encountered in the process of developing their research capacity, the chapter highlights contradictions between research governance structures and academic agency. It is argued that Armenian universities failed to internalise the research mission and to carry out their research mission in a sustainable way as Armenian research development has been in an amorphous condition; that is, lacking a clear structure or focus. The Armenian higher education and research system exists in the context of constantly changing policy priorities, traditional modes of research governance, and limited research funding.

The chapter on Azerbaijan draws on multiple data sources to explain if and why research is pivotal to universities and how early career researchers navigate national and institutional policies around research. Through an in-depth study of ADA University and Azerbaijan State University of Economics, the authors document recently adopted guidelines for staff recruitment and promotion which are aimed at boosting research output and innovation. University jobs are categorised as teaching- and research-intensive and research is seen as a part of the global obsession with university league tables. The chapter concludes with a discussion of the possible implications of relying on research metrics for the quality of university-based research.

The Georgian case study explores the extent to which universities in Georgia internalised their research mission and developed the capacity to carry out this mission in a sustainable way. As the findings suggest, several important reforms such as integrating research institutes into higher education institutions and introducing a three-cycle system have contributed

significantly to the development of university-based research. Nevertheless, the study also identifies persistent structural and institutional problems that impede the implementation of higher education reforms. The authors argue that higher education institutions need to address these challenges to ensure the successful development of university-based research in Georgia.

The section on the research capacity in Central Asia includes the case studies of Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. The Kazakhstan case study identifies three stages in the development of university research capacity. The chapter uses government policy documents, reports prepared by the government and external advising organisations, scholarly research on the topic, as well as public and expert reactions in traditional and social media to the corresponding reforms. For each of the stages, the analysis includes the description of the main rationales, approaches, and specific initiatives of the government, as well as the way universities implemented anticipated changes. The chapter concludes with predictions about the future of research capacity development in the country.

The Kyrgyz case study examines the evolution and current state of research capacity in higher education institutions of the Kyrgyz Republic. It presents the findings of a qualitative study conducted at the country's two flagship national universities. Using empirical data from the interviews, country-specific literature and documents, national statistical data, and various national and international reports, this chapter demonstrates that, while both of these universities initiated a series of changes directed at developing research capacity, some of these changes have remained on paper with little or no actual implementation.

The chapter on Tajikistan draws on policy document analysis, literature by Tajik academics, and new primary source interviews with researchers working in Tajikistani higher education in the 2010s and early 2020s. Sabzalieva demonstrates that a research mission has not yet been internalised in Tajikistan's universities although the government and universities have adopted the language of research, provided guidance to academics on doing research, and given academics scope to set a research agenda and take up opportunities to do research. The development of a research mission in universities is further constrained by the heavily

politicised and increasingly authoritarian environment that characterizes the contemporary education and research system in Tajikistan.

The Uzbekistan case study examines relevant policy documents, official statistics, and the primary data generated through interviews to explain why higher education remained one of the least reformed areas in Uzbekistan until 2016 and why the reforms accelerated since then. While highlighting key policy changes in recent years, the chapter concludes that the structural impediments that constrain universities' ability to independently plan and build their research capacity remain unattended. Although the new government seems to appreciate the importance of investing in research, recently created incentive mechanisms are geared mostly towards quick fixes. There are no robust and well-thought-out long-term plans to improve research capacity in a broader sense, that is, long-term investments in people, processes, facilities, and carefully linking these to research outputs.

The reader will notice that two former Soviet countries are missing from the volume—Estonia and Turkmenistan. Unfortunately, the pandemic interrupted the work of our Estonian colleagues who initially signed up to present their case. Turkmenistan is a different story. This country is closed for any research and comparative analysis in social sciences. We were unable to identify a scholar who would be prepared to write the case study on the development of research capacity at universities in Turkmenistan.

These case studies are preceded by a short overview of the Soviet experience of developing a unique technocratic system with highly specialised institutions for higher education and research. The Soviet chapter argues that universities in the Soviet Union were not isolated from research. University-based academics were expected to engage in research, publish, and supervise doctoral students. However, the organisation, substance, and impact of university research activities were quite different from the research undertaken in academies of sciences or industrial research institutes.

The volume ends with a concluding chapter which synthesises the evidence from country case studies and charts the editors' vision of developing research culture at universities and deparochialising the idea of research. It offers insights into the main barriers in transforming

Soviet-style higher education institutions into research universities and establishes two groups of countries—the radical reformers and those who have pursued changes but have not radically transformed their national higher education and research systems. We observe that political and economic paths of development might not have been crucial determinants of transformation of the Soviet model of organisational separation of higher education and research. Neither does it seem that these macro factors have influenced differences in the experience of building universities' research capacity.

Transformations of the higher education sector to develop research capacity are not unique for the post-Soviet countries. The end of twentieth century and the beginning of twenty-first century has been marked by major developments in higher education's research mission in various global contexts. Therefore, empirical accounts of different pathways of boosting research at universities in post-Soviet countries has global relevance and might be of interest to scholars, professors, university leaders, and policy-makers in different countries. These case studies might be particularly relevant for those contexts which retain organisational separation of higher education and research, such as Germany, France, China, and some Eastern and Central European countries.

What makes this edited volume unlike many others is that every case study reports the findings of original[1] empirical research, not research published elsewhere. Each chapter is authored by academics with expertise in the higher education of a given country. Authors are based at universities in former Soviet countries, Canada, Europe, the United Kingdom, and the United States. Case study contributors conducted interviews with higher education sector representatives (academics, administrators, and policy makers) and complemented the interview evidence with the analysis of policy documents to observe how policy agendas in the last three decades have evolved and influenced the development of research universities, and how local stakeholders used the Soviet legacies and imported new policy paradigms to achieve their objectives. The writing of the volume was completed in September 2021, so the authors

[1] One exception is the Kazakhstan case that builds on the secondary literature and data.

were not able to account for some of the changes, some of them hugely important, that took place after that date.

While each chapter adopts its own unique analytical angle as appropriate to the circumstances of a given country, each country case overviews the institutional evolution of university research over the last 30 years, both at government and at university levels; the perspective of academics and university administrators; and the broader historical, social, political, and economic context in order to address the overreaching question: to what extent have universities in former Soviet countries internalised their research mission and developed the capacity to carry out this mission? The case studies that follow do justice to the complexity and versatility of this question.

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2

Separation Between Higher Education and Research in the USSR: Myth or Reality?

Igor Fedyukin

It is a commonly accepted notion that the defining feature of Soviet academia was the separation between higher education and research. Whereas universities were the main hubs of research in the West, the Soviet Union developed a system where serious research was the prerogative of academies of sciences[1] with their sprawling networks of institutes, while higher education institutions (HEIs) were generally supposed to focus on teaching. This separation has been invoked to explain both the strengths of Soviet science and its weaknesses. Allegedly, the absence of tradition of university research has hampered the ability of post-Soviet HEIs to meet twenty-first-century expectations of excellence. As many of the interviews cited in this volume demonstrate, this idea is widely accepted by academics and university administrators across the

[1] Eventually, there emerged four networks of research institutes: the Academy of Sciences, the Academy of Medical Sciences, the Academy of Pedagogical Sciences, and the Academy of Agricultural Sciences.

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post-Soviet space, while dealing with this separation has been at the core of R&D policies in the region.

Against this background, this chapter utilises both key Soviet policy documents, such as joint resolutions of the Central Committee of the CPSU and the Council of Ministers of the USSR, and secondary literature, including works by Soviet experts who wrote on this topic, to map out the role of university research as it was envisioned by Soviet policymakers and the measures they took to build research capacity at HEIs. This chapter also relies on a series of interviews with academics (by now, mostly retired) with experience of working at Soviet HEIs, as well as archival sources (annual research reports submitted by HEIs to the ministry) to suggest how research was actually administered at HEIs.

The picture that emerges from our analysis calls into question the accepted notion of separation between research and higher education in the USSR. First of all, while the institutional separation between research institutes of academies of sciences and HEIs was real, separating higher education and research was not the official doctrine of the USSR. On the contrary, the mantra that all HEIs must engage in research and that research must be integrated into teaching was constantly reiterated throughout the Soviet period. Secondly, calls upon universities to do research were not merely a matter of doctrine: the government repeatedly took practical steps to push HEIs to engage more actively in research and strengthen their research potential. The steps taken in the 1970s–1980s were especially important, and their legacy still largely defines the landscape of university research in the post-Soviet space.

Thirdly, the extent to which research was the rule or the exception at Soviet HEIs is a question that is extremely difficult to address with certainty. When we talk about the separation between higher education and research in the USSR, we must keep in mind that our assumptions are based on statistics that leave much room for uncertainty. Moreover, the situation varied dramatically across the Soviet space. At the very least, we must realise that, while Soviet HEIs might have lagged behind the Academy of Sciences in the volume and quality of research, research as an activity was never marginal in Soviet higher education. For this reason, far from being a greenfield project, building university research capacity in the post-Soviet space has had to deal with significant structural and cultural legacies.

Research Mission of Soviet HEIs

The fall of the Tsarist regime in 1917 and the consolidation of the new Soviet state opened the floodgates for radical experimentation in all spheres of life, including academia. In particular, these experiments involved abolishing degrees and academic titles and putting a premium on "practical" and "useful" teaching and research. Things began to change in the 1930s when the Stalinist consolidation of hierarchies gradually replaced the institutional and normative fluidity of the 1920s. In academia, it brought about a bureaucratic consolidation of control and a transformation of the Academy of Sciences from a learned society into a "ministry of science" that presided over a vast network of research institutes. At the same time, there emerged an equally vast, or even larger, network of applied research institutes subordinated to individual sectoral ministries. Many of these research institutes were created by splitting research units off from HEIs (Lakhtin, 1990, pp. 70–71). In the 1930s, there also emerged a sprawling network of highly specialised HEIs expected to train personnel for rapidly modernising and expanding Soviet industry. They were supplemented by a few "classical universities" that were supposed, among other things, to train personnel for the research sector (Kuzminov & Yudkevich, 2021, pp. 72–78). This institutional landscape of research and higher education would last for the rest of the Soviet period.

The establishment of a separate network of research institutes did not mean, however, that HEIs were not supposed to do research. As early as 1930, the new salary rules in higher education explicitly listed "conducting research" among the duties of all full-time academics (Council of People's Commissaries of the USSR, 1930). The fact that research was absolutely essential to higher education in general and to HEI educational missions in particular was stressed in the 1936 joint resolution that codified the Stalinist turnaround in higher education by thoroughly repudiating early post-revolutionary experiments. In particular, item II.14 asserted that "without research (*nauchno-issledovatel'skaia rabota*) it is impossible for higher education institutions to provide education in accordance with the standards of today's science or to train future academics". Believing otherwise, which admittedly "some" academics and

academic managers did, was implicitly construed in this text as a leftist deviation and condemned, while the relevant authorities at all levels were summoned to do their utmost to assure that research would be conducted at HEIs (Council of People's Commissaries of the USSR and the Central Committee of the All-Union Communist Party, 1936).

The principle that HEI academic staff was supposed to do research was asserted in a variety of other documents. In 1937, the new salary rules for academic staff stressed once again that research was part of their job duties alongside teaching and administrative work. Academic staff members were also explicitly authorised to engage in contractual research commissioned by outside parties and to earn extra wages for this, which were limited to 50 per cent of their regular salaries (Council of People's Commissaries of the USSR, 1937; Mukhin, 1979, p. 27). Both of these provisions would remain on the books throughout the Soviet period.

In the post-war decades, Soviet authorities repeatedly returned to this subject (for an overview, see Lakhtin, 1990, pp. 72–75; Kuzminov & Yudkevich, 2021, pp. 470–472). Typically, joint resolutions of the Central Committee of the CPSU and the Council of Ministers of the USSR both reaffirmed the official discourse about HEIs being centres of research and provided practical guidance for HEI managers and the executive agencies that oversaw them. To be sure, these resolutions routinely referred to "serious shortcomings" in the organisation and management of research at HEIs: while this kind of criticism was a standard rhetorical element of such documents, it also indicates that the authorities did perceive the research capacity of HEIs as being deficient. At the same time, they left no doubt (and, indeed, presented as self-evident) that HEIs must actively engage in research and development. In particular, the Soviet government approved in 1956 the creation of dedicated research units within HEIs (Council of Ministers of the USSR, 1956, §4). A series of regulations in the first half of the 1960s set down the rules and procedures for administering different types of research units and projects at HEIs (Mukhin, 1979, p. 37). In 1964, a joint resolution focused specifically on developing HEI research potential: involving HEIs in research was declared a priority, and government agencies at all levels were ordered to provide additional resources and entrust HEIs more systematically with specific tasks within their R&D programmes (Central Committee of the CPSU and Council of Ministers of the USSR, 1964).

In 1968, yet another joint resolution sought to "increase the efficiency of research organisations" and to speed up the transfer of R&D results to the "people's economy": it explicitly addressed HEIs alongside research institutions and other types of units. Moreover, it stated directly that both research institutes and HEIs (their research institutes and thematic laboratories) ought to be held responsible for the direction and level of research in fields assigned to them. It also directed the relevant bodies to work out formulas for calculating the economic effect of introducing new products and technologies based on R&D results (Central Committee of the CPSU and Council of Ministers of the USSR, 1968, §§15, 28).

Especially important for our purposes was the joint resolution issued on April 6, 1978 (Central Committee of the CPSU and Council of Ministers of the USSR, 1978). Similarly to earlier documents, it asserted that HEIs were already making an important contribution to the Soviet economy with their research yet more had to be done. Therefore, the relevant ministries and other state agencies were ordered to involve HEIs in their research programmes more actively and apportion research funding to them accordingly. Additional resources and equipment were to be provided, along with other incentives such as reducing teaching loads for active researchers and setting aside hard currency to enable academics to travel to socialist countries for research and training purposes. The resolution also mandated the creation of "regional inter-university research support centres".

In terms of broader policy directions, the 1978 resolution identified the lack of coordination in selecting research topics as an important or even the key problem of university research at the time. Allegedly, academic staff members were insufficiently engaged in "large comprehensive (*kompleksnye*) research projects", that is, that many of them worked on narrow stand-alone themes which, consequently, lacked adequate academic and economic impact. The "efficiency" mentioned in the title of the resolution was understood as "radically improving research planning", "concentrating resources on the most important research problems", and "eliminating unnecessary parallelism and overlaps" between research projects.

Finally, the resolution identified a group of HEIs which "conduct research that has special importance for the people's economy". In these

research-intensive HEIs, "the rules of planning, funding, and conducting research should be brought into accordance with those at research institutes" of the Academy of Sciences. The offices for managing research (*Nauchno-Issledovatel'skaia Chast'*, or *NICh*) at these hand-picked HEIs should be supervised by designated vice-rectors for research. This created, for the first time ever, a separate category of HEIs that were to be more research-intensive than others and be funded accordingly—a Soviet version of the "research university". Attached to the resolution was a list of seventy such HEIs, including Moscow and Leningrad State Universities; the flagship universities of some (not all) union republics; major regional universities and polytechnics; and some specialised institutes (mostly technical, yet also medical) and the Moscow Pedagogical Institute.

Funding Research at Soviet HEIs

Policy documents of the Soviet era refer to two types of research conducted at HEIs, depending on the source of funding: "budgetary" and "contractual" (*khozdogovor*) (Karpov et al., 1990, pp. 6–13). "Budgetary" research mostly included work that academic staff members were required to do as a part of their job responsibilities. "I had a certain number of contact hours I was supposed to do each year, and an approximately equal number of hours were set aside for research. Time spent on administrative duties, if any, was paid for and budgeted separately", recalls a former associate professor at a Moscow geological HEI. Work at less prestigious institutions did not necessarily entail higher teaching and smaller research loads. Naturally, the allocation of time for research was largely an administrative fiction (just as it is often, unfortunately, the case at modern Western universities). Still, budgetary research was planned and accounted for at the departmental level and at the level of HEIs: research topics were discussed and approved in advance, and reports were submitted at the end of the year.

Conducting this research, however, did not entail getting extra pay. "We were never paid for 'budgetary' research, there was no money for it, and it was done for prestige", claims a professor at an engineering HEI in Moscow. While her words are suggestive of how the situation was

perceived by academics, her recollections are erroneous: as per her contract, she was paid for research, yet this payment was "hidden" in her total salary rather than being accounted for as targeted research funding. This not only probably served to disincentivise academics, making them largely unaccountable for this part of their research responsibilities, but also made this research invisible in official statistics on research funding.

Yet some additional money for budgetary research was indeed allocated to HEIs, and it is these funds that we observe in Soviet statistics. Some of them were targeted for research at the departmental level: this money could mostly be spent on research equipment and the salaries of research support staff. This funding was quite meagre, however, as Soviet analysts and members of the university community themselves complained. In the 1980s, HEIs subordinated to the Soviet Ministry of Higher Education received on average merely 120 roubles of budgetary funding per year per person for departmental research. At less prestigious HEIs subordinated to the Ministry of Education of the Russian Federative Republic, this number was lower still, amounting on average to merely 70 roubles per year per academic staff member (Mukhin, 1979, pp. 77–79). To put these numbers in perspective, 70 roubles was equal to the monthly salary of non-qualified technical personnel, while 120 roubles was an entry-level engineer's monthly salary.

In addition, budgetary funding for research could also be allocated to specialised units at HEIs that hired research fellows rather than teaching personnel. Although these were so-called thematic (*problemnye*) laboratories in most cases, a few major HEIs were authorised to create full-scale research institutes. For example, Belorussian State University, the flagship HEI of this union republic, had three institutes in the early 1980s: the Institute of Powder Metallurgy, the Institute of Physical Chemistry, and the Institute of Applied Physics (Tsyparkov et al., 1981, p. 26).

Contractual funding, on the other hand, was received as payment for research commissioned by other entities such as factories or ministries. Throughout the 1970s and especially the 1980s, the authorities pushed HEIs to increase the amount of contractual research in their portfolios: the ability to attract such funding was presented as an important indicator that a given HEI's research was actually useful for the Soviet economy.

Unlike budgetary research, contractual research allowed researchers to earn extra money and could even be quite lucrative.

"Everybody did this work at our department, it was a matter of course", recalls another professor at an engineering school in Moscow, even though his institution did not number among the 70 research-intensive HEIs.

> All factories had quotas of how much money they had to spend on research, and this was strictly enforced. So, getting these contracts was quite easy, especially for someone who had worked in a given field for a while and established connections. You met factory managers, talked to them, and then proposed a research project that might be useful for them. It was as easy as that!

This professor explained that, insofar as the total income from contractual work was capped at 50 per cent of one's regular salary, there was no rivalry over it within departments, and "everybody" got a chance to participate. There was even plenty of money left over to hire full-time researchers, pay student research assistants, and even buy research equipment for the department: "Compared to the situation today, we were swimming in money back then", he says nostalgically. "A neighbouring department had only five full-time academics, yet their lab that did contractual research hired 25 engineers [on short-term contracts] using that money", claims an associate professor at a geological HEI.

Nostalgia or not, there is no doubt that contractual funding was a lot more plentiful than budgetary funding. Partly because budgetary funding was meagre and partly because the pressures and incentives to expand contractual funding were great, the amount of contractual research funding attracted by Soviet HEIs in the late 1980s was seven times larger than the budgetary research funding they received (Karpov et al., 1990, p. 13). The share of budgetary research in the total research funding could vary in the late 1970s even among engineering HEIs in Moscow, for example, from a respectable 30 per cent or more to merely 1 per cent at the Moscow Aviation Technology Institute—a situation that reflected the latter's access to lucrative research contracts for the aviation industry (Mukhin, 1979, p. 77). According to official data, 75 per cent of academics across the USSR participated in contractual research at the time (Tsyparkov et al., 1981, p. 12).

One reason why it was so easy for some HEIs to get contracts is that Soviet enterprises such as factories or mines were required to invest a specific share of their profits in R&D, and these quotas were actually enforced. The allocation of these contracts was inevitably part of the Soviet economy of favours. "The father of one of the members of our research group was a section chief in the KGB", recalls one professor interviewed for this chapter. "So, the KGB allocated some contractual funding for our research", even though the subject matter had nothing to do with state security. "When a deputy chief engineer at a mine for which we did contractual work decided to get a postgraduate [*kandidat nauk*] degree", he continued, "his dissertation was naturally written by people at our lab. And, of course, you hired people's cousins or nieces, that was routine". How much of the research done under contracts that were allocated in this fashion was real? "In our case, it was probably half real, half on paper only", the professor admits. But, then again, we have no reason to believe that the situation at specialised research institutes was any different.

Of course, the situation varied in practice, insofar as a person's ability to attract funding heavily depended on his or her field of work. Obviously, this option existed mostly in applied fields, and an astronomer or a historian could hardly compete with a scholar working in petrochemicals or structural engineering. The Moscow engineering professor who asserted that receiving contracts was easy and that "everybody" at her HEI was involved in such work hastened to make a caveat: "Well, of course, it was very different for people from humanities departments or foreign languages or purely theoretical people like mathematicians: they hardly received anything". She went on to boast, "We had so much contractual money at our department that we would hire our foreign language colleagues to do translations for us and our math colleagues to do calculations".

Furthermore, there were huge disparities between HEIs. A survey of academics in Belarus conducted in the late 1970s highlighted both the relatively disadvantaged situation of provincial HEIs in compared to institutions in Moscow or Minsk and the dependence of funding on the field of research. At the Minsk Radio Technology Institute, 63 per cent of academics reported participating in contractual work, a number that

reflected this institution's heavy focus on applied disciplines, in comparison to 56 per cent at the somewhat more multidisciplinary Novopolotsk Polytechnical Institute that serviced the city's huge petrochemical industry. At Belarus State University which, as befits a "university", covered a broader range of theoretical disciplines and humanities, the corresponding figure was merely 21 per cent, even though this was the republic's flagship HEI. It was a meagre 4 per cent at the provincial Grodno State University, while no contractual research at all was reported at the Theatre and Arts Institute and the Cultural Institute (Tsyparkov et al., 1981, p. 12). On the whole, across all HEIs in Belarus, 65 per cent of surveyed academics reported not being involved in contractual research, while 12 per cent of all academics were excluded even from the poorly funded budgetary research: this was a typical problem of academics at the so-called general curriculum departments and in the humanities and social sciences (Tsyparkov et al., 1981, pp. 8, 11).

By the 1980s, Soviet experts and policymakers were increasingly concerned about the negative side effects of the HEIs' focus on contractual research. Not surprisingly, the bulk of these contracts concerned applied research and development. It was argued that this suppressed the academics' interest in and ability of conducting research of a more abstract and theoretical nature which, in turn, was seen as harmful to the longer-term growth prospects of HEI research potential and detrimental to the quality of teaching (Mukhin, 1979, p. 59; Karpov et al., 1990, pp. 14–15, 17). The last major Soviet policy document specifically devoted to the topic of university research, the 1987 joint resolution, expressly and repeatedly called for increasing budgetary funding for more theoretical research at HEIs in order to counterbalance their excessive focus on applied contractual work (Central Committee of the CPSU and Council of Ministers of the USSR, 1987).

A Tale of Two Polytechnics

How these trends and pressures played out at the level of specific institutions could be seen from the annual research reports submitted to the ministry by two major regional HEIs, the Ural Polytechnic Institute

(UPI) and the Gorky Polytechnic Institute (GPI). Both of these institutions were located in large urban centres, Sverdlovsk (now Ekaterinburg) in the Urals and Gorky (now Nizhny Novgorod) on the Volga, respectively. These cities boasted a high concentration of heavy industry, including defence factories, and large clusters of research institutes. As both institutions specialised in engineering, metallurgy and related fields, their academics had ample opportunities to engage in applied contractual research and enter into collaboration with colleagues from research institutes. Both institutions ranked among the USSR's top 70 HEIs in 1978.

These HEIs' annual reports echo, naturally, the latest fads in Soviet R&D policy. After the publication of the 1978 joint resolution by the Central Committee and the Council of Ministers, the Gorky Polytechnic Institute (GPI) immediately put together an "action plan for raising the effectiveness of research work" that was subsequently prolonged to 1983. The deliberations of this institution's various bodies also reflected state-mandated policy priorities. In March 1983, for example, the GPI Academic Council instructed the Research Management Office to "take more active strides towards increasing the share of priority themes in the overall volume of research work". In December, the Rector's Council returned to the same issue and decided "to elaborate measures for focusing budgetary research on larger themes, to increase research outputs, and to improve control over the implementation of these policies". As expected, the action plan focused heavily on expanding the involvement of GPI academics in various coordinated research programmes (Gorky Polytechnic Institute, 1983, pp. 7, 1, 2, 18).

A few years later, in 1987, Mikhail Gorbachev's *perestroika* was already in full swing. At UPI, a new action plan was designed for "raising the effectiveness/efficiency of R&D and research management" for 1986–1995 that entailed, among other things, performing a research audit (*attestatsiia*) for research units and individual researchers. The authors of the report also boldly used the new language of marketisation. The report embraced the "new mode of relationship between higher education, industry and science". It referred to the institute's outputs, including its research results, as "*tovary*" or marketable goods that had to be "paid for at the agreed prices" by those who used them. A new type of unit, the Republican Engineering Centre, was set up to facilitate the

transfer of applied research results to industry (Ural Polytechnic Institute, 1987, pp. 44, 2, 3). The following year, the authors of the UPI report contrasted applied research and development that produced directly observable economic benefits with purely "theoretical research … where it is impossible to quantify the scale of economic effect". To further incentivise researchers, annual bonuses were replaced by quarterly ones (Ural Polytechnic Institute, 1988, pp. 66, 75).

At GPI, too, the Impuls R&D Centre was set up in 1987 on *khozrashchet* principles of financial autonomy and self-sufficiency. In order to "increase the effectiveness of research, speed up the completion of *khozrashchet* research contracts, facilitate the transfer of R&D results to industry, increase the volume of R&D and reduce the number of full-time researchers involved", GPI designed a new bonus payment scheme. It was also decided to offer training for research team leaders on organising research according to the new economic principles. The older language of focusing efforts in priority areas was also present in the report, however (Gorky Polytechnic Institute, 1987, p. 18).

The two institutions' reports point to a very high degree of involvement of their academics in research. GPI had 1144 academic staff members in 1983 (note, however, that only half of them had *doktor nauk* or *kandidat nauk* degrees), 730 of whom participated in contractual research (GPI 1983, Table 12). In 1987, GPI had 957 academic staff members (not counting researchers), and every single one of them participated in contractual research (Gorky Polytechnic Institute, 1987, Table 7). At UPI, 1646 out of its 1711 teaching staff members were involved in all types of research in 1987 (Ural Polytechnic Institute, 1987, Table 12). According to UPI's 1988 report, it had a total of 2266 teaching and research staff members. This number included 177 researchers who were employed in specialised budgetary research units, that is, were, by definition, full-time researchers. In all, 1551 staff members participated in different types of research, including contractual research. Out of GPI's 1642 teaching staff members, 1174 were involved in contractual research that year (Ural Polytechnic Institute, 1988, Table 12).

The wording of these reports is largely economic, as the volume of research and its effects are assessed in roubles. At UPI, this amounted to 15,594 thousand roubles in 1987, which represented an increase of 845

thousand roubles in comparison to the previous year, or more than two-fold. The bulk of it was contractual research which was assessed at 13,251 thousand roubles. The "economic effect" of implementing UPI's research results in the "people's economy" was, allegedly, 49,905 thousand roubles (Ural Polytechnic Institute, 1987, p. 48, Table 7). GPI's research brought much more modest results to the "people's economy"—merely 272 thousand roubles (Gorky Polytechnic Institute, 1987, Table 7).

At the same time, the institutions reported their publication results: these metrics were listed first in the report tables, reflecting, perhaps, their symbolic importance. In its 1987 report, UPI listed 48 monographs, 908 journal articles, 350 patent applications, and 43 defended dissertations (Ural Polytechnic Institute, 1987, Table 12). GPI listed 548 articles, 120 patents, and 43 defended dissertations (Gorky Polytechnic Institute, 1987, Tables 12, 7). In both cases, this indicated an average publication rate of slightly more than one journal article per academic staff member in two years.

Finally, another important priority was involving students in research. GPI claimed that 91 of its undergraduate students were involved in research work in 1983 (Gorky Polytechnic Institute, 1983, p. 5) In 1983, 38 of 133 postgraduate students were involved in research at GPI (Gorky Polytechnic Institute, 1987, Table 12) and 168 out of 325 at UPI (Ural Polytechnic Institute, 1987, Table 12). However, postgraduate dissertation research was apparently not included in the metrics: only supplementary research projects conducted by academics were taken into account.

Conclusion

So, how real was the separation between research and higher education in the USSR? Perhaps, the best way to answer this question would be to say that a lot of research was, indeed, separated from higher education, as it was conducted in research-only institutes. Higher education, however, was never separated from research, since conducting research was, by definition, part of the job responsibilities of all academic staff members, and significant amounts of research were indeed carried out at HEIs. Nor

did the Soviet authorities themselves view the HEIs, the Academy, and industrial research centres as fully separate or competing sectors. On the contrary, the idea was that both HEIs and other types of research organisations were parts of a unified framework of the Soviet R&D sector. Organisationally, this was reinforced by a variety of thematic programmes and coordinating committees that, by the end of the Soviet period, encompassed pretty much all institutions of different types and all individual research projects. Furthermore, there was the widespread practice of Academy researchers—especially, its leading scholars—holding part-time teaching jobs at HEIs, and HEI academics working part-time at research institutes. We do not know the exact scale of this practice of *sovmestitel'stvo*. However, some of the most prominent Soviet research-intensive HEIs such as Novosibirsk State University and the Moscow Institute of Physics and Technology were explicitly established as joint ventures with the Academy of Sciences.

Still, even with these caveats, assessing the actual research potential of the Soviet higher education sector is not easy. The Soviet analysts themselves saw it as a challenge: theoretical works of the late 1970s–early 1980s discussed the limitations of the various metrics available in the USSR. Many of their concerns sound very familiar to us today. They recognised that, while publications are an important indicator, not all publications have equal value. In the absence of more sophisticated tools for tracking citations and impact factors, they tried to distinguish between publishing externally, in "inter-university" publications, and internally, in one's own department. They also struggled to calculate the economic impact of research, which, in the absence of market prices, boiled down to employing officially approved coefficients or inventing unwieldy formulas using different combinations of statistical data. They searched in vain for methods of adequately comparing the research effectiveness of HEIs and specialised research institutes, which was complicated by the fact that research was only one of several HEI missions that also had indirect and hard-to-observe positive effects, or so one hoped, on the quality of teaching (Mukhin, 1979, p. 102 passim).

The statistics at our disposal also present challenges. Taking stock of Soviet university research is complicated, for example, by the fact that HEIs were managed by a variety of government bodies: the most

important HEIs reported to the Union Ministry of Education, while others were subordinated to republican educational authorities or different sectoral industries. Some data is simply lacking—for example, comprehensive statistics on the publication records of Soviet HEIs. Other data reflects the formal ways in which research was accounted for—for example, the treatment of academic staff (*professorsko-prepodavatel'skii sostav*) and "scientific workers" as two separate categories or not counting the research hours covered by professors' regular salaries as research funding. Of course, these research hours were, to some extent, an administrative fiction, but so were the hours allegedly spent on research by the staff of numerous research institutes.

Nevertheless, judging from the data that we have at our disposal, the combined research potential of Soviet HEIs appears to have been more or less comparable to that of other sectors. While HEIs accounted for merely 11 per cent of what were officially classified as "research organisations" in the USSR in 1990, the Academy of Sciences did only slightly better with 16 per cent of all research organisations. It is the industry research sector that made up the rest. In terms of degree-holding personnel involved in research, the university sector was actually ahead of the Academy: it employed 43 per cent of all research-active holders of the *doktor nauk* degree against the Academy's 29 per cent, and 43 per cent of all research-active holders of the *kandidat nauk* degree against the Academy's 18 per cent. Nor was the amount of research funding allocated to HEIs and the Academy vastly different: while the Academy got about 12 per cent of the total funding, HEIs received slightly less than 7 per cent. The situation depended on the type of research we are looking at. In basic (*fundametal'nye*) research, the Academy was far ahead, of course: in 1989, it got over 60 per cent of the total funding for this type of research, while the HEIs' share was a mere 11.6 per cent. In applied research, however, HEIs were on nearly equal footing, getting 11 per cent in comparison with the Academy's 13.4 per cent (Mindeli, 1992, pp. 32, 45, 111, 248). A recent attempt to go beyond the official statistical categories and recalculate the relative share of university research by counting all research units and grouping teaching staff (*professorsko-prepodavatel'skii sostav*) and researchers together actually puts HEIs ahead of the Academy of Sciences: the former had 20.7 per cent of all research units and 10.2 per cent of

researchers and academics in the late 1980s, while the latter had 21.4 per cent and 40.2 per cent, respectively (Kuzminov & Yudkevich, 2021, pp. 470–471, 508–509).

None of this goes to say that research as it was practiced at HEIs did not differ from research as it was practiced at the academies of sciences. The institutional context was different, the priorities were different, and the ethos might have been different, too. To what extent these differences translated into differences in the quality of research is difficult to say, however. It is also important to note that the situation varied dramatically not only from one HEI to another but also from one academic institute to the next. While the average research institute was most likely stronger than the average HEI, some HEIs were certainly much stronger than many weak research institutes. Indeed, the very decision to put a small group of research-intensive HEIs into a separate category indicates that the higher education field was very uneven in its research potential. But, then again, formally segregating HEIs on the basis of their research potential was a global trend at the time, most prominently embodied in California's 1960 Master Plan.

This segregation also left deep legacies across the post-Soviet space. Out of the 70 research-intensive HEIs identified in the 1978 resolution, 47 were concentrated in the Russian Federation, and 11 in Ukraine. These numbers mirror the overall distribution of research capacity in the USSR: almost 60 per cent of research organisations of all types were concentrated in the Russian Federation, and another 18 per cent in Ukraine. Belarus and Uzbekistan came in next with merely 4 per cent in each of these categories; other republics fared even worse. Russia also received over 70 per cent of all funding for basic research; Ukraine got one-seventh of that amount, while other republics shared the rest (Mindeli, 1992, pp. 162, 111). These disproportions inevitably affected the post-1990 trajectories of R&D policy in the newly independent countries.

While the post-Soviet decades are often described as a period of a decisive turn-around in terms of government policy towards university research, the Soviet legacies also continued to loom large. Some of the themes that define contemporary debate on this topic and that are often presented as a neoliberal revolution—pushing academics to do research and attempting to use quantifiable metrics to assess it; tying salaries to

research performance; encouraging universities to conduct "useful" research and to attract funding from industries; complaining about the shortage of budgetary funding for research; and designating flagship research-intensive HEIs—would have sounded very familiar to our academic forebearers in the late 1970s and early 1980s. Indeed, it is hardly a surprise that, out of the 47 Soviet research-intensive HEIs in the Russian Federative Republic, about half are also participating in flagship university programmes in post-Soviet Russia.

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Part I

University Research Capacity in Eastern Europe and Russia

3

University Research Capacity in the Republic of Belarus (1990–2020): Effects of the Education Policy of "Re-Sovietization"

Andrei Laurukhin

Introduction

The strengthening of the research and innovation component of higher education has been a key trend in the national educational policies of most countries in the world over the last three decades. This trend has been accompanied by the large-scale internationalization of higher education and the rapid growth of international cooperation between universities.

Similar tendencies have been observed in many post-Soviet countries after the collapse of the USSR. Belarus also followed this trend up to a certain point by adopting national policies aimed at promoting "innovations" and stressing the role of higher education institutions (HEIs) in this process. As late as 2007, a presidential decree mandated the creation of science and technology parks, while, in 2018, the Minister of Education G. Karpenko claimed that Belarus was ready to shift to the University 3.0

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model according to which HEIs engage not only in teaching and training research personnel but also in conducting research and applying it to the economy at large. The Ministry selected six HSEs for the development and implementation of a pilot project to introduce this new approach.

At the same time, in sharp contrast to most other post-Soviet republics, Belarus rejected at an early stage the policy goal of "westernizing" its higher education and research sphere. Instead, it set itself apart from other countries in the post-Soviet space by adopting the strategy of "re-Sovietization" (Laurukhin, 2019). This doctrine aimed at preserving the Soviet model of higher education that was described by President A. Lukashenko in 2005 as "the best in the world" and assumed that both the research infrastructure and the structure of incentives for conducting research in higher education inherited from the USSR were sufficient for successfully supporting research. Following V. Furs (Furs, 2007, pp. 52–55), we understand "re-Sovietization" not as a "spontaneous roll-back" to the (Soviet) status quo ante but as the isolationist response of official Belarus to global challenges and a form of local appropriation of global processes.

Practically speaking, this has led to increasing political pressure being put on HEIs and to the discouragement of university administrators from experimenting and pursing initiatives on their own. Taken together, these contradictory trends have produced a peculiar setting in which the Soviet model was not only gradually rebuilt but also distorted, producing outcomes that have sometimes entered into blatant contradiction with the declared goals of policy makers. This chapter will show how the implementation of this hybrid educational policy has affected university research capacity in the Belarusian system of higher education between 1990 and 2020.

Data and Research Design

This study is based on ten semi-structured interviews with current and former policy makers in the field of higher education, university administrators, and academics. The interviews were conducted in Belarus over the period July 8–24, 2020, recorded, and transcribed for thematic

analysis. Our other data sources included policy documents, media publications, and academic literature on research policy and higher education and on governance reforms in Belarus. Documentary sources include government reports, documents prepared by higher education and research institutions, and reports by international organizations. The chapter also draws upon the secondary analysis of quantitative data, including bibliometrics and national statistics.

Managing Research and Higher Education in Belarus

After Belarus gained independence in 1991, the key players in the field of higher education policy were initially the universities themselves: in a situation of political, economic, and social uncertainty, they had to assure their own survival. In such circumstances, research became a marginal concern for universities. Their lack of interest in developing research capacity also stemmed from the fact that, among the HEIs that Belarus inherited from the USSR, only Belarusian State University (BSU) could boast of high-quality research personnel and a level of funding that allowed it to think seriously about supporting research.

After the current president A. Lukashenko came to power in 1994, the situation began to change, and HEIs faced increasing competition from other players in the field of educational policy, such as the Ministry of Education, the Higher Attestation Commission (HAC), the National Academy of Sciences of Belarus (NASB), the State Committee for Science and Technology (SCST, established in 1993), and the Presidential Administration. After each presidential election, the autonomy of universities in educational policy and research management shrunk further. The role of the Ministry of Education also decreased as a result of the growing influence of the HAC, the NASB, the SCST, and the Presidential Administration. During the 2001 elections, a lot of students and academic staff members voted against the current president, leading the political authorities to view universities as a potential threat. After the 2006 presidential elections, during which BSU rector A. Kazulin ran for

president and attempted to mobilize the academic community of the country's leading university in his support, universities lost all opportunities for implementing independent policies. The law "On Higher Education" (2007) specified that rectors of all universities as well as the Republican Council of Rectors (established in 2001) were to be appointed in consultation with the Ministry of Education, the Presidential Administration, and the president personally. As if to emphasize this trend, the acting Minister of Education A. Radkov was chosen in 2010 to head A. Lukashenko's re-election campaign.

In such circumstances, the conservative and politically loyal NASB began to play a growing role in the organization and management of education and research. A key role in these processes was played by academician A. Rubinov, who managed to combine research and political careers, serving as the chairman of the Higher Attestation Commission in 2002–2006, the first deputy head of the Presidential Administration in 2006–2008, and the chairman of the Council of the Republic of the National Assembly of Belarus in 2010–2015.

As a result of institutional changes implemented in 2001–2005, the NASB began to play a key role in supervising research activities at universities and other organizations in the country. Today, it evaluates all research projects, postgraduate programmes, and even dissertations at the pre-defence stage as well as deciding about the allocation of funding by state programmes. The SCST, established to administer applied research and innovation, was given special administrative powers by the president to oversee the activities of the NASB in order to integrate scientific research into the economy. However, this measure has led to mixed results: the management structure has become more cumbersome and bureaucratic, the NASB's capacity to conduct basic research has significantly deteriorated, while R&D expenditures declined from 1.47% of GDP in 1990 to 0.59% in 2020.

Adopted in 2011, the "Educational Code" has given the president complete control over Belarusian HEIs by establishing a vertical hierarchy of power in which universities, Councils of Rectors and even the Ministry of Education occupy subordinate positions. In the absence of university autonomy, this strict hierarchy in which the minister of

education and all rectors are appointed only with the personal consent of the president replicates the Soviet model of top-down control over universities. It also obstructs all independent educational and research policy at the university level, with all initiative being punishable. As a result, university administrators have opted for preserving the inherited Soviet status quo rather than promoting reforms and innovation.

Research Personnel at Belarusian HEIs

The quantitative assessment of the research potential of Belarusian HEIs is complicated by the structure of the statistical data collected in the republic. Its evolution over the last 30 years notwithstanding, the statistical terminology of the Republic of Belarus still follows the Soviet model, using such categories as "the number of employees engaged in scientific and technical activity" ("scientific staff"), which was renamed in the early 2000s "the number of employees engaged in research and development" ("R&D personnel"). This category includes only individuals who formally hold research positions, as opposed to professors and docents who are officially considered teaching personnel. In other words, as far as HEIs are concerned, "scientific staff/R&D personnel" includes only individuals who work at specialized research units and labs within HEIs, while professors and docents are only counted if they also formally hold part-time research positions concurrently with their main teaching jobs. It is impossible to say how many professors and docents combine teaching and research jobs in this way and to what extent the statistical category of "scientific staff/R&D personnel" covers the entire spectrum of research-active university employees. Anecdotal evidence and some of our interviewees suggest that the most productive academic staff indeed also hold research positions and thus belong to the "scientific staff/R&D personnel" category, yet this is impossible to verify.

With this in mind, we should note that, in 1989, 31.8% of all "scientific staff" worked at research institutes and their branches and units, 37.2% worked at HEIs and their research labs, 13.5% at R&D, engineering and technology organizations, 2.0% at industrial enterprises, and

15.5% at other research institutions (Nauchnyy potentsial Respubliki, 1991, p. 52). In other words, even with the caveat that "scientific staff" does not include all, and perhaps not even most, research-active faculty members, HEIs were still ahead of the Academy of Sciences in terms of the number of researchers they employed. Despite the significant reduction in the size of scientific staff after the collapse of the USSR, the Ministry of Education still had the largest share (23.5%) of scientific staff, while the Ministry of Industry and the NASB ranked second and third with 16.9% and 15.0%, respectively (NSCRB, 1996, p. 37).

However, by late 2005, the distribution of scientific staff had changed dramatically: the Ministry of Education (i.e. HEIs) accounted for only 9.4% of all scientific staff, whereas the Ministry of Industry accounted for 19.5%, the NASB for 37.3%, and the State Military and Industrial Committee for 10.9%. By early 2009, the NASB had 66.4% of all *doktor nauk* and 58.7% of all *kandidat nauk* degree holders in the republic. Over the 2010s, the share of scientific staff employed by the higher education sector grew somewhat to 10.4% of the total amount, and the share of the holders of *kandidat nauk* and *doktor nauk* degrees employed in the higher education sector also increased slightly to 18.3% and 22.8%, respectively (NSCRB, 2020, p. 17). Still, the bottom line is that, by early 2006, the NASB had already accumulated the largest share of scientific staff in the country and emerged victorious in the struggle for the dominant role in the field of education and research, not only retaining but also significantly expanding the position it had inherited from the USSR. Thus, state policies in Belarus not just reproduced the division of labour between HEIs and the Academy as it had existed at the end of the Soviet period but even increased it to a degree comparable to the state of affairs in the 1940s–1950s rather than the 1960s–1980s. To all intents and purposes, this reversed decades of late Soviet efforts to bring the Academy and HEIs together.

This trend underscores the fact that the key mission of universities is defined by the Ministry of Education (and understood by university rectors) as teaching—indeed, predominantly teaching at the bachelor's level. The share of students enrolled in master's programmes in Belarus remains negligible: 1% during the 2010–2011 academic year and 4.3% during the 2019–2020 academic year. Even this growth in the share of masters'

students has been largely due to the drop in the total number of bachelor's students for demographic reasons (NSCRB, 2015b, p. 157; NSCRB, 2020, p. 45). The third cycle of higher education (postgraduate and doctoral studies) is formally absent in Belarus, while the training of future *kandidats* and *doktors* is referred to as "post-higher education", which is supervised, evaluated, and certified by the NASB and HAC.

As elsewhere in the post-Soviet space, HEIs in Belarus have suffered from an extensive "brain drain". Respondents note that, in the 1990s, this led to the active cooperation between scholars who left Belarus and successfully integrated into the international educational and research community and those who stayed in the country. "Take, for example, the Department of Energy Physics, in which about 90% of all publications were made jointly with foreign colleagues from different countries and which mainly conducted research in different laboratories around the world", a former high-ranking policymaker observed. "Although … people seemed to be leaving abroad, their migration nevertheless had a very positive effect on the development of the research environment at universities, because those people were very influential and encouraged young people to pursue academic careers". However, when the system turned towards isolationism in the 2000s, this kind of cooperation progressively declined before stopping altogether in the 2010s.

Finally, Belarusian universities have faced the problem of ageing academic staff and a widening generation gap between senior scholars entrenched in leadership positions and their younger colleagues. According to BSU Rector Siarhiej Ablamiejka, the average age of a department head at BSU is 57 years old, while employees past the retirement age account for 59% of *doktor nauk* degree holders (up from 35.8% in 1988) and 39% of *kandidat nauk* degree holders (up from 5.9% in 1988). This is part of a broader trend in Belarusian science: according to Chairman of the Presidium of the NASB Anatoly Rusiecki, the average academician is 73.5 years old, while the average corresponding member is 68.5 years old. (Attestatsiia, 2011). Overall, according to 2011 data presented by the Ministry of Education, one-third of *kandidat nauk* degree holders and almost one-half of *doktor nauk* degree holders are past the retirement age (Listopadov, 2011).

Funding, Infrastructure, and Incentives for Research at HEIs

The state budget accounts for the largest share of research funding received by Belarusian HEIs. While all state agencies are encouraged to attract "extra-budgetary funds", the Ministry of Education is among the most heavily depended (72.7%) on budgetary funding for the research projects it commissions, second only to the Ministry of Architecture and Construction (99.9% of all funds) and the NASB (85.7%) (GKNTRB, 2019, p. 97).

At the same time, Belarus lags behind all developed countries in the world in budgetary expenditures on higher education and research and development and ranks the lowest among European countries (NSCRB, 2012, p. 139). In 2011, the actual spending of the Belarusian national budget on science, R&D and innovation amounted to 0.28% of the GDP, which was a lot lower than the figures of EU states (e.g., Lithuania allocated 0.34% of the GDP for these purposes) and even of neighbouring post-Soviet Ukraine (0.35%) and Russia (0.36%) (GKNTRB, 2012, p. 23). Even against this backdrop, the higher education sector suffered disproportionately. The share of the higher education sector in domestic spending on R&D declined from 17.0% in 2005 to 9.6% in 2011. As a result, the financing of R&D in Belarusian higher education had fallen to 0.05% of the GDP by 2009 (NSCRB, 2012, pp. 66–70), the lowest level among OECD countries. During the 2010s, the situation deteriorated even further on account of the general economic slowdown in the country. In just three years between 2014 and 2016, the share of the higher education sector in domestic spending on R&D decreased by 0.9 percentage points (NSCRB, 2016, p. 31), amounting to as little as 9.4% of the combined domestic spending on R&D at the end of 2017 (NSCRB, 2018a, p. 32).

An analysis of government programmes, regulatory documents, and media statements by policy makers suggest that the policy of reducing the budgetary financing of research in general and R&D in higher education in particular was understood by the political leadership as a coercive measure to compel teams and organizations to seek extra-budgetary sources

of funding for university research. However, this policy did not have the desired results. The last relatively successful "five-year period" (2011 to 2015) is remarkable in this respect: the proportion of research funding received by HEIs from sources other than the state budget increased by only 0.5 percentage points over this time (NSCRB, 2012, p. 61; NSCRB, 2015a, p. 63).

Today, research funding reaches HEIs and individual faculty members in a variety of forms. Nominally, the bulk of research work is financed through salaries, since, in accordance with the Soviet model, all academic staff members are expected to conduct research as a part of their labour contracts (even if they are not counted as "scientific personnel"). The money specifically earmarked to fund research projects is allocated through grants distributed on a competitive basis by state programmes such as the "State Scientific Research Programmes" (SSRP or GPNI, in which the Ministry of Education accounted for 58.3% of competitively distributed funds in 2018, for example; GKNTRB, 2019, p. 65) and, to a much smaller extent, the Belarusian Republican Foundation for Fundamental Research (BRFRF or BrFFI). The distribution of all funds allocated by the republican budget for R&D is supervised by the NASB and the SCST.

The second source of funding is grants by foreign foundations, which, until relatively recently, were comparable in volume to the funding allocated by the BRFRF. However, all our respondents noted in their interviews that grants from foreign foundations are not a very appealing option since they, as a rule, cannot be used to pay salaries, on the one hand, and the high complexity of the application process as well as the increasing political risks, on the other. As one of the academics interviewed for this chapter said, "We are scared to accept grants from European foundations, and so we immediately rule them out. Political factors play an increasing role. [The authorities] begin to inquire who funds you and why you are funded". Notably, according to all interviewees, grants from Russian and Russian-Belarusian foundations are the smallest source of funding.

Another important element of the system of financial incentives for research at Belarusian HEIs is the fees paid for research commissioned by third parties. This instrument is mandatory for all HEIs in the country

and is a part of a policy of prompting HEIs to attract extra-budgetary funds. Every five years, the Ministry of Education sets targets for all the country's HEIs to increase income from the provision of paid services in accordance with the established standards (e.g., during the 2019–2020 academic year, the set target represented an increase of at least 5% on a year-over-year basis). The HEI administrations set corresponding targets for each department and school, and heads of departments and other subdivisions set target figures for their academic staff. As a rule, it is the academic staff members who are ultimately responsible for attaining the target: they are expected to find customers, negotiate contracts, conduct research, and make sure that the customers pay on time. The income from research for third parties is partly transferred to the university (the average share of universities is 50%) and partly to the school/department. Academic staff members receive salary bonuses from these funds.

In 2018, a new type of financial incentive for university researchers was introduced: a salary bonus for publishing in high-ranking journals. However, this instrument is available almost exclusively at BSU (and, even there, not at all schools).

Since the overall level of research funding is extremely low at Belarusian higher education institutions, academic staff members cannot afford to choose a more research-oriented career trajectory with a lower teaching load. One of the respondents—a university administrator from the country's most prestigious university (BSU)—explained that "even if you are a professor, and your workload is lower … teaching is still your main occupation, in terms of both the workload … and compensation. You can choose to take 50% more teaching hours, and you will get the same amount of money as your colleagues who publish and receive bonuses, yet without any fuss".

Research Outputs

According to a comprehensive study of citations of Belarusian researchers in scholarly journals in 2006–2010, the number of international publications by Belarusian scholars nearly tripled over this period in comparison to 1993–2006. The distribution of citations among key organizations has

remained largely unchanged over the post-independence period: the leaders are still the NASB, BSU, Belarusian State University of Informatics and Radioelectronics (BSUIR), and Belarusian National Technical University (BNTU), although their share in the national total has slightly decreased. For example, the share of the NASB in the total number of articles by Belarusian authors cited in the Web of Science decreased from 54.7% to 51.3%, the share of BSU from 37.5% to 33.6%, the share of BSUIR from 4.6% to 3.2%, while the share of BNTU remained constant at 2.9–3%. It is also clear from these figures that BSU is the dominant contributor to citation statistics among Belarusian HEIs, while the share of other HEIs is negligible (CNBNANB). Since then, the distribution pattern of publication activity by organization has changed very little (GKNTRB, 2019, p. 27).

As of 2020, the publication activity of Belarusian researchers and the presence of Belarusian research institutions in international databases, especially in the largest and best-known databases Scopus and the Web of Science, remains low. Out of 52 Belarusian universities, only 22 organizations have profiles in Scopus and 26 in the Web of Science. Scopus subscriptions are available only at seven leading universities and two research libraries of Belarus. Only five institutions subscribe to the Web of Science. At the same time, two-thirds of these publications are still authored by employees of only two institutions: BSU (35% of the total number of publications of Belarusian scientists in the Scopus database) (BGU, 2019) and the NASB (34%). Such insignificant involvement of the majority of Belarusian HEIs in the global exchange of academic knowledge points to the systemic and infrastructural nature of the problem. Characteristically, only 6 out of 306 journals approved by the Higher Attestation Commission (HAC) of Belarus are simultaneously indexed by the Scopus database. In comparison, the same indicator is 24% (551 journals) for Russia and 4% (73 journals) for Ukraine (MMKVYa-2019).

According to official reports for the year 2011, "the share of patent applications filed by higher education institutions and patents granted to them was about 20–25% of the national total. Universities own about 18% of existing patents in Belarus" (Zmeeva, 2011, p. 80). The share of the so-called innovative infrastructural organizations that were affiliated in some way with the higher education system amounted to 6.4% in

2011 (NSCRB, 2012, p. 82). Moreover, more than 90% of the higher education institutions where these innovative organizations were based were located in Minsk, despite the fact that innovative industries in general are more or less evenly distributed across Belarus (ibid., p. 82).

In 2010, the official assessment of the percent contribution of university research to industrial output was 2.7% and to agricultural output—merely 0.01% (GKNTRB, 2011, p. 97). According to official estimates, "the contribution of university researchers to the modernisation of production facilities for the development and production of new products, technologies and goods" over the period 2006–2010 was 13.6% of the total number of modernized production facilities and 4.7% of the total number of new technologies (ibid., p. 105).

Academic Freedom and Institutional Autonomy

Even though Article 52, Clause 1.6 of the "Educational Code" allows academics to participate in research and creative work, the right to disseminate and publish research findings is often limited at the institutional level. "In late 2019, I talked to a professor who published an article about agricultural policy in Belarus in a foreign journal. However, not all Belarusian officials liked this", said an academic interviewed for this chapter. Such displeasure can create major hindrances to a person's career, including the non-prolongation of the contracts of offending academics and different types of formal and informal pressure applied to rectors and department heads to make them restrain such staff members.

Belarusian HEIs limit the academic mobility of their staff—in particular, by introducing complicated procedures for obtaining permits to travel abroad. Receiving any research funds from abroad is increasingly viewed with hostility and suspicion. According to another academic,

> When we visit international conferences, our bosses are annoyed. One organisation engaged in innovative research invited me to a conference, and I approached my superiors to do the paperwork for the trip. All the expenses were covered by the inviting party, and I just needed my superiors' approval. Yet their reaction was: "Why are they covering all your expenses?"

According to the Viasna human rights centre, repressions against disloyal or dissident members of the academic community have been observed during every presidential election. Between 1994 and 2021, more than 1,000 students were expelled and more than 200 faculty members were dismissed for political reasons. These repressions have caused particularly serious damage to the social sciences and humanities, which were subjected to significant political indoctrination. The impact of restrictions on basic academic freedoms and on academic mobility is evident from the extremely low academic productivity of researchers in these politically sensitive fields.

Conclusion

To sum up, the policy of re-Sovietization has had a stifling impact on university research capacity in Belarus. The vertical personalist model of management has blocked the creative initiative of all other subjects of educational policy: in the absence of the right to take risks, the Ministry of Education and university administrators have tended to adopt the strategy of going with the flow, preserving the Soviet heritage, and maintaining the status quo. As a result of the victory of the conservative forces entrenched in the Academy and the strengthening of the latter's role as the main provider and supervisor of research, university research has been relegated a secondary role, and HEIs have focused on teaching and social missions. As a result, university research in Belarus occupies an even more marginal position today than during the Soviet period, while HEIs account for roughly 10% of the Belarusian science. Even within this narrow segment, the lion's share of international publications comes from only two metropolitan universities—BSU and BNTU. The model of research financing adopted by HEIs is not designed to assess the contributions of individual researchers or incentivize them, which negatively affects the structure of incentives of university researchers in general. The lack of self-government and academic freedom against the backdrop of the strict administrative hierarchy gives rise to extremely bureaucratic and clumsy organizational forms that significantly complicate the implementation of independent personnel policies and hinder prompt and

flexible responses to changes in the knowledge market in general. A permanent reduction in the size of research personnel and the deterioration of its age structure have had a negative impact on the quality of teaching in postgraduate programmes.

With regard to the trajectories of research policy in Belarus, one can say that, in the 1990s, ministry officials and the academic community looked to universities in Moscow as models of Soviet higher education and as sources of best practices and educational standards (Kovzik & Watts, 2003, p. 61). However, as the Russian Federation embarked on reforming its higher education system, Belarusian policy makers began to take a sceptical stand: Russian educational policy increasingly provokes rejection precisely because it fails to preserve the Soviet heritage.

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4

Democracy, Knowledge Economy, and Global Excellence: Mapping the Controlling Narratives of Latvian Research Reforms, 1990–2020

Liene Ozoliņa

Introduction: The Politics of Research

My interviewee shifts uneasily in her seat as I introduce the title of this research project, "University Research Capacity in Post-Soviet Countries". We are seated in her spacious office in one Latvian university. Her reaction is characteristic of how many Latvians feel these days about the label "post-Soviet". It is seen as irrelevant. Priorities and goals are no longer expressed in terms of de-Sovietisation: for almost a decade now, research policy reforms have been related to global excellence, competitiveness, and internationalisation. Still, the visceral reaction of my interviewee points to the geopolitics of knowledge that have underpinned research and higher education (HE) reform processes in Latvia since the 1990s. While the language of the reforms refers to universality, rationality, and objectivity, the reconfiguration of the research system has been a political undertaking.

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Scholars of globalisation and neoliberalism have spoken about the logic of marketisation spreading across the world and highlighted the convergence of norms and institutional patterns in all policy fields. Nevertheless, national research systems continue to differ substantially despite the levelling effects of globalisation, as knowledge creation and nation-building are linked in contemporary societies (Jasanoff, 2005, pp. 6–8). This is particularly true for former Soviet countries. As this volume suggests, different trajectories of research and higher education reforms are observed across the region. In this chapter, I show how research policy-making and nation-building have come together in the case of Latvia. Drawing on interviews with policy makers, researchers, and university administrators, as well as on the analysis of policy documents and mass media, this chapter maps the "controlling narratives" (Jasanoff, 2005, p. 45) that have organised research governance reforms in Latvia since the 1990s. This mapping exercise reveals three main controlling narratives that have been at work over time: (1) democratisation and Westernisation, (2) knowledge economy and innovation, and (3) internationalisation and global excellence. As this chapter shows, Latvian research system reform in general and the integration of research and higher education in particular were initially framed as part of the democratisation and Westernisation process that Latvia embarked upon after regaining independence from the Soviet Union. After the subsequent rise of the neoliberal discourse of the knowledge economy, an economic approach to research and higher education began to predominate, and the integration of research and higher education was framed as a means of increasing the global competitiveness of Latvian universities.

Latvian research and higher education (HE) reforms should be situated within two broader historical processes. First of all, they have been part of post-Soviet political and socio-economic reforms that were characterised in Latvia and the other two Baltic states by democratisation and the rapid shift to a market economy (Nissinen, 1999; Eglitis, 2002). Secondly, research and HE reforms in Latvia have unfolded in the international context of the neoliberalisation of universities marked by the emphasis on auditing (Power, 1997) and other quantifiable forms of accountability (Strathern, 2000) and "quantified control" (Burrows, 2012), the introduction of market competition into the university sector

(Olssen & Peters, 2005; Nash, 2019), and the increasingly precarious forms of academic labour, along with the characterisation of academics as neoliberal entrepreneurial subjects (Gill, 2009; Loveday, 2018). By "neoliberalisation" or "marketisation", I understand "the extension of market competition into organisations constructed around specific values of public good: education, health, social security" (Nash, 2019, p. 178). By tracing the integration of research into Latvian universities, this chapter reveals the early introduction of neoliberal principles of research governance in Latvia, including the emphasis on the principle of competition in the allocation of research funding and later on quantifiable research performance assessment. At the same time, it stands in a line of studies of the neoliberalisation of research and higher education that treat neoliberal rationales and practices not as hegemonic but rather as contested and implemented in different national contexts in historically and culturally specific ways (Ong, 2006; Nash, 2019). In particular, I show how the shift to "quasi-markets" (Nash, 2019, p. 180) in research funding (i.e., grant funding through competitions) was legitimised in the 1990s as a "democratising" measure, while a similar narrative of democracy was recently invoked by some universities to resist other reform proposals that would lead to the further neoliberalisation of the research and higher education sector.

Methodology

This chapter draws on eight semi-structured interviews with current and former policy makers working in the field of research and higher education, university administrators, and academics. The interviews were recorded in Latvia on 18–25 September 2019 and transcribed for thematic analysis. Other data sources are policy documents, media articles, and scholarly literature on research and higher education policy and governance reforms in Latvia. The documentary sources include government reports, documents drafted by higher education and research institutions, and reports by international organisations. The data analysis was guided by principles of interpretive methodology with an emphasis on narrative representations of social reality (Riessman, 2011). Following Jasanoff's

(2005) approach of narrative analysis in research governance, the qualitative data from the different sources listed earlier were analysed to identify recurring narrative frames, that is, ways that higher education and research reforms have been explained and justified in the public sphere.

The 1990s: Democratisation and the Return to Europe

Democratisation was the first controlling narrative that organised the research governance reform in Latvia after the country regained independence from the Soviet Union. After the Latvian independence movement began to gain momentum in the late 1980s, the Latvian Union of Scientists was founded in 1988. It was the first union of scientists in the Soviet Union, bringing together a large number of Latvian researchers (Kristapsons et al., 2003, p. 20). In 1989, the Union of Scientists together with the Latvian Academy of Sciences and a number of other institutions formulated a joint proposal for a new research governance and funding system that would be "competitive" and "democratic" in nature and where "suggestions for funding certain branches of science, programmes or individual research projects must be left to experts in the field i.e. the scientists themselves" (Academy of Sciences [1989] cited in Rambaka, 2011, p. 88). The Union of Scientists also proposed the reorganisation of the Latvian Academy of Sciences, the central decision-making and funding body in Soviet Latvia, and the creation of the Latvian Council of Science, the appointment of independent expert committees, the establishment of a peer-review process, and a new law on research activity (Rambaka, 2011, pp. 71–72).

The Latvian Council of Science was established with "democratically elected scientists" in 1990 (Kristapsons et al., 2003, p. 23). As the institution's website states, the charter goals of the Latvian Council of Science were formulated as follows:

> (…) to democratise the science governance system, to raise the effectiveness of scientific work, and to ensure effective use of public funding for

> science on the basis of research grant competitions. The Council's key goal was to promote science and technology policy development and implementation in Latvia according to European Union's goals and requirements. (Latvian Council of Science, 2020)

In the 1990s, the Latvian Council of Science played a key role in Latvian research governance, leading the "bottom-up transformation process", while the role of the state was "rather marginal" (Rambaka, 2011, pp. 206–211). On the recommendation of the Union of Scientists, the Council took over the key functions of the Academy of Sciences such as directing science and technology policy development, advising the government on research funding, and distributing funding.

As Latvia ceased to be part of a "science centre" (the Soviet Union) and moved to the "science periphery", it looked for a new centre as a source of models of research policy and governance. In Joseph Ben-David's terms, "the country, which plays the role of science centre, provides (for a certain period of time) the norms, patterns and ideals of the scientific activity, including the models for HE and research and development (R&D), the structures of organisation and management of science, i.e. the science policy", while "the countries of the so-called science periphery copy the science values, models and structures provided by the science centre (…) transfer and adapt" them (Blagojevic et al., 2003, p. 40). With the dissolution of the Soviet Union, which used to play the role of a science centre in the surrounding region of Central and Eastern Europe and Central Asia during the period of its existence, the former Soviet republics and other countries of the region started looking at Western Europe as a source of new governance norms and institutional patterns. In Latvia, reforms strove for a "return to the Western model of science institutions", and the scholars who had closer contacts with Western colleagues—particularly physicists and chemists—drove the reform process within the academic community (Kristapsons et al., 2003, pp. 20–22). As early as in May 1991, the Latvian Council of Science and the Latvian Academy of Sciences called upon the Danish Research Councils to organise an international evaluation of the Latvian research landscape. As Latvian representatives put it in an official letter to their Danish colleagues,

> To stimulate the movement towards European society, to which we believe Latvia is belonging ethnically, historically as well as by the mentality of people, several activities have been undertaken by our government and society. Science is one of fields to be analysed in order to make necessary changes. (…) We are convinced that expert analysis of Latvian science and well-balanced recommendations to make it more efficient and updated to current world science level cannot be achieved without international evaluation. (Danish Research Councils, 1992, p. 8)

As one Latvian scientist put it a few years later, this evaluation "helped our researchers to see their research projects from the perspective of the international scientific community" and "aided us in making new contacts with scientists of various Western countries" (Knets, 1999, pp. 194–195). The evaluators made a number of reform recommendations that cast the foundations for the process of integrating research institutes and higher education institutions as well as shaping other aspects of the reform (Kristapsons et al., 2003, p. 28).

One of the key steps in the process of integrating research and higher education was the reorganisation of the Latvian Academy of Sciences into a "community of leading scientists" (Danish Research Boards, 1992, p. 14), and, in 1996, the merger of universities and research institutes began. Between 1990 and 2001, the number of research institutes at universities grew from 2 to 21, while the number of state research institutes decreased from 18 to 10 (Table 4.1). Many new higher education institutions were established in the first decade of Latvia's independence. After the introduction of a free market economy, private universities started to

Table 4.1 Number of research institutions in Latvia, 1990–2001

Institutions	1990	2001
State/public universities	4	5
State institutions of higher education	6	23
Private institutions of higher education	2	17
Research institutes at universities	2	21
Academy of Sciences research institutes	16	–
State research institutes	18	10
Private sector R&D institutions	–	9

Source: Kristapsons et al. (2003, p. 43)

appear. In 2001, there were 17 private HE institutions operating in Latvia alongside 28 public HE institutions. Table 4.1 provides a picture of the development of the national research landscape in Latvia.

A Latvian policy maker pointed to the transition to a market economy as a key factor in the initial restructuring of the national research system:

> The current system of governance of research and higher education in Latvia is totally different from the system that existed in the Soviet Union. They have practically nothing in common. After the collapse of the Soviet system, a market economy was introduced in the 1990s. (…) Many universities and institutes lost their relevance insofar as the economic structure and priorities changed. It is no secret that a lot of research had been funded in Soviet Latvia through the defence budget. (…) [Now] universities became independent, autonomous, academically free institutions, which, in my opinion, created a certain sense of euphoria at the level of management. As a result, we have universities with different internal governance systems and different standards of educational provision. The same is true of research institutions.

Not only the Latvian institutional landscape of higher education and research was reconfigured, but also the research funding system was overhauled. One of the proposals of the joint committee of the Latvian Union of Scientists, the Latvian Academy of Sciences and other higher education and research institutions established in 1989 was to move to a "competitive" research funding system (Latvian Academy of Sciences cited in Rambaka, 2011, p. 88). The new funding system, later called the "Basic and Applied Research Grants Programme", was put in place in 1991 and remained the main funding mechanism up until 2005 (Rambaka, 2011, pp. 90–91). Research money was now distributed to projects in open competitions, unlike the case in Lithuania, say, where institutional funding was maintained and only a small percentage of financing was distributed through competitive grants (Kristapsons et al., 2003, p. 36).

At the same time, this competitive system had to be adjusted due to a key factor that shaped the Latvian research landscape in the 1990s: only a very limited amount of research funding was available. Over the period 1995–2004, GERD (gross domestic expenditure on R&D) was only about 0.4% of the country's GDP (European Commission, 2009, p. 26).

The scarcity of funds meant that the principle of competition could not be fully implemented. The Council of Science tended to distribute funding in small portions to many research projects to support the survival of institutions rather than funding solely the strongest projects (Rambaka, 2011, p. 104). As Elmārs Grēns, head of the Latvian Council of Science during the funding reform, wrote in 1995,

> Looking back, it seems obvious that this shock approach [of switching to grant competitions as the main form of research funding] was necessary to shatter the old administrative system of research management. (…) Unfortunately, the grant system in science had several negative traits from the very beginning, which had to be compensated by other methods of research funding in the course of time. The basic problem lies in the contradiction that ensues when an individual researcher and his project receives funding, while his/her respective research institution gets nothing and is forced to collect the necessary funds only as overhead from the grants allocated to researchers. (…) In essence, the role of institutes is reduced to serving as landlords and janitors for researchers. (Grēns in Kristapsons et al., 2003, pp. 40–41)

With such scarce state support, Latvian scholars increasingly had to rely on European funding. An EU document speaks of the "forced internationalisation of the national centres of scientific excellence" in Latvia in the 1990s, when joining international research projects was the only way to continue working (European Commission, 2009, p. 2). While independent research institutes were forced to internationalise, universities relied on government funding allocated for higher education services.

The choice by the local research community of a "form of administration through 'quasi-markets'" (Nash, 2019, p. 180), that is, the distribution of research funding in a competitive manner, shows that democratisation and marketisation processes were interlinked from the moment Latvia re-established its statehood. Sociologist Kate Nash (2019) points to research funding through grant competitions as one of the key elements of the neoliberalisation of higher education and research in the UK, with market principles being applied to research governance. Mark Olssen and Michael Peters call markets a "disciplinary technology (…) by

which control can be effected and performance enhanced in the public sector" (Olssen & Peters, 2005, p. 316). In Latvia, however, the principle of market competition was introduced as a bottom-up initiative. As aforementioned evidence shows, it was formulated and implemented by the local research community as a way of moving from the Soviet to the Western model of research administration and framed as part of the Latvian democratisation process.

Knowledge Economy and the European *Zeitgeist*

The new millennium arrived with the buzzwords of "knowledge economy", "innovation", and accession to the European Union (EU). The National Development Plan for 2002–2006 called "[f]ostering a knowledge-based economy" one of Latvia's priorities (2000, p. 10). Whereas research governance reforms had been led by the local academic community without a lot of government involvement in the 1990s, the national research policy became more "top-down" in the 2000s, and research was defined more explicitly as a state priority (Adamsone et al., 2008; European Commission, 2009, p. 11). The National Innovation Programme 2003–2006 outlined government measures for supporting the high-tech sector and private R&D investments, increasing the number of students in STEM fields, and funding technology-transfer centres (Ministry of Economics, 2003). The accession process to the EU also led to the greater role of the Latvian government in research policy-making, as it "commit[ted] the state to formulate a policy for science, technology and innovation, and appropriate measures of accountability" (Rambaka, 2011, p. 219). As part of the EU-funded initiative for developing regional innovation systems in accession countries, the Latvian Innovation Strategy Action Plan for 2005–2010 (RIS Latvia, 2004) was co-written by the Latvian Investment and Development Agency, the Latvian Technological Centre, the German company Inno GmbH, and the Stockholm Economic Development Agency.

Significant changes took place in research funding. In 2005, the new law "On Research Activity" introduced base funding, moving away from the grants-only system that had been in place since the early 1990s. The new law also stipulated an annual increase of R&D spending by 0.15% of the GDP. State research programmes were introduced as a new funding instrument in national priority areas, based again on grant competitions. The following were defined as priority areas in 2006: information technologies, organic synthesis and biomedicine, materials science, forestry and wood processing technologies, Letonica (Latvian Studies), agricultural biotechnology, medical science, energy, and environmental science (Rambaka, 2011, p. 97). Latvian research and innovation policy programmes became linked to European Structural Funds as soon as the latter became available. For example, the Programme for the Promotion of Business Competitiveness and Innovation 2007–2013 included a range of initiatives (such as fostering cooperation between academic researchers and industry) that were implemented mostly with the help of European Structural Funds (Karnitis, 2007, p. 176).

At the same time, the knowledge economy and innovation policies mostly remained "on paper". According to a Latvian academic who participated in drafting the Latvian Innovation Strategy Action Plan for 2005–2010, such a plan was "required by Europe and the *zeitgeist*", while there was little demand for it locally, and the document was not even translated into Latvian (Ozoliņa, 2009, p. 6). On the one hand, research and higher education were increasingly framed throughout the first decade of the new millennium as an economic development factor and therefore as a national priority for a "catching-up economy". As Olssen and Peters (2005) argue, a key feature of neoliberalism is that governments see research and higher education institutions as drivers of the knowledge economy and thus foster links between universities and industry. In this way, the neoliberal framing of research system reforms in Latvia replaced the earlier framing of democratisation and Westernisation. On the other hand, the promotion of knowledge economy and innovation did not lead to any significant changes in the social contract between the Latvian state, researchers, and industry (cf. Jasanoff, 2005, p. 225).

Internationalisation and Global Competitiveness

By the third decade of Latvia's independence, several policy makers who had studied in the West returned to the country. A number of reforms were initiated by the Cambridge-educated social anthropologist Roberts Ķīlis, who served as Minister of Education and Science in 2011–2013. In 2013, a research assessment exercise of Latvian research institutions was undertaken by an international group of researchers along the model of the British Research Assessment Exercise. A former policy maker who had been involved in the process at the time explained that the British model was adopted in its quantitative indicators but without its extensive peer evaluation component:

> Assessment (…) can be traced back to Roberts Ķīlis, who arrived with all his ideas. (…) Given that he had studied in the UK, which I think matters in this story, he had met someone at the Royal Academy and had decided that as Minister he wanted to implement this evaluation in a similar way to the British research excellence assessment. And we introduced it in an adapted form. (…) When someone submitted five papers, my panel did not sit and read these papers but looked at the quantitative indicators.

One-hundred forty research institutions were assessed, including universities, university subdivisions (such as university-affiliated research institutes), and independent research institutes (Ministry of Education and Science, 2016). Both publicly and privately funded research institutions were evaluated. The results of the assessment exercise were dismal. Only 15 out of 140 institutions received 4 or 5 (maximum) points and were deemed to be "players of international relevance", while 35 institutions received 3 points ("strong local player") (Ministry of Education and Science, 2016). The evaluators emphasised that the fragmentation of the national research landscape was overly high. As a result, state funding was subsequently allocated only to research institutions that were considered "competitive", that is, had received high scores in the assessment, while

others were encouraged to merge with the "high performers" (Ministry of Education and Science, 2016, p. 8). Institutions that had received a score of 2 or 1 and did not pursue restructuring received no base funding from 2016 onwards. The number of registered research institutions in Latvia had shrunk to 77 by 2016 (Table 4.2).

As one sees from the shrinking number of research institutions classified as "subdivisions of HE institutions", research institutes became increasingly integrated into universities. The general tendency was for whole universities to be registered as research institutions, reflecting the shift towards the closer integration of higher education and research. In 2020, there were 21 publicly funded research institutions and 48 privately funded research institutions. Out of the 21 publicly funded institutions, 13 were universities, higher education institutions, or research institutes within a university, while 8 were independent research institutes. According to a former policy maker, this "second wave" of integration of research and higher education (after the "first wave" of the 1990s) was successful:

> If you ask how sustainable it is, I would say it is extremely so. It is extremely sustainable, and the integration [of research and higher education] is taking place in an intensive manner today. It may well be that the lack of resources due to the [economic] crisis [of 2009] played a positive role here along with [European Union] cohesion money with its very clear and strict requirements for integrating science and higher education.

Table 4.2 Number of research institutions in Latvia, 2010–2016

	Number of registered research institutions			
Institution type	01/12/2010	01/12/2012	30/12/2014	01/01/2016
Public bodies, including the Latvian Academy of Sciences	13	13	14	12
Directly governed institutions	2	2	1	1
HE institutions	9	11	12	12
Subdivisions of HE institutions	67	65	23	12
Commercial institutions	45	39	40	40
Total	136	130	90	77

Source: Ministry of Education and Science (2016, p. 8)

As one academic put it in an interview, "[T]he following principle was promulgated at the time: if there is no research, there is no university. 'No research—no university'."

As mentioned earlier, funding was one of the tools used by Latvian policy makers to encourage the integration of research and higher education. In 2014, a three-pillar funding model was introduced on the basis of recommendations by the World Bank. The three pillars are base funding, performance funding, and innovation-oriented funding. Research performance was now taken into account for calculating both base research funding (part of the first pillar, along with education baseline funding) and performance funding (second pillar). Using the results of the research assessment exercise described earlier, 21 research institutions (including both research institutes and universities) received first-pillar base research funding (Ministry of Education and Science, 2016).

There has been a stronger orientation on output (publications, attracted research project funding) as a consequence of the new funding model (Arnhold et al., 2018, p. 131; European Commission, 2018, pp. 60–61). Output indicators are now required for all research funding competitions. Performance targets have been included in the National Development Plan for 2021–2017 (Cross-Sectoral Coordination Centre, 2020). While a similar document for the period 2007–2013 listed only a couple of research-related development indicators (e.g., the number of PhD degrees awarded), the National Development Plan for 2021–2027 features a significantly longer list. In addition to requiring R&D funding to grow from 0.63% to 1.5% of the GDP between 2018 and 2027, targets also mention "research personnel as a percentage of all employees" and new PhDs as a share of all 25–34-year-olds. The number of Scopus publications is required to increase from 2376 in 2017 to 3000 in 2027, while the share of Scopus publications in the top 10% of the most cited Latvian publications should grow from 9.7% in 2017 to 15% in 2027 (Cross-Sectoral Coordination Centre, 2020, pp. 31–32).

The performance-based nature of external funding is reflected in internal funding allocations that incentivise performance in the form of salary bonuses to individuals, grants to units, and project-based funding (Arnhold et al., 2018, p. 118). The University of Latvia allocates its

second-pillar funding to "research activities via tender-like processes" (Arnhold et al., 2018, p. 114). In 2016, the University of Latvia established the Science Excellence and Commercialisation Support Programme that is funded from the money the University receives as part of second-pillar performance funding. Bonuses are offered to researchers for "research commercialisation", that is, for bringing funding to the University in the form of cooperation with companies or other external organisations. At the same time, academics receive 1000 euros for each article published in a journal that is ranked by the Web of Science in the first or second quartile. The University of Latvia rewarded 39 such publications in 2018 (Latvijas Universitāte, 2017).

The increasing emphasis on research-based higher education and performance measurement has been framed by policy makers as a path towards "internationalisation" and "global competitiveness" for Latvian research and higher education. The narrative of internationalisation is now present in all key policy planning documents. Raising global competitiveness by publishing internationally and attracting researchers and students from abroad is also emphasised as a key goal in a document entitled "Research and Innovation Strategy for Smart Specialisation" (Ministry of Education and Science, 2013a). The target indicators for developing research capacity are doubling human capital and researchers in priority fields and raising base funding, while linking base funding to "international excellence" measurements such as publications and citations (Ministry of Education and Science, 2013a, p. 9). The strategy outlines the government's goal of "more than two" universities being "globally competitive" and calls for the increased role of the English language at universities and research institutes (Ministry of Education and Science, 2013a, pp. 16–18). Similarly, the Guidelines for Science, Technology Development and Innovation for 2014–2020 list the internationalisation of science and international cooperation as national priorities (Ministry of Education and Science, 2013b; see also European Commission, 2018, pp. 71–72).

Interviews with policy makers and civil servants similarly featured terms such as "internationalisation" and "global excellence". As one civil servant put it,

> In Latvia, international publications are unfortunately only a relatively new phenomenon. A key direction for us is to globalize research to avoid the case where topics of local interest appear in local monographs with a small circulation.

The researchers and university administrators I interviewed mostly expressed agreement with the internationalisation process. Some welcomed the recent reforms, as the existence of clearly formulated performance indicators make the rules of the game more understandable and government funding decisions more transparent. Many expressed support for the internationalisation process by emphasising that science is universal. One interviewee reflected on the dilemma of the universal relevance of research by invoking the slogan of the University of Latvia, "Scientiae et patriae":

> Here we come across the ambivalent nature of the motto of the University of Latvia. On the one hand, "for science"; on the other, "for the fatherland". I think this is particularly acute in the social sciences. (…) It's not quite right to live only in your own little world, because you cannot speak the same language as your colleagues in, say, France, the Netherlands or somewhere else. So … I don't know if a good balance is possible, yet, as I jokingly told a colleague from the Technical University, water pipes clog up in the same way everywhere around the world—well, perhaps it depends on the temperature [somewhat], but, in principle, they clog up in the same way. And you can study them in Riga or in Milan. At the same time, I'd say that some social processes are quite different in Riga and in Milan.

Another researcher saw the emphasis on international publications as a way to reform a recruitment system that was, in her view, often based on favouritism rather than meritocracy. She argued:

> There has to be a more or less objective way of assessing a researcher's work. Nobody questions that. And nobody questions that research publications are one way to assess it. (…) There have been a lot of discussions about how much we should publish in English and how much in Latvian. Of course, some people argue that it is important to publish in Latvian as well in order to develop the Latvian research language. I agree with that. At the same

time, a lot more weight is being put at the moment on publications indexed by Scopus and the Web of Science.

As these interviews show, the policy shift towards performance monitoring and quantifiable research outputs has been legitimated as part of the internationalisation of Latvian research and higher education. The imaginary of science as "universal" (Jasanoff, 2005, p. 16) is prevalent among both policy makers and academics in Latvia along with the post-Soviet reform narrative of Westernisation (cf. Kristapsons et al., 2003, pp. 1, 20–28). As a result, the shift towards a neoliberal research governance model with its emphasis on the economic value of education and research, quantifiable outputs and performance measurement has continued over the past decade largely unchallenged.

A recent reform initiative, aimed towards increasing global competitiveness, proved controversial, however. In May 2019, the new Latvian government issued a declaration of goals and commitments (Government of Latvia, 2019), which included a target of at least one Latvian university entering the top 500 of a global ranking of higher education institutions. Subsequently, a new reform of higher education governance model was proposed to foster global competitiveness and research excellence on the basis of a study carried out by the World Bank (Arnhold et al., 2018). In a document summarising the study, World Bank experts argued for the need to implement a reform in order to bring Latvian research governance practices "closer to European best practices" (Arnhold et al., 2018, p. 9). The document drew attention to the strong democratic culture of decision-making at Latvian universities and argued that a move to a "more managerial" style would be beneficial to increase strategic decision-making capacities (Arnhold et al., 2018, p. 141). In particular, this meant introducing university boards as a new decision-making body. The boards would comprise not only university representatives but also "external stakeholders", several of whom should come from abroad.

While many academics agreed that changes in university governance were necessary, several expressed concerns about the possible loss of democratic governance and autonomy. The rector of one of Latvia's largest universities warned of a return to Soviet-style authoritarianism in university governance and of the risk of boards of external stakeholders being

subject to political influence (NRA, 2019). Another rector questioned the proposal that 30% of the board members should come from abroad, seeing this as an avowal that "we are not smart enough to run our own universities" (Brikmane, 2020). While collegial decision-making has long been identified as a key element of academic autonomy, the neoliberalisation of universities worldwide has led to the replacement of collegial forms of decision-making by more corporate models (Nash, 2019) and the shift "from 'bureaucratic-professional' forms of accountability to 'consumer-managerial' accountability models" (Olssen & Peters, 2005, p. 328). While the Latvian government invoked "global competitiveness" and "excellence" to justify the transition from a collegial to a managerial and market-friendly governance model, the universities mobilised the narrative of democracy and scientific autonomy to counter the government's proposals.

Conclusion

The strengthening of university research capacity and the internalisation of the research mission of universities has been set out and legitimated in Latvia with the help of a number of distinct controlling narratives. While the early framing of the reforms in the 1990s emphasised Westernisation and democratisation, the economic narratives of innovation and knowledge economy became dominant in the 2000s, followed by the emergence of internationalisation and global competitiveness as the main organising frame in the 2010s. A number of corresponding key reforms have taken place: most (though not all) research institutes have been integrated into universities, and state funding for universities has become increasingly tied to their research outputs. Nevertheless, the number of research organisations remains high, especially in view of the limited national funding available, and the over-reliance on European Union Structural Funds raises further questions about the sustainability of the Latvian research system (European Commission, 2018, pp. 55–56).

Since the re-establishment of the Latvian state in 1990, the processes of research/HE reform and nation-building have been intertwined. Narratives of democratisation and marketisation have been invoked by

key actors to legitimate reform processes at different times. After the knowledge economy and global competitiveness began to be invoked more actively by the state, universities engaged with these notions in different ways. Insofar as the goal of internationalisation is framed in relation to the supra-national character of academic knowledge, Latvian researchers and university administrators perceive it as a legitimate reform goal. However, where reform proposals to introduce wider accountability to the state and the private sector are seen as limiting institutional autonomy, the narrative of democracy is mobilised to resist them. Thus, this study shows that not only Latvian research and HE reforms have been framed since 1990 in terms of three distinct controlling narratives but also that these narratives provide repertoires for resisting particular reform visions. Furthermore, the Latvian case has shown how the neoliberalisation of research and higher education with its emphasis on principles of competitiveness and quantitative accountability has been supported by emic understandings of democracy and the universality of science.

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5

Research Capacity in Lithuania Since Independence

Rimantas Zelvys

Introduction

The contemporary Lithuanian system of higher education and research evolved from the former Soviet model that had been introduced after the country's incorporation into the Soviet Union in 1940 and existed until the late 1980s. A key trait of the Soviet system was the institutional separation of higher education and research. Most research was conducted at research institutes, affiliated either with the Academy of Sciences or with the corresponding ministries. The higher education sector's share of research was small (Smolentseva et al., 2018). The only Lithuanian university to survive through the entire Soviet period was Vilnius University, which conducted research in a broad range of fields and developed scholarly traditions in a number of disciplines. The liberalisation of the Soviet

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regime that began in 1985 and ended with its collapse triggered fundamental changes in Lithuanian higher education and research.

This chapter presents the Lithuanian case study of the development of university research capacity over the past three decades. The study relies on document analysis, bibliographic overview, and original interviews conducted for the purposes of this project. The analysed documents include reports drafted by different agencies of the Lithuanian government and reports and data from Eurostat, OECD, the World Bank, and the Norwegian Research Council. The author conducted nine interviews with policy makers from the Ministry of Education and Science and the Lithuanian Research Council, academic leaders, and researchers from four Lithuanian universities.

Historical Development Since Independence

The development of Lithuanian higher education and research over the past three decades can be divided into three rough periods. The first period was marked by the academic community's quasi-universal goal of breaking away from the legacy of the totalitarian system. After beginning in the late 1980s, the process of transformation was swift and radical. In 1989, the Supreme Council of the Lithuanian SSR declared the priority of republican legislation over the legislation of the Soviet Union. Vytautas Magnus University that had been founded in independent Lithuania in 1922 and closed by the Soviet regime for political reasons in 1950 was re-established in Kaunas in 1989. The university was strongly supported by Lithuanian expats returning from abroad, mainly from the USA and Canada, who spoke out in favour of adopting the Anglo-Saxon system with bachelor's and master's degrees. Vilnius University—the oldest and largest university in Lithuania—declared itself to be institutionally autonomous. After the restoration of independence in 1990, the newly elected Supreme Council of the Republic of Lithuania approved Vilnius University's new statute. As the Soviet legal framework for higher education and research did not meet the needs of the rapidly changing situation, the Supreme Council of the Republic of Lithuania adopted in 1991 the Law on Higher Education, which was drafted by the academic

community. The new law granted autonomy to all higher education institutions (HEIs), introduced a three-tier (bachelor's, master's, and doctoral) degree system, established the Lithuanian Research Council, and introduced a number of other legal and structural changes. Research institutes, previously affiliated with either the Academy of Sciences or government ministries, became independent research institutions. The Academy of Sciences itself was transformed from an administrative body into a club of distinguished scientists with the mission of promoting research activities and acting as a collective expert body. In 1992, the principle of the autonomy of universities was set down in the newly adopted Lithuanian Constitution.

Nearly all major structural and legal changes in the domain of higher education and research were implemented during the first five years of independence. In the mid-1990s, the Norwegian Research Council conducted the first major comprehensive evaluation of research in Lithuania. The evaluators made a series of recommendations for research development: launching the integration of universities and research institutes, continuing the reorganisation of the system of doctoral studies and degrees, and intensifying the cooperation of researchers both within Lithuania and internationally (Norwegian Research Council, 1996). In 1992, the government changed the rules for defending dissertations and awarding academic degrees: the permanent councils of the Soviet era were replaced by smaller and more flexible committees convened ad hoc for each individual defence and composed of experts in the field. The adoption of the 1992 law also launched the nostrification process, which lasted until 1995: dissertations defended during the Soviet period were reviewed, and Soviet *kandidat nauk* and *doktor nauk* degrees were converted into doctoral (PhD) and post-doctoral *doctor habilitas* (Dr. Habil.) degrees. As the requirements were not very rigorous, 8454 out of 8507 academic degrees were eventually nostrified (Daujotis et al., 2002). The Dr. Habil. degree continued to be awarded until 2003. Subsequently, the country switched to a one-level system of doctoral degrees. According to the current legislation, the Lithuanian Research Council appoints a group of experts to assess the capacity of institutions to offer doctoral studies. The right can be granted to a single university, a consortium of universities, or a university affiliated with a research institute. Research institutes

cannot offer doctoral studies on their own, because doctoral students have to take university-based courses as part of their doctoral programmes.

In 2000, a formula was introduced for tying the funding of research institutes to the effectiveness of their research activities (Daujotis et al., 2002). The evaluation criteria included research quality, international cooperation, and practical relevance. The following year, an updated formula was applied both to research institutes and to universities. Simultaneously, the Lithuanian Research Council began to allocate research grants in designated priority research areas on a competitive basis. The adoption of a new version of the Law on Higher Education and Research in 2000 symbolically marked the end of the first decade of transition.

The second period (2000–2009) was characterised by the further diversification and expansion of the higher education system and the introduction of a binary system. Former *technicums* that had provided vocational post-secondary education were reorganised into non-university higher education institutions called "colleges". According to the 2000 version of the Law on Higher Education and Research, the mission of colleges included applied research to meet the needs of the regions in which they were located and consulting local government and economic organisations (Lietuvos Respublikos Seimas, 2009). During the same period, rapidly growing university enrolment provided Lithuanian universities with larger revenues, enabling them to employ more lecturers and researchers with academic degrees.

The adoption of the updated neoliberal version of the Law on Higher Education and Research in 2009 marked the beginning of the third period, characterised by more intense internal and international competition between higher education institutions. Competition for research funding has exacerbated university rivalries and led research community to voice fears that the implementation of structural and financial reforms could push academic elites to increase lobbying efforts at the cabinet and parliamentary levels:

> Lithuania is a small country, and higher education reform can't be implemented without lobbying and inconsequent decisions. Any university professor can influence the decisions of ten or twenty MPs and members of the

> government. In a small country we know each other quite well, especially within the academic and political elite, and it's difficult to expect fair competition. (Senior Administrator, Vytautas Magnus University)

EU accession in 2004 created opportunities for receiving European research funding, yet thrust the new member states into a highly competitive environment. As Lithuanian universities lacked experience in competing for the EU research funding, only a small share of project applications from Lithuania was initially accepted. European programmes encouraged links between universities and industry. The National Agency for Science, Innovation and Technology (MITA) was established in 2010, taking over the administration of certain joint programmes from the Ministry of Education and Science and the Ministry of Economics. Joint programmes were meant to strengthen research activities and encourage industrial innovations. As a result, the innovation index of Lithuania increased from 38.5 in 2011 to 41.5 in 2019, attaining 74.5% of the EU average (Lietuvos Respublikos Vyriausybė, 2019).

After a decade of rapid growth, university admissions started to decline for demographic reasons. The numbers of university students began to fall in the late 2000s, and the total student body decreased by 50% over the past decade (Lietuvos statistikos departmentas, 2020). Work and study opportunities in the EU have had negative implications for the national research sector in terms of human resources. A working group established by the Ministry of Education and Science found that Lithuania's research output was below the EU average and warned about the increasing brain drain of the brightest students and academics, who were leaving the country to study or work abroad (Leišytė et al., 2018). To counter the brain drain, the Ministry of Education and Science launched the "Brain Regain and Attraction" programme that encourages Lithuanian researchers living abroad to participate in the country's R&D and cooperate with Lithuanian HEIs, other organisations, and researchers (OECD, 2016).

In contrast to the Soviet period, the process of higher education and research policy implementation is decentralised and involves different stakeholders. This is largely a result of the loose governance of research and education at the national level that is partly due to frequent changes

in administrative structure. As a result of legal changes initiated in the early 1990s, the Ministry of Education and Science was stripped of much of its authority. Until the early 2000s, policies and reforms were mostly shaped by interest groups from within the academic elite, including the members of the Lithuanian Research Council and the Lithuanian Academy of Sciences, both of which operate independently from the government (Daujotis et al., 2002). Over the past decade, the Lithuanian Research Council, which is partially elected by the academic community and partially appointed by the Parliament, has played an increasing role in shaping national research policy, while the Lithuanian Academy of Sciences has retained its symbolic representative role. The Rectors' Conference established in 1995 is another powerful public organisation. The parliament, the government, and the Ministry of Education and Science usually negotiate key decisions related to the university sector with the Rectors' Conference. In recent years, a certain trend towards reregulation can be observed, with the Ministry of Education and Science seeking to control higher education institutions through the updated system of research evaluation that is linked to funding allocation (Leišytė et al., 2018).

Development of Research Missions and Sustainability of Research

Our study has identified at least five factors that have contributed to the development of university research missions. The first and perhaps the most important factor was the bestowal of university status to former institutes and academies that had previously focused on training highly skilled labour. Their new status required them to pay greater attention to research. The Law on Higher Education and Research states that the main objectives of a university include "developing academic knowledge in different fields, conducting high-level theoretical and experimental (social, cultural) studies, training scholars, cooperating with national and foreign partners in the sphere of research" (Lietuvos Respublikos Seimas, 2009). From the legal standpoint, there is no such category as "research

university" in Lithuania today as all universities are expected to conduct research and provide research outputs. However, Vilnius University remains the country's de facto research centre. Other Lithuanian universities are also conducting research, albeit on a smaller scale, in their specific fields of expertise.

Another important factor was the integration of research institutes into universities. At the time of the collapse of the Soviet Union, 29 research institutes were operating in the country. The integration of universities and research institutes began in the early 2000s and lasted for almost a decade. This process met with the resistance of research institutes, whose academic staff and administration were not eager to give up the autonomy gained in the early 1990s. At the same time, small research institutes were experiencing financial difficulties, and becoming part of a university was a way out. Financial considerations prevailed in the end, and numerous mergers took place in the late 2000s with EU support. Most of the institutes became separate structural units within universities or were integrated into faculties. The institutes were distributed among several Lithuanian universities: Vilnius University, Kaunas University of Technology, Vilnius Gediminas Technical University, Lithuanian University of Agriculture, and Lithuanian Veterinary Academy. Vilnius University incorporated the majority of research institutes working in the fields of chemistry, physics, mathematics, biology, geography, and medicine (Lietuvos Respublikos Vyriausybė, 2008). Today, 13 state and 9 non-state research institutes remain independent (MOSTA, 2019). State research institutes are facing a new round of mergers, which is expected to result in five large scientific centres. State research institutes currently account for only about 15% of the national research output. After merging with research institutes, universities became the main centres of research activity, which constitutes the key difference between the current situation and the Soviet model. Another important difference is the reorientation on applied research and the needs of the private sector. Applied research dominates in both state and non-state higher education institutions and research institutes. Moreover, 4479 of the country's 18748 researchers (24%) are working in private companies and non-state research institutes (Statistikos departamentas, 2020).

The third factor was the introduction of a performance-based research funding scheme that made funding a lot more dependent on the quantity and quality of research output. University administrators use a variety of financial incentives to encourage the participation of the academic community in research projects and the publication of articles in journals with high-impact factors. Many universities have also introduced internal systems of financial rewards for research activities. For example, all departments at Vilnius University have introduced salary bonuses for staff members publishing in high-impact journals. The Faculty of Philosophy at Vilnius University rewards the authors of publications in journals indexed by the Web of Science and Scopus and of monographs released by international and national academic publishers. The size of the bonuses depends on the rating given to the publications by the experts of the Lithuanian Research Council during the annual evaluation of university research output (Vilniaus Universiteto rektorius, 2018). Other university units, such as the Institute of Mathematics and Informatics, introduced more stringent requirements for the evaluation of research outputs, awarding bonuses only for publications in high-impact (WoS Q1 and Q2) journals (Vilniaus Universiteto rektorius, 2017a). One should also mention rectors' awards that are granted at the end of each year, and the Vilnius University awards for significant academic achievements.

The fourth factor was the introduction of new rules of academic recruitment. Permanent academic positions were abolished in 2009, so that the positions of professor, docent, and lecturer can currently be occupied for only five years. Subsequently, the staff members have to undergo an attestation and reapply for the position on a competitive basis. Research output plays an important, if not decisive, role in the process.

The fifth factor is the availability of national and European research grants, which give researchers additional opportunities to get extra income. Universities encourage their staff to apply for research grants as the number of successful applications is one of the evaluation criteria used in the process of external institutional accreditation.

In addition to external factors, personal motivation plays an important role in internalising the research mission. After enjoying a great prestige during the Soviet period, the academic profession lost its privileged status in the new market economy. Today, many talented young people opt for

more prestigious and profitable career paths, while academia is losing much of its attractiveness (Žalimienė & Ivaškaitė-Tamošiūnė, 2009). At the same time, a survey of doctoral students conducted by the Union of Young Scientists showed that most respondents were satisfied with their decision of pursuing doctoral degrees and hoped to make academic careers (Vanagienė, 2019). Young people who choose academic career are apparently motivated not so much by financial rewards, as by the prospects of conducting socially relevant research and becoming a part of the international research community.

Balancing Teaching, Research, and Public Engagement Missions at Universities

The Law on Higher Education and Research states that the key missions of universities are to provide higher education, conduct research, contribute to regional and national development, and diffuse academic knowledge among the public. The external institutional evaluation of HEIs is done in four main areas: strategic management, teaching and lifelong learning, research, and regional and national impact. Nevertheless, the government does little to regulate the balance between applied and basic research, and between the teaching and research missions of universities. All of this is determined by the universities themselves. For example, Vilnius University regulations require two-thirds of the academic workload to pertain to teaching, and one-third—to research (Vilniaus universiteto rektorius, 2017b). The workload distribution is similar at other universities. However, universities are faced with conflicting priorities in practice. The priority that is most often stressed by governmental policy statements and strategic documents is developing the nation's human capital and meeting the demands of the labour market. As a result, university lecturers are often overloaded with teaching and have trouble finding time for research.

Another key priority is applied research, which brings additional funding to universities as well as meeting the needs of industry and commerce. Theoretical research, especially in social sciences and humanities, is often downgraded because it brings no direct financial gains and thus

produces no "added value". Teaching and applied research, as well as paid services to the community, are the main sources of income for universities. At the same time, state policy calls for fostering internationally competitive research and improving university positions in global rankings. Thus, universities face contradictory pressures. On the one hand, they strive to meet the demands of the labour market and gain additional funding by selling applied research results to industry. On the other, they try to raise their research capacity in "unprofitable" and underfunded areas to a world-class level. This apparent discrepancy between low funding and high expectations is one of the factors that make academic careers less attractive to university graduates.

The search for the right balance between teaching and research has led to changes in the internal structure of Lithuanian universities. As autonomous universities can change their organisational structure at will, their academic staff lives in a state of almost permanent structural flux. Access to national and European research funds has stimulated the establishment of research project offices that support academics in preparing funding applications and monitoring ongoing projects. While faculties remain the key structural units of universities, many universities have formed smaller units within faculties that focus on research. These new units may be institutes, laboratories, or flexible research groups that are linked to research networks, while administrative work is performed by special units:

> Every researcher belongs to a research group which jointly develops research ideas. Every researcher is a member of a research laboratory in his or her field. These laboratories are organised into a network. … Researchers do not need to manage projects, do the budgeting, etc. This work is done by other administrative units. This is very convenient, as it allows a researcher to concentrate exclusively on research. (Professor, Mykolas Riomeris University)

The international study "Academic Profession in the Knowledge Society" (APIKS) concluded that university personnel in Lithuania, like in many other participating countries, primarily focus on research or both research and teaching, yet with a bias towards research (Huang, 2019).

National Funding Policy and Research Capacity Development

One of the main policy instruments on the national level is the allocation of research funding. In 2011, Lithuanian government increased the share of performance-based funding for research from 30% to 50%. The allocation of the remaining 50% is based on the total amount of research funding received over the preceding period, expressed in terms of the "standard number of research staff" (OECD, 2016). In addition to regular budgetary funding, universities get extra funding for improving the research infrastructure, receive grants from European and national research funds, and generate income from applied research.

The system of research output evaluation was introduced in the early 2000s and subsequently modified several times. The current model is a combination of peer review and quantitative evaluation. Research institutions (universities and research institutes) select research output of the highest quality (the so-called Level I), which constitutes 20% of all research output in social sciences and humanities. Expert groups selected and appointed by the Lithuanian Research Council evaluate the content of "Level I" research. Other research output ("Level II") is subject to quantitative evaluation: experts evaluate their formal status (e.g., papers published in high-impact journals indexed by the Web of Science or Scopus, monographs released by international publishing houses, and plenary presentations at international research conferences). Each research output is assigned a rating, which is later used to calculate funding from the state budget according to the existing formula. Research outputs are evaluated once in five years. In addition, the Lithuanian Research Council conducts an annual short-term quantitative evaluation on the basis of annual reports.

The OECD (2016) has noted that the introduction of international peer review for research units and the use of a broader set of performance criteria than just publications have played an important role in bringing international best practices to the Lithuanian research sector. The Lithuanian Research Council also organises assessments of arts activities in Lithuania, along with assessment of research doctorate programmes

and doctoral programmes in the arts. In order to attract foreign experts, the Council collaborates with the Research Councils of Norway and Finland and institutions in other countries. In 2015, Research Councils of Lithuania, Latvia, and Estonia signed an agreement aimed at improving the assessment of research work (Lithuanian Research Council, 2020). Though performance-based funding was introduced in Lithuania over 20 years ago, the system still has a number of weaknesses. One of the problems is that the total amount of funding allocated for research remains more or less the same from one year to the next. Therefore, better results do not necessarily lead to more funding:

> I understand the researchers who complain that we allocate the same amount of money every year. They improve their results and receive more funding from businesses and international programmes. Yet we allocate the same sum, and they get less money. I have to explain to them that their rivals wrote even better publications and signed even more contracts. (Policy maker, MoES)

Another problem area involves the existing assessment model. While a blind review method is usually used, reviewers can often recognise the publications of colleagues working in the same field. As a result, a conflict of interests becomes almost inevitable in this small yet highly competitive academic market. Institutional assessment is punitive by nature: a negative evaluation can result in a higher education institution being deprived of the right to proceed with ongoing research or to start new research projects. Rigid external assessment makes it difficult to launch doctoral programmes, which results in a low number of doctoral students at Lithuanian universities.

The allocation of sufficient resources for R&D has also been a chronic problem in Lithuania. From the very first years of the independence, research activities have been underfinanced in comparison to most EU states. The situation changed for the better when EU funds became available after Lithuania's EU accession in 2004. Over the period 2007–2017, R&D funding increased by 60% in absolute terms (Lietuvos Respublikos Vyriausybė, 2019). However, it still amounts to less than half of the EU average, which was 2.06% of the GDP in 2017 (Eurostat, 2019).

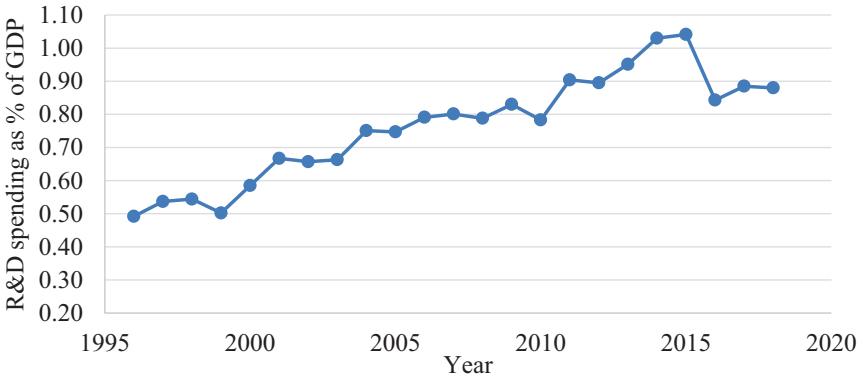

Fig. 5.1 R&D spending over the period 1996–2018. (Source: The World Bank, 2020)

In 2018, R&D spending in Lithuania amounted to 0.88% of the GDP (Fig. 5.1). The contribution of the private sector is four times lower than the EU average, amounting to only 0.31% of the GDP (Lietuvos statistikos departamentas, 2019). Lithuania had 3191 researchers per million population in 2018, which is also below the EU average (UNESCO Institute of Statistics, 2021). In R&D funding per capita, Lithuania ranks 22nd among EU member states. International experts consider the strategic goal of raising R&D funding to 3% of the GDP in accordance with the 2020 EU target to be ambitious, and even unrealistic (OECD, 2016). Recently, the Government has set the more realistic target of raising R&D funding to 1.5% of the GDP by 2024 (Lietuvos Respublikos Seimas, 2020).

Publishing, Research Infrastructure, and Research Impact

A key way of encouraging university staff to engage in research is to set recruiting requirements for academic and research positions. The Lithuanian Research Council has introduced minimum requirements, while universities can adopt even higher standards. A case in point is Lithuania's leading university, Vilnius University: to be appointed to the position of a researcher, professor, or docent at the university, a scholar

needs to have a higher number of publications in journals indexed by the Web of Science or Scopus than required by the Lithuanian Research Council. This initiative met with the opposition of Lithuanian academics, especially in the social sciences and humanities: in interviews, conducted during this study, scholars from different universities noted that such requirements place them at a disadvantage with respect to colleagues working in other fields, such as the natural sciences, where it is easier to publish internationally. In particular, a staff member of Vilnius Gediminas Technical University complained about the recruiting requirements for appointment to academic positions:

> At this university, requirements for full professors are very high at the moment. You have to publish a lot of articles. At the same time you can publish, say, ten articles in non-Web of Science journals, yet you won't be promoted to the rank of professor—even if you publish ten, twenty, or even thirty. Even monographs … are not adequately assessed: only publications in the Web of Science count. (Professor, Vilnius Gediminas Technical University)

Most universities have their own publishing houses that release research journals, monographs, conference proceedings and other types of academic publications. Publishing in scholarly journals is usually free of charge for both local and foreign scholars, which makes publishing attractive to international partners. A significant part of publishing expenses is covered by EU funds.

Over the past 15 years, the research infrastructure has improved significantly in Lithuania, mainly due to European funding. Modern university libraries have been established in Vilnius, Kaunas, and Šiauliai. Five so-called research valleys have been created in Vilnius, Kaunas, and Klaipėda. The goal of the valley development programmes was to upgrade the Lithuanian research infrastructure and create conditions for the closer cooperation between business and academia in order to increase the value-added. The valleys provide infrastructure for applied R&D and favourable conditions for setting up new innovative companies. All the research valleys are affiliated with universities. For example, Vilnius University has built two modern research centres—the United Centre of

Life Sciences and the National Centre of Physical and Technological Sciences—as well as a new library at Vilnius Sauletekis Valley. The OECD (2016) has noted that major investments into research infrastructure during the previous EU Structural Funds cycle have provided the research sector with a good infrastructural basis. However, this must still generate internationally competitive research, and increasing the impact of Lithuanian academic publications is perhaps the most problematic aspect of national R&D policy. Despite the growth of Lithuanian research output, the share of highly cited publications is only 35% of the EU average (Lietuvos Respublikos Vyriausybė, 2019).

Impact of Internationalisation on Research Capacity at Universities

The internationalisation of higher education has had a mixed impact on the research capacity of Lithuanian universities. On the one hand, it has created new research opportunities. Access to international academic literature, which was restricted during the Soviet era (especially in the social sciences and humanities), is currently practically unlimited. In addition to open-access publications, subscriptions to major databases are purchased by universities and made available to researchers on university premises.

Scholars participate in joint research projects funded by the EU or initiated by national governments. The Lithuanian Research Council as well as the universities themselves allocate research grants and scholarships for doctoral students and young university researchers (post-docs) and provide travel grants for participating in international conferences and other academic events. In this respect, the situation has improved significantly in comparison with the difficult first decade of independence. Over the past decade, international cooperation with the rest of the world has also intensified. According to the final monitoring report for the European Union's Seventh Framework Programme for Research and Technological Development (FP7), the success rate of Lithuanian applicants (20%) was roughly equal to the European average (20.5%).

The number of joint publications with foreign researchers doubled, while the number of most cited publications increased by 50%. Lithuanian researchers co-authored 304 publications with foreign scholars per million inhabitants in 2012, compared to the European average of 343. Their main academic partners come from large European countries such as Germany, France, and the United Kingdom, as well as the neighbouring Nordic countries like Sweden, Finland, and Denmark (OECD, 2016). The number of foreign doctoral students in Lithuanian universities has increased nine-fold since 2011. Despite their growth in absolute terms, the share of foreign doctoral students in Lithuania is still not very high, amounting to only 21.9% of the EU average (Lietuvos Respublikos Vyriausybė, 2019). Moreover, most foreign doctoral students prefer to return to their home countries after receiving their degrees (MOSTA, 2017).

Western Europe, North America, and (to a lesser extent) Central and Eastern Europe were the most attractive destinations for Lithuanian researchers to travel, work, and publish. Few researchers are interested in travelling to the former Soviet republics or publishing their research in academic journals there. Besides the language barrier, the fact that few journals from the former Soviet republics are included in the Web of Science and Scopus databases also makes them less attractive to Lithuanian scholars. In contrast, students and researchers from the former Soviet republics take an interest in academic cooperation with Lithuania. The language barrier remains the main obstacle for foreign partners: doctoral students must know Lithuanian or English in order to study in Lithuania, while foreign authors have to submit articles in English in order to publish in Lithuanian journals. Lithuanian academic journals usually do not publish papers in Russian, and their high publication standards also make it difficult to submit articles.

Publications in foreign journals get the highest points from the research assessment exercise; for this reason, a good knowledge of English may prove more important than research competencies for getting an academic position. International journals often reject publications not because of low research quality but because of bad academic English. In a world where English has become a lingua franca of the academic community, native English speakers have a competitive advantage. When

submitting manuscripts to journals or presentations to international conferences, "good" institutional affiliation and even an English-sounding name of the author may help. For this reason, joint publications with Western researchers are highly attractive to Lithuanian scholars, who prefer to publish abroad (Židonytė et al., 2019). Most doctoral dissertations are published in Lithuanian and provided with an abstract in English. However, many researchers argue that doctoral dissertations, written and defended in Lithuanian, should be subsequently translated into English (Zabarskaitė, 2017). At many Lithuanian universities, publications in English have begun to outweigh publications in Lithuanian:

> Last year, we had twenty publications in Lithuanian. Seventy other publications were written in other languages, so that we are currently switching to English. Lithuanians even tend to write doctoral dissertations in English. Our language committee does not approve of the translation of new terminology into Lithuanian. To avoid all the hassle of getting approval, we decided to use English. (Institute Director, Mykolas Riomeris University)

In social sciences and humanities, research publications are often devoted to local themes. For this reason, they are less interesting for an international audience, and it is quite logical to publish them in Lithuanian. However, this gives few points, if any, in performance-based evaluation. As a result, specialists in Lithuanian history, literature, and culture feel that, despite the importance of their publications for national development, they are undervalued and disadvantaged in comparison with internationally oriented studies. A group of researchers in the humanities have expressed their concerns in *The Red Book of Humanitarian Sciences.* They suggest that the social sciences and humanities should not be judged solely by their "output". The mission of humanitarians is to participate in dynamic social development, and so the very process of participation can be considered as an important result. Assessment criteria should not be reduced to financially or quantitatively measurable outputs. The value of the social sciences and humanities manifests itself in the development of the social and European identity of Lithuanian society (Lietuvos humanitarinių mokslų raudonoji knyga, 2019).

Conclusion

The research capacity of Lithuanian universities has changed dramatically since the collapse of the Soviet system. Legal and structural changes were swift and radical, yet lacked a clear strategy and vision (Mokslo ir studijų departamentas prie Švietimo ir mokslo ministerijos, 2001). The principle of academic autonomy announced during the first years of independence limited the ability of the central government to implement reforms in higher education and research. Traditional academic organisations, most notably the Academy of Sciences, lost their former status and influence after the appearance of new bodies such as the Lithuanian Research Council and the Rectors' Conference that brought together key interest groups and involved them in designing the trajectories of national research development. Early attempts to work out a national research strategy led to a series of strategic documents. However, the decentralised nature of the higher education system hindered the process of their implementation. Following the difficult first decade of economic transition, the situation started to improve in the early 2000s. Lithuania's EU accession in 2004 opened new opportunities for both international cooperation and research funding. The national research policy developed within the framework of joint EU research initiatives aimed at creating a European Research Area. The expansion of university admissions and the allocation of EU funds significantly improved the research capacity of Lithuanian universities. Major investments in infrastructure during the previous EU Structural Funds cycle provided the research sector with a good material basis, yet it must still generate internationally competitive research. Increasing the impact of Lithuanian academic publications is perhaps the most problematic aspect of national R&D policy. Performance-based and competitively allocated funding became a powerful policy instrument in higher education. However, research is still underfunded, and R&D spending as a share of GDP has been less than half of the EU average in recent years and much below the 2020 EU target of 3%. Scarce funding has resulted in the falling popularity of academic careers as well as in internal and external brain drain. In a global

market, researchers have to engage in intense competition with foreign colleagues, and yet Lithuania's standing in terms of the quality of publications and the internationalisation of research are still below the EU average. Nevertheless, recent governmental initiatives of increasing funding for the R&D sector, launching national programmes encouraging Lithuanian-born researchers to return to the country from abroad, and fostering closer cooperation with high-tech industry provide hope for the further growth of university research capacity.

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6

Internalising Research Capacity at Moldovan Universities: An Unfinished and Contested Project

Anne C. Campbell and Cristina Gherasimov

Moldova's tumultuous post-Soviet transition has posed significant challenges for the sustainable development of the country. A particular problem that we explore in this chapter is the numerous hindrances and barriers to structuring research and innovation to capitalise on the skills of Moldovan researchers, to empower higher education institutions to boost their research capacity, and to link research outcomes with the country's development needs. As we demonstrate in this chapter, some of these challenges have existed since independence, while others have been exacerbated by inefficient and fragmented government policies or by not prioritising research as a tool to transform the country. Despite some advances in policy and a few innovative leaders and ambitious

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researchers, Moldova's universities still face numerous problems—prominently, insufficient funding for research activities—to adequately internalise their research missions. Moreover, the lack of strong and well-conceived government funding schemes have been among the main challenges identified by university leaders and academic staff.

History and Context

During the Soviet era, the Soviet Socialist Republic of Moldova was a leader in agricultural research and technological innovation, resulting in numerous patents and other advances. Following the country's independence in 1991, Moldova faced multiple economic and political challenges which have significantly shaped universities and university research. Between 1990 and 1999, the Moldovan GDP fell by 64%, which affected the allocation of public resources; funding for research and development decreased from 0.73% of the GDP in 1990 to 0.22% in 2004 (Moldovan Academy of Sciences [ASM], 2014).

Over the past 30 years, administrators and policymakers have continued to debate the importance of research for society, and where and how it should be conducted. One key point of this discussion is where the coordination of research activities should be located, with a choice among three contenders: the Moldovan Academy of Sciences (ASM), a model similar to the one that was used during the Soviet period; the Ministry of Education; or each university (or academic staff member) individually. This ongoing debate has presented challenges for universities to institutionalise and adequately support research among their academic staff and students.

To better understand these challenges, it is important to recognise that each new Moldovan government has had its say on higher education policies and structure (Bischof & Tofan, 2018). With significant Romanian and Soviet historical influences, the country has undergone controversial educational reforms, as national identity is often contested in this multi-ethnic society and played out differently in classrooms across the country (Worden, 2014).

Higher education research capacity has also been influenced by university internationalisation efforts, with Moldovan researchers engaging in international partnerships. As Kushnarenko and Cojocari (2012) noted, small countries' "universities realize that they cannot meet the demands of the globalized world acting alone" (p. 134), with each Moldovan university designing its own internationalisation plan and pursuing partnerships with universities both in the West and in the East. Notably, most university reforms have been focused on structural changes in terms of aligning with Bologna Reforms (Wetzinger, 2019) and improving teaching and curricular efforts, supported by both public and private funders, such as the World Bank, Open Society Foundations, and foreign governments. However, very little of this funding has been directed towards boosting research capacity, in terms of both human capital and infrastructure (Bischof & Tofan, 2018). As a part of internationalisation efforts, joint research ventures have been often used to support academic staff and student exchanges (Kushnarenko & Cojocari, 2012).

An additional consideration is that many Moldovan universities identify their primary mission as teaching, not research. To complicate the issue, Moldovan universities face declining student enrolments in both undergraduate and postgraduate programmes due to decreasing population and significant emigration of young people. Wetzinger (2019) suggested that "the declining student population makes it clear that a reorganisation of the large higher education system is required in order to ensure its sustainability" (p. 30). Bischof and Tofan (2018) agreed, noting that the trends of Moldovan higher education indicate that universities will see "further consolidation and decreasing internal quantity and possibly diversity" (p. 331); however, they also stated that reforms could affect both teaching and research training in Moldova.

Collectively, these influences have resulted in a fragmented and partial effort to institutionalise research in Moldovan universities. This chapter aims to present the state of research capacity in Moldovan universities[1] by examining various factors that have influenced academic research from

[1] In the Transnistrian region—a self-proclaimed autonomous territory in the east—research is concentrated at Shevchenko University. We have omitted further evidence specific to the Transnistrian region due to the lack of reliable data.

independence to the present. However, it is also important to note that in Moldova, the notion of research capacity is not often perceived as something universities *should* do, nor is this work exclusive to universities or to university-based academic staff. Instead, the data we consulted for this study often combined the research capacity of the country, including ASM research institutes. This speaks to the decentralised nature of research in Moldova.

Throughout our analysis in this chapter, the following themes are explored in depth to understand how research capacity has developed and why universities are still far from reaching their full research potential: the research environment; the most influential factors and policies; the research mission of the universities and their preparedness to carry out this mission; academic careers and the production of knowledge; and the perceived impact of research. The conclusion provides insight into current considerations and highlights concerns as university leaders and academic staff consider their future.

Methodology

To conduct a deeper investigation into research capacity development in Moldovan higher education, our team followed Bartlett and Vavrus's (2016) *processual approach* to case study. This approach accounts for the people, events, situations, and processes—and their interconnection and influence over time—to form a case. Our data came from document analysis and interviews, carried out in both Romanian and English. Documents included both current and former government policies, websites, grant guidelines, and reports, with a total number of 29 documents reviewed. As noted earlier, much of the national data amalgamates all research productivity, scholarly production, and other signs of scholarly research, without separating or comparing that which is specific to university-based researchers.

Our team invited 33 individuals for interviews in 2019, resulting in a total of 12 interviews that were conducted and included in this analysis. These 12 individuals included officials of various governments over the past 30 years, ASM staff, university leaders and academic staff at five

Moldovan universities, and higher education experts at think tanks and research institutes (both in Moldova and abroad). Interviews were conducted in person and over Skype, in both Romanian and English. Interviews were transcribed, and Romanian transcriptions were translated into English. Thematic analysis was conducted to identify the major themes in response to the research questions. Quotes are included in English to provide depth of understanding and nuance to the case.

The research questions which guide this case study are as follows:

1. To what extent have universities in Moldova internalised their research mission and developed the capacity to carry out this mission in a sustainable way?
2. How have political realities driven policies pertaining to research in Moldova? And how have these policies supported or constrained research capacity development at universities?

The Case: University Research Capacity in Moldova

In describing the case, our focus is to provide a snapshot of the current practice in Moldova in early 2020, including a broader landscape of higher education development to provide important context for research capacity in Moldovan universities. In our analysis, we focus on six subpoints: (a) research environment, (b) influential contextual factors and policies, (c) research mission of the universities, (d) academic careers, (e) universities' preparedness to carry out their research mission, and (f) impact of research.

The Research Environment Today

The current research environment has been significantly influenced by the Soviet past and the legacy of its academic tradition. Before Moldova became an independent country, universities focused heavily on their mission to teach and educate students. The tasks of coordinating and

conducting research were predominantly concentrated in and driven by the Academy of Sciences in Moscow. Upon independence, Moldova adopted this model, resulting in research being dominated by ASM and its research institutes—not universities. The state delegated research powers and resources to the president of ASM, and the individuals occupying this post gradually became influential figures who continue to play a key role in national research coordination.

Many interviewees mentioned that ASM's domination of research funding and priorities for such a long period of time engendered numerous problems. ASM was simultaneously responsible for policy formulation, decision-making, coordination and implementation of research and innovation activities, identification of strategic directions in research and innovation, and funding. At the same time, ASM was also the main research institution in Moldova—a direct conflict of interest. Several interviewees commented that this centralised structure allowed ASM to support only their own researchers without transparent and consistent criteria and that university-based researchers received very little support or attention in the process. One university leader said that ASM is "outdated as a concept", while another stated that ASM acts as an "elitist club". Because of its influence, it is still a major research player today, which works to the detriment of the research potential of universities.

A 2015 European Commission report by Turcan and Bugaian noted that Moldovan universities need to introduce autonomous research planning as part of their holistic reform efforts, which shows that this aspect was still not present five years ago. Changes have been made since—notably a 2017 decision to move research planning to the Ministry of Education, Culture and Science (MECC)—although ASM has lobbied to have institutional funding reinstated to its research institutes. This request was partially approved by the government in February 2020 (Government Decision no. 53).[2]

Moreover, it is difficult to determine the exact number of research universities in Moldova. The best estimate was made by the National Bureau of Statistics (2020), which reported that research and development activity existed in 63 units, including 40 research institutes and centres, 16

[2] All government decisions can be accessed on the governmental database www.legis.md

higher education institutions and 7 other types of units in 2019. Because the research process is now split between ASM and universities, we refer in this chapter to the overall research capacity development in Moldova when no data is available for university research alone.

Lastly, university research facilities vary widely, although actual resources—such as access to scholarly journals and modern laboratory equipment—are inadequate at most universities. A report issued by ASM in 2019 identified "insufficient infrastructure for conducting research" as one of the main challenges to quality research (p. 25, translated from Romanian). The passage goes on to provide the following example: "The infrastructure of a single research institute or university in Bucharest, Romania, effectively exceeds the infrastructure of all other research institutions in the Republic of Moldova" (p. 25, translated from Romanian). The need to advance research infrastructure to international standards has been identified in the National Programme for Research and Innovation for 2020–2023 that the government adopted in 2019.

Influential Contextual Factors and Policies

When examining the current state and development of research capacity in Moldova, there are several key contextual factors and policies to note. Three prominent contextual factors that emerged from the interview data are discussed further: (a) the lack of consistency and prioritisation of higher education reforms due to the frequent change of government administrations since independence, (b) the depletion of human capital potential due to significant emigration of Moldovan students, researchers and professors, and (c) Moldova's cultural, historical, and linguistic relationship with Romania.

Since proclaiming independence in 1991, Moldova has had more than 20 cabinets. Most of the cabinets either have ignored research altogether or have had very different conceptualisations of research organisation. Also, with each administration come new ministers and senior officials who steer higher education policies in alignment with the administration's geopolitical agendas. As a former policymaker put it, university research capacity has fallen victim to "the high ambitions of the

governing elites who think they are the centre of the planet, but in one to two years they leave and new ones with similar ambitions replace them". This resulted in inconsistent planning and several politically driven initiatives that have never been completed.

The second contextual factor that has influenced the Moldovan higher education system, and the research conducted within it, is the high rate of emigration. Of an estimated one million Moldovans who have emigrated (Cucoş, 2015), a high number were students seeking education and employment abroad. Several interviewees noted that top students often leave for Romanian universities—sometimes even in the middle of the Moldovan academic term—or immediately after graduation. One Moldovan academic staff member said that Romanian universities "attract the best of the best" Moldovan students. Many Moldovans stay abroad after finishing their studies; some graduates return yet leave again due to the lack of employment opportunities. This process has weakened the research potential of universities.

A third contextual factor is Moldova's special relationship with Romania. Many people take advantage of nearby Romanian universities to pursue studies and research, due to the high quality of education, fluency in the same language, and better professional opportunities. Some Moldovan academics travel between Chisinau and Romanian universities for engaging in collaborative research, accessing libraries, or gaining additional teaching experience—the distance between Chisinau and universities in Iasi, Romania, is close enough to make day-trips possible. Moreover, Romania has been a key supporter of educational reforms and ongoing partnerships, and many post-Soviet reforms in Moldovan higher education institutions have been based on Romanian examples (Bischof & Tofan, 2018). The Romanian government has also provided scholarships for Moldovan students, awarding 4500 scholarships during the 2019–2020 academic year and up to 6000 in previous years (V. Ursu, personal communication, May 29, 2020). Hence, this factor has had a double effect on research conducted in Moldovan higher education institutions: the brain drain is leading to the depletion of Moldova's research potential, yet it is promoting closer Moldovan-Romanian research collaborations.

In terms of specific government policies towards higher education, there were few measures worth mentioning before the adoption of the 2004 Code on Science and Innovation (no. 259/2004). Additionally, Moldova joined the Bologna Process in 2005, switching from the old Soviet model to a system built around master's and doctoral programmes that specifically include research components. Moldova was also the first among the six European Union's (EU) Eastern Partnership countries to receive associate status to the Seventh Framework Programme of the European Community for Research, Technological Development and Demonstration Activities (2007–2013), an opportunity that has helped Moldovan research institutions to access European research projects.

Greater advancement towards internalising research mission at universities was made following the appointment of Maia Sandu as Minister of Education in 2012; she is also the current president of the Republic of Moldova. With her leadership the government took on holistic education reform, including addressing issues related to research financing. In 2013, the country approved the "Innovations for Competitiveness" Strategy for 2013–2020. This strategy aimed to develop an environment conducive to research and development, creating the necessary conditions for research competition and innovation. In April 2014, the National Strategy for Research, Development and Innovation 2014–2020 was also approved. Moreover, Moldova joined the Horizon 2020 Framework Programme for Research and Innovation of the European Union (2014–2020). In July of the same year, the country adopted a new Education Code. These policies introduced an understanding that the production of research should shift away from ASM to university classrooms and laboratories, in line with Western models, while extending financing for research and highlighting its importance as a central activity of university-based researchers. However, there is little evidence that an actual shift towards university-based research followed as a result of these policies.

Another major step was the creation of MECC in August 2017 following a review of the Moldovan higher education system by the European Commission (Räim & Weiss, 2016; Spiesberger & Cuciureanu, 2015). Several important shifts in relation to research capacity happened in quick succession. In November 2017, a new Directorate on Research and

Innovation and the new post of Secretary of State for Research was established. In January 2018, MECC took over from ASM the coordination of the 19 research institutes. In February, the previously autonomous National Agency for Quality Assurance in Professional Education (ANACIP) became an administrative unit of MECC and changed names to the National Agency for Quality Assurance in Education and Research (ANACEC). It absorbed several other institutions including the National Council for Accreditation and Attestation.

These changes from 2004 onwards were influenced by western practices in higher education, including emulating western ways of funding research to become more competitive internationally. Control of university research shifted gradually from being managed by ASM to a two-track system managed by MECC: competitive project-based funding and institutional funding. The universities themselves, too, are active in making case for research to be moved from ASM to universities: in the words of one rector, "The future lies in a more active research presence at universities [as] it is the shortest way of technological transfer, of transferring the research results to the students" who will take the knowledge into the field.

In 2020–2023, the National Programme for Research and Innovation (National Agency for Research and Development, 2019) set the following strategic research priorities: (a) health, (b) sustainable agriculture, food security and food safety, (c) environment and climate change, (d) societal challenges, and (e) economic competitiveness and innovative technologies. Research is also currently listed as a priority in the government's Action Plan and is a part of National Development Strategy Moldova for 2030, which is aligned with the UN Sustainable Development Goals (UNDP Moldova, 2018). This speaks to the gradually rising profile and salience of research as a development priority for Moldova.

Research Mission of Moldovan Universities

The interviewees for this chapter perceive research as being central to the mission of Moldovan universities. This is supported by the websites of major universities in Moldova—such as the Technical University of

Moldova (TUM), the Academy of Economic Sciences, or Moldova State University—which stress that these institutions elaborate research strategies, appoint top management to develop the university's research portfolio and directions, and value the role of research in the development of society. Officially, all academic staff members are expected to devote 50% of their work time to research (Government Decision no. HG1234, 2018). The National Bureau of Statistics (2020) reported that 42 doctoral schools located at 18 higher education institutions were accredited to offer PhD programmes in 2019.

Among the research carried out at universities, there is variance in research productivity and capacity by field. Unlike applied social science (e.g., law or economic sciences), technological fields (e.g., computer science or nanotechnology) are perceived as having the greatest level of productivity, innovation, technological transfer, and partnership with industry. While there are certainly star researchers and international collaborations in selected fields, the perception is that scholarly output in the humanities, social sciences, and natural sciences is struggling in the current context.

Likewise, there is a great deal of variation among the expectations of quality. For example, a former university academic staff member and administrator said that many Moldovan doctoral theses are literature reviews, not original scholarly production. For this reason, academic staff committees often judge work based not on quality, methods, or original contribution—but on their personal attitude towards the student. The interviewee noted, "if you reject [a thesis], that means you are against that person", tantamount to being against "him earning more money".

When speaking about the aforementioned issues, few interviewees mentioned the existence of research review boards or other mechanisms for developing standards of ethics and integrity in research practice. A few researchers said that they had learned research design and ethics through international exchanges in EU member states, the US, and Russia and that they follow ethical practices even if it is not required by their universities. However, there are exceptions: for example, the University of Medicine has rigorous international ethics standards in place. According to a government decision on the methodology of granting and confirming academic titles of November 2019, the responsibility

to respect ethical and quality standards lies with the academic advisor and the PhD student (Government Decision no. 497, 2019).

Research Training and Academic Careers

There are two academic degrees that are awarded in the Moldovan research system: *doctor* and *doctor habilitat*. The *doctor* degree is awarded upon the defence of a PhD thesis, while the *doctor habilitat* is awarded upon the defence of a *doctor habilitat* thesis or on the basis of a portfolio of published academic research papers. While academic degrees are awarded by individual institutions, they are subject to subsequent validation by ANACEC.

According to the National Bureau of Statistics (2020), the total number of PhD students enrolling each year in Moldova has continuously declined since PhD programmes were included in the higher education cycle in 2015. The same has been true for the total number of PhD students, with the exception of 2019, when a slight increase was observed. However, the number of international students pursuing doctoral degrees has increased in recent years. Of the 1569 doctoral students enrolled in 2018, 23% were international, which is a significant increase from the 14% share of international doctoral students in 2014 (Information Society Development Institute, 2020). Moreover, during the past five years, more females than males have enrolled in PhD programmes on average.

In addition, most students pursue a doctoral degree on a part-time basis; in 2018, 84% of PhD students were enrolled in part-time programmes. As PhD stipends are very low, most students take up full-time jobs during their graduate studies to earn a living. Dividing time between doctoral studies and full-time employment presents challenges for rigorous research work, data collection, and analysis. However, the government has recently provided additional funding. For 2019–2020, the government approved 313 PhD stipends (including 303 academic PhD degrees and 10 professional PhD degrees) for Moldova nationals and 15 for foreign students (Government Decision no. 430, 2019). Of these, 115 are intended for PhD degrees in social and economic sciences. For

2020, the government also approved financing 23 post-doctoral students from the public budget (Government Decision no. 460, 2019).

Moreover, the profile of the academic profession in Moldova is likely to change significantly in the coming years. As one rector said, "[T]here will be a teaching crisis in the next two to three years". While some universities have recently hired younger academic staff (e.g., the University of Medicine), some interviewees noted that many current academic staff members are ageing and would soon retire. Several academic staff members and administrators noted that being an academic has lost its prestige in Moldova. Today, academics are paid very little, with salaries ranging on average between US $300 and $500 per month, depending on a range of professional indicators such as title and working experience. In turn, many scholars have to augment their salaries with additional work, such as translations or commuting to Romania for performing additional teaching.

University Preparedness to Carry out Research

Moldovan universities are generally underprepared to institutionalise their research mission despite the current policy support from the government and more freedom from ASM to conduct research, according to interview findings. Besides the absence of a long-term government strategy and the competition with ASM for funds, key challenges to research capacity development mentioned by interviewees include limited funding for universities and the brain drain of students and academic staff. Recently, some universities have begun to adopt their own strategies to deal with these challenges and strengthen their research capacity in the absence of strong and well-conceived government policies.

Insufficient funding for research has been identified as a major factor that reduces the capacity of Moldovan universities to internalise their research missions. Only accredited institutions are eligible for state budgetary funding, which is allocated through public competition by the National Agency for Research and Development. They can apply independently or in partnership with other organisations such as businesses and civil society partners in Moldova. For the period 2020–2023, the

government approved the allocation of 222 million lei for financing 140 research projects (National Agency for Research and Development, 2020). According to the National Bureau of Statistics (2020), public expenditures on research and development constituted 498 million lei (0.24% of the GDP) in 2019, of which 97.3% were current expenses and 2.7% were capital expenses on equipment, software, renting premises, and so forth. Expenditures on research and innovation in Moldova amount to approximately 6.6 euros per capita, 80 times less than the EU average (Räim & Weiss, 2016).

The interview data also showed that current funding is inadequate for the country's needs and that most funded projects are perceived to be in line with political preferences instead of national priority areas. Low funding results in multiple challenges for university-based researchers: poor lab equipment, limited access to journals, little funding for attending international conferences and meetings, and no pay specifically allotted for research time or productivity. While the expectation is that academic staff should devote half of its time to research, many academics note that it is nearly impossible to carry out research in addition to their heavy teaching loads and without salary allocations for research.

In addition, interviewees noted that the recent shift towards more competitive research funding—and especially the push to apply for EU grants—is a challenge that was not inherent to the culture of Moldovan universities. One former university administrator said that, for established academic staff, seeking grants and applying for research funding is "not their habit, it's not in their DNA". The interviewee continued, "Old professors know that they have their salaries, and the state and the university must […] take care of them". However, several universities are attempting to build capacity and evoke a spirit of competition through English-language courses, providing financial incentives to publish in international journals and travel grants to international conferences.

Despite numerous university development and reform projects for Moldovan higher education in recent decades, most resources have been spent on pedagogical improvements, curricular reforms, and university exchanges. According to the interview data, very little international aid has been designated specifically for research capacity development. However, more recently, a few academic departments and individual

researchers have been able to modernise and seek mutually beneficial partnerships with industry; fields such as agricultural research, computer science and advance nanotechnologies were mentioned by interviewees. There is little evidence of partnerships between Moldovan universities, however.

Other challenges to the universities' capacity to carry out research include the dwindling numbers of researchers and the ageing academic staff. According to the National Bureau of Statistics (2020), the number of researchers has decreased from 113 per 100,000 population in 2000 to 86 per 100,000 in 2018—a sharp decline of 24% over 18 years. As further evidence for this point, the Global Competitiveness Report for 2017–2018 noted that Moldova ranks 120th out of 140 countries in the availability of scientists and engineers (Schwab, 2017). The academic staff is also ageing: in 2018, the average age of researchers was 50.8 years, up from 47 years in 2005. Moreover, the share of young researchers (under age 35) was only 17.8% in 2019, down from 26% in 2010 (National Bureau of Statistics, 2020). These trends indicate that there are fewer researchers to carry out research and promote the development of its capacity at Moldovan universities.

Nevertheless, several interviewees spoke about university departments and individual academic researchers that have shown significant research productivity over the past 30 years. In particular, they mentioned the Departments of Technological Science and related departments at the Technical University of Moldova (UTM) and the State University of Moldova (USM), both located in Chisinau. Several university leaders and academics mentioned colleagues who have demonstrated high productivity despite all the challenges, winning international grants, partnering with industry, publishing in international journals, and incorporating research into their teaching work.

Likewise, while state policies have historically not provided much support to universities to internalise their research missions, institutional leaders and academics reported positive cases of policies directly addressing these challenges. According to the interview data, strategies to strengthen research capacity include international mobility opportunities, international partnerships, and university-administered competitions, awards, grants, and incentives for research and publications. For

example, one former administrator noted that, when Moldovan academics became eligible for participation in the European mobility programme Erasmus Mundus, it was like "the demolition of the Berlin Wall […] for research in Moldova". This former administrator continued to say that, thanks to academic staff and student exchanges, it has become possible for the first time to measure research capacity against other institutions, especially within Europe. Concurrently, universities started to attract more foreign doctoral students.

In addition, several university leaders and academic staff members described international research collaborations as being key to involving university researchers in international projects, assimilating research processes, and securing research funding. Specifically, as we mentioned earlier, interviewees referred to close, ongoing partnerships with Romanian researchers. Depending on their profile, universities also partnered with institutions in Germany, the UK, Ukraine, France, and the US. Speaking about the importance of international research partnerships, one academic noted,

> So, we cannot create anything [on our own] in the Republic of Moldova. Therefore, we have to join an [international] team to do something. The disappointment is extremely high. The fact is that you go [abroad] and learn something yet cannot implement it here. You face opposition or [impossible] research conditions or human resistance from older people, who do not want to change. […] So, no successful project in the Republic of Moldova, created in the Republic of Moldova, has been without international support.

Additionally, interviewees noted that most research collaborations take place in English, creating barriers for academic staff without a proficient knowledge of English.

Given all the challenges faced by the Moldovan academic environment, strengthening the research capacity of universities is only at the beginning of the process. While the majority of the country's research output is still generated by researchers affiliated with ASM institutes, universities are gradually starting to see themselves as research players, even if major challenges are hindering their overall productivity.

Research Impact

Measuring the impact of research and innovation in Moldova's universities—as a reflection of how well universities have internalised their research missions—is difficult, as available figures include both universities and ASM institutes. According to the Information Society Development Institute (2020), research productivity in terms of research publications and new agricultural varieties and hybrids increased between 2010 and 2018. However, the number of total patents decreased during these same years, with 88.71 patents per million inhabitants in 2010 and 52.15 in 2018. At the same time, as mentioned earlier, the overall number of researchers—especially young researchers—is falling.

Another measure of research impact is the number of academic publications with original contributions to knowledge. According to an ASM report filed in 2018, the top 100 researchers in Moldova author approximately 500–600 publications annually.[3] The same report notes that, in Webometrics, "two research institutes in the Republic of Moldova (Institute of Applied Physics and Institute of Mathematics and Computer Science) and two universities (State University of Moldova and Technical University of Moldova) occupy prestigious positions between the top 2,000 and 3,000, respectively, globally" (p. 13). In addition, ASM reported that 185 patents were filed in 2018, and approximately half of Moldovan publications of 2018 were available in open access. With regard to Moldovan journals, none are included in Journal Citation Reports; only three journals are indexed by the Web of Science; and seven are listed in Scopus (Instrumentul Bibliometric National, 2020).

There is a keen awareness of Western notions of research productivity among academic staff, such as the number of articles published in international academic journals and in English, citation indices, and presentations at international conferences. Universities measure research productivity in terms of books, citations, patents, and international conference presentations, with particular emphasis on academic publications in international journals. According to information provided by the

[3] ASM tracks the annual number of publications by Moldovan researchers, including both full-time staff members of ASM institutes and researchers at Moldovan universities.

Information Society Development Institute (2020), there were very few Moldovan publications in international journals between 2014 and 2018, with the average number of citations in ISI Thomson/Web of Science journals decreasing over this five-year period. However, there was some growth in other metrics, with the total number of articles in ISI Thomson/Web of Science journals per 100 researchers showing an upward trend over the period 2008–2018.

When asked about the influence of university research on society, most interviewees expressed doubts about it. Several suggested that there had been a greater link during the Soviet Union when Moldovan researchers had an "outsized" influence on the fields of technology and agriculture. A few interviewees gave examples of robust technical fields (e.g., nanotechnology research and telecommunications) or cited international projects that benefitted the wider European or Eastern Partnership region. Some mentioned that research was improving or was being incorporated into teaching and university activities, such as hackathons and innovation start-up weekends, often funded in partnerships with industry (especially IT) and international government donors. Moreover, according to some accounts, a number of researchers who produce useful research for the country now live abroad and work at leading universities and think tanks in the EU and US.

Concerns were hence raised about how universities respond to the needs of society; a major identified shortcoming is the absence of a mechanism connecting research priorities and objectives to social needs. Moreover, as the scant funding for research moves from institutional support to project-based funding, some universities are trying to promote innovation and collaboration in response to specific needs, spurring a revised way of thinking about research planning.

Nor is there much evidence that the government has historically provided specific tools or pathways to connect society's needs with research or to encourage partnership between universities and external stakeholders, such as industry. According to a study undertaken by the National Bureau of Statistics (2018), 13% of businesses reported partnering with universities and ASM research institutes to promote the innovation of their processes and products in 2015–2016 (latest available data). The absence of technology transfers and other mutually beneficial

partnerships is a problem that is acknowledged by the Ministry itself in its 2020–2023 National Programme (MECC, 2019, p. 2). The absence of a formal framework to align research with national socio-economic priorities is partially addressed by the Ministry's National Programme.

Conclusion

After examining the current state of research capacity internalisation at Moldovan universities, we showed that Moldovan universities are only at the start of institutionalising their research mission. Despite some recent government incentives, university leaders and academic staff continue to experience hindrances to conducting globally competitive research. As highlighted earlier, the topic of institutionalising research at universities has garnered attention in the past five years, thanks in part to Moldova's international development partners, such as the EU. Yet there has been little consistent attention to finding solutions to the structural problems that hamper universities from becoming fully-fledged research actors.

Policymaking and planning of research capacity and knowledge creation has shifted significantly over the past five years, due in part to the election of a government with a new view of the role of research in society. While some governments agreed with the EU's assessment that research should be incorporated into universities and tied closely to teaching and learning (Räim & Weiss, 2016), giving universities and researchers autonomy with coordination led by the MECC, other governments have preferred a centralised model of research planning and funding, coordinated by ASM. This low-key debate continues at present: in February 2020, the Parliament made the decision of returning partial institutional funding to ASM research institutes. This resulted in decreased funding opportunities for university-based research and less merit-based competition for funding among all researchers in the country.

One of the main findings of this study is that enhancements to university-based research capacity must be considered as part of national higher education reform. The interview data showed that research output cannot be considered separately from university accreditation and quality assurance—processes of great consequence. For example, one interviewee

emphasised that, given the significant decline in student enrolment, three pedagogical universities are excessive; these could be combined into one, with research planning reshaped as part of the reform. In addition, interviewees widely called for making the curriculum more relevant to market needs, improving academic salaries and work conditions, introducing better planning and more flexible budgetary processes to allow the purchase of research equipment, and improving domestic and international student recruitment and retainment efforts.

However, it is also important to highlight the progress that has been made. Despite funding and political challenges, several Moldovan university departments and researchers have continued to push forward on research and innovation. Moldovan researchers, especially in sectors such as medicine and technology, continue to publish in high-ranking journals, participate in international partnerships, and engage in innovative collaboration with industry. Within universities, individual researchers are lauded for their research skills, teaching engagement, and training.

In terms of future research, one suggestion is to look more closely at the academic staff and departments that are excelling in research productivity and quality despite the contextual limitations and fragmented policy landscape. For example, universities that are piloting incentive packages for academic staff publications may provide programme models for other institutions. In addition, partnerships, especially with industry, are important to Moldovan academic researchers. However, few university leaders or academic staff members mentioned research consortia or cross-institutional partnerships that could be developed and expanded to share resources and ideas.

Overall, this study makes it clear that consistent, significant reform is needed to advance the research capacity of Moldovan universities. It also echoes the findings of other researchers (Bischof & Tofan, 2018; Wetzinger, 2019) and European reviews of higher education (Räim & Weiss, 2016; Turcan & Bugaian, 2015) that reform is already underway yet more is needed to improve the quality of higher education. In this reform, funding for research is paramount if research capacity is to be developed and fully institutionalised in Moldovan universities. As stated in a 2019 ASM report, without funding and equipment, "scientists in the Republic of Moldova cannot be competitive compared to those doing similar research in European countries".

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7

Russia: The Rise of Research Universities

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Pushing universities to embrace, internalise, and prioritise their research mission was, arguably, the key policy project in the field of higher education and research in Russia from the 1990s to the early 2020s. Besides boosting university research capacity as such, it involved pushing higher education institutions (HEIs) to conduct research in the context of the new market economy. It was also a hotly contested political project, as it implied changing the balance of power and influence between universities and the Academy of Sciences and redistributing both symbolic and very real financial capital. Furthermore, it involved a redefinition of what exactly constitutes "research" and "research capacity," how these are to be

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assessed, measured, and compared, and even what constitutes the goals and driving forces of the social and economic development. This chapter draws on an analysis of policy documents and on interviews with eight top-level former policy-makers (including ministry officials) and university leaders to map out the most important policy initiatives implemented by the government over a period of three decades and to assess their impact on research capacity at Russian HEIs. The evidence suggests that, during the post-Soviet period, a number of leading Russian universities moved towards internalising their research mission.

Early Years: Stormy Transformations

As by far the largest and most economically powerful former Soviet republic, the newly independent Russian Federation found itself in possession of numerous universities and a huge research establishment in the early 1990s. Uniquely among Soviet republics, Russia did not have its own republican academy of sciences (just as it did not have its own republican communist party): it inherited the bulk of the defunct Academy of Sciences of the USSR, including many of its most important institutes and its governance infrastructure that became the foundation of the newly created (or re-established, depending on one's point of view) Russian Academy of Sciences (RAS). In addition, Russia housed some of the most research-intensive Soviet universities, such as the Moscow, St Petersburg and Novosibirsk State Universities, the Moscow Institute of Physics and Technology, and the Moscow Engineering Physics Institute. In terms of their research reputation, these HEIs hardly had any peers in other Soviet republics (Ukraine might be the only exception) and still dominate (though not exclusively) the landscape of university research in Russia today.

Nevertheless, many post-Soviet policymakers tended to view the research capacity of HEIs very sceptically in general. "[Even though] the majority of advanced degree (*doktor nauk* and *kandidat nauk*) holders worked in the higher education sector, in reality HEIs accounted for [no more than] 6 percent of all research," claims an interviewee who was a science policy expert before serving as a high-ranking government official

in the early 1990s. "In practice, they taught yet produced no research." According to him, while most leading scientists from the Academy's institutes also held professorships at HEIs, they did not conduct research there; rather, they used these positions to train junior researchers whom they later recruited to their labs at the institutes. A former high-level official who played a key role in the science reforms of the 1990s is willing to admit that there existed a small group of about 40 research-intensive HEIs that mostly went on to solidify their status as research universities in the post-Soviet period. Yet, even they, he believes, mostly did applied research commissioned by the defence and aerospace industries.

Not surprisingly, other representatives of HEIs remember things quite differently. Even though they acknowledge that HEIs mostly focused on teaching or applied research, they still present late Soviet university science as a thriving sector: "The contribution of HEIs [to applied research] was way above the Academy of Sciences," claims the former rector of a technical university connected with the military-industrial complex, who subsequently served as a high-level government official. "Research at universities was excellently administered, all academics had annual research plans, there were specialised departments for managing research … they all produced real research results that were presented and discussed at meetings of academic councils," claims another rector. "In terms of publications per capita, leading HEIs were not behind the Academy's institutes," says a former high-ranking official at the ministry. "Certainly, there were small HEIs and pedagogical institutes where very little research, if any, was conducted. On the other hand, in such fields as medicine or agricultural research that had their own specialised academies, [the academies] and HEIs were very closely integrated."

Three main trends strongly affected the research mission of Russian universities during the early transition period: falling funding, the brain drain, and the expansion of higher education enrolment. Research funding declined dramatically during this period. R&D expenditure as a share of the GDP fell in Russia from 2.03% in 1990 to 0.74% in 1992 (Goskomstat, 1998, p. 284). Our respondents recall that many HEIs could pay their faculty no more than 15–20% of their nominal salaries. During the Soviet period, a significant part of research funding at

universities had come from industry, yet now this source dried up completely. Funding from the Ministry of Education for laboratory equipment, research materials, and support staff was also cut almost entirely. This situation also had a major psychological impact as university management began to view research not as a source of revenues but as a financial burden.

Not surprisingly, HEIs were also hit hard by the brain drain of the 1990s, as some of the most research-active professors sought jobs abroad. While estimates vary, anywhere from 18 to 30 thousand scholars left Russia in the 1990s by some accounts (Mkrtchyan & Florinskaya, 2018; Denisenko, 2020). Even larger numbers of scholars left Russian academia in the 1990s not for other countries but for other industries in order to earn a living—or even to prosper in the new world of the market economy (Alakhverdian, 2015, pp. 105–106). Universities accounted for a hard-to-quantify yet certainly non-negligible share of these losses.

At the same time, higher education underwent a tremendous expansion both in the number of institutions and the student enrolment. The number of HEIs grew from 514 in 1990 to 1134 in 2008—a process that was largely driven by the emergence of new private universities. While the number of public HEIs increased only moderately (to 660), the number of private institutions skyrocketed from zero in 1990 to 474 in 2008 (Goskomstat Rossii, 1993, p. 286; Indikatory obrazovaniia, 2010, p. 80). Most of the new private HEIs had neither the desire nor the capacity to support research, concentrating instead almost entirely on teaching. As for public HEIs, they sought to boost their revenues by admitting ever larger numbers of fee-paying students and expanding their networks of branch campuses, which, again, normally lacked research capacity altogether. Finally, public HEIs also sought to expand their course offerings in such newly fashionable fields as economics, management, law, and so on, where their teaching credentials, not to mention research capacity, were often questionable. This process was accompanied by rampant "status inflation," as many specialised institutes and distance learning schools rebranded themselves as academies or universities.

The multiplication of HEIs was accompanied by the equally dramatic expansion of student enrolment. While Russian HEIs had slightly fewer than 3 million students in the early 1990s, their number had grown more

than twofold by 2008 to over 7.5 million, about 1.3 million of whom studied at the new private HEIs (Platonova & Semyonov, 2018, p. 344). This often resulted in an additional teaching burden on academic staff and the de-emphasis of research even in those institutions that had boasted high research potential during the Soviet period. As fee-paying students became the main source of revenue for both public and private universities, university leaders gradually lost interest in their research mission.

At the same time, another important legacy of the 1990s was the significant degree of autonomy gained by Russian universities, including public institutions, as the Soviet legislative framework was dismantled and replaced by a new, market-oriented one. After the collapse of the USSR, HEIs' "received freedom" recalls the rector of a flagship university, "and so much authority was transferred to us that we could not even shoulder it all. When I saw our university's new charter and began to flip through it, I thought, good God, what is this all about? Are we some kind of independent state now? We can sign papers on our own without asking anyone, accept foreign and post-graduate students, recruit teachers, and appoint vice-rectors without any need to get clearance from anyone or to keep minutes of meetings, reports, etc." These new freedoms gave HEIs the flexibility that would later allow them to experiment with developing their research capacity.

The First Attempts at Reforms in the 1990s

Against this backdrop, the successive governments of newly independent Russia explored policies aimed at developing the research sector to bring it into line with the market economy. The search for new models included ideas to promote HEIs as centres of research. On the one hand, policy-makers, especially in the 1990s, were mesmerised by the great American research universities. "We had the US system of higher education before our eyes as a model … the strongest US universities were the [global] pioneers in research," says a former top-level official. On the other hand, institutional separation between higher education and research was seen by some as an outdated product of the Soviet system that reflected its

ideological priorities, the goals of social engineering, and the requirements of the planned economy rather than the natural needs of the research sector. Indeed, the alleged gaps between education and research and between academia and industry had been the subject of a lot of criticism already during the Soviet period. Now, the proposed way of addressing this "inefficiency" was to eliminate institutional separation and to return to what was described as the norm: "In the 1990s, the idea began to circulate that research must be concentrated after all at universities and that this is the standard international practice," another former top ministry official recalled. "The standard Anglo-Saxon practice, not the German one," he added with the benefit of hindsight.

Arguably, the first major practical step towards restructuring the Russian research sector was the creation of the Russian Basic Science Foundation in 1992. Presented in the presidential decree as an emergency measure designed to "preserve" Russia's academic potential, it was a radically novel institution in the context of Soviet science. The Foundation's mandate was to distribute funding directly to individual researchers and research groups on a competitive basis (Prezident Rossiiskoi Federatsii, 1992). In theory, this meant that the competition was now between scholars rather than institutions or academic bosses (although in practice, RAS leaders continued to play a key role in running the Foundation). Most importantly, competition was open to all scholars, regardless of their institutional affiliation, that is, university faculty were just as eligible as RAS researchers. While the amount of funding distributed through the Foundation was relatively small (the presidential decree initially set it at 3% of the annual federal budgetary allocations for research), it had huge symbolical importance as well as signalling a shift to a new policy paradigm that would become dominant over the following decades.

The goal of bridging the gap between research and higher education was explicitly spelled out in a federal programme adopted in 1996 for the period 1997–2000 that was called, quite straightforwardly, "State Support for the Integration of Higher Education and Science." This programme directly stated that the "growing gap between the Academy of Sciences and the universities" was a key impediment to the advancement of Russia's R&D potential. Among other things, the programme aimed at

supporting various types of joint research ventures by RAS and university scholars and at integrating research conducted by RAS into university teaching (Pravitel'stvo Rossiiskoi Federatsii, 1996; Dezhina & Graham, 2009, pp. 183–186).

While these initiatives played an important role in the individual career trajectories of many scholars, they were extremely limited in scale and hardly sufficed to change the overall structure of the research sector. On the one hand, in the early 2000s HEIs still boasted a huge research potential in purely nominal terms. They employed nearly one and a half times as many holders of both *doktor nauk* and *kandidat nauk* degrees as all the research institutes combined. Nearly two-thirds of Russian HEIs had graduate programmes, which enrolled nearly 90% of all graduate students (Gokhberg & Kuznetsova, 2004, pp. 108–110). On the other hand, the share of HEIs officially said to "conduct research" declined over the period 1990–2002 by 14 percentage points to no more than 38% (Gokhberg & Kuznetsova, 2004, p. 108), although this was largely a function of the overall multiplication of HEIs. Furthermore, by the early 2000s, HEIs received no more than 5% of all the money allocated for research from all sources in the country—far below the US (13.6%), Japan (14.5%), or the EU (20.9%). The share of the Ministry of Education, which managed HEIs, in the overall federal expenditures on research actually declined somewhat in the early 2000s (Gokhberg & Kuznetsova, 2004, pp. 110–111).

Nevertheless, these numbers should be viewed with a large dose of scepticism because of the ways in which Soviet—and post-Soviet—statistics measured research potential. For example, in the mid-1990s, HEIs nominally employed no more than 6.8% of all "researchers" in the country (Indikatory nauki, 2007, p. 191). However, in official statistics this category only included people who held "research" positions at universities—and explicitly excluded academic staff, thus vastly underestimating the actual number of active researchers at HEIs. Similarly, the extremely skewed picture of distribution of research funding is to some extent a reflection of the fact that all funding to specialised bodies such as the Academy (including capital expenditures) was counted as research funding, while, in the case of HEIs, only grants and similar types of earmarked funding were taken into account, while professors' salaries, for example,

were labelled as "teaching" expenditures. All of this makes it extremely hard to assess the share of HEIs in post-Soviet Russian research with any precision. Indeed, it might be safer to rely on informed guestimates that suggest that, in the early 2000s, no more than a fifth of all academic staff members at HEIs actually engaged in research (Goskomstat Rossii, 1993, p. 360).

From "integration" to Research Universities

The real paradigm shift in government policy towards university research came after 2004, when the goal of promoting HEIs as an alternative, or even the preferred, platform for research was enshrined in a variety of strategic documents and a slew of government programmes. These renewed efforts were also much more systematic and ambitious and implemented on a much grander scale than in the previous decade.

The very feasibility of large-scale endeavours to support university research was due to the rapid recovery of the Russian economy in the 2000s, fuelled by favourable conditions on the global natural resource markets. This enabled policymakers, for the first time in post-Soviet history, to conceive of significant interventions in higher education. Further, the new approaches to promoting university research were designed and implemented in the context of larger "priority national projects"—a set of social policies launched in 2005 in order to boost Russia's "human potential." Finally, these schemes reflected a broader and more explicit turn towards the New Public Management paradigm in Russian policy-making. Policies adopted across a variety of sectors in the 2000s–2010s stressed such principles as the competitive distribution of funding from the federal budget; the use of quantifiable indicators; efficiency; and the focus on individual "consumers." In the domain of research policy, this meant that the new funding schemes were often targeted at individual scholars or research groups regardless of their institutional affiliation. In this sense, they created additional opportunities for university-based researchers and were generally perceived as favouring HEIs at the expense of RAS, thereby undermining the Academy's exclusive position. Probably the most important ideological shift was manifested by the introduction

of the very term "research university" into the national debate about higher education policy. The idea of strong research capacity as the marker of a good university became a driving force of the internal transformation of many universities and an important target for university leaders.

Even though research universities that began to be officially identified and promoted in the mid-2000s were and are still seen as competitors of the Academy of Sciences, the policy of boosting university research potential in the 2000s–2010s was not explicitly connected to efforts to radically reform the Academy itself. The adoption of the research university model was driven by multiple factors, from the ideological criticism of what came to be dubbed as "state science" to the policymakers' frustrations with what they saw as the Academy's intransigence and refusal to make itself more "efficient." The central tenet of economic policy in the late 2000s–early 2010s was promoting "innovations" as a driver of economic growth, and policymakers viewed HEIs as easier to manage and more open to turning towards the market and the needs of industry. "The view was getting increasing support that we should look to America, where the academy of sciences is no more than a club, while all research is done at universities or in corporations. So, let's take away the Academy's funding, turn it into a club-like structure, and move research to universities," recalls a former top official at the ministry. The new approach was reflected, among other things, in the ways in which the governance of higher education and research was structured at the government level. Throughout most of the 1990s, education and "science" were managed by two separate ministries, the latter placed under the same umbrella with "technologies" and, from 2000 on, with "industry." In 2004, however, "science" was split away from "technologies and industry" and transferred to the newly formed Ministry of Education and Science, an arrangement that persists to this day.

The most important of the numerous steps taken to boost research at HEIs in the 2000s was a series of endeavours designed to set up and support a separate category of flagship universities similarly to the "excellence initiatives" implemented around the same time in a number of countries. The first among these schemes, the establishment of a network of so-called federal universities, began in 2006 and was not, strictly speaking, geared towards the promotion of research: these HEIs were

envisioned primarily as hubs for boosting the development of human capital in their regions. Yet, the very concentration of resources that was built into this programme ("federal universities" were usually created by merging existing institutions and giving them additional funding) encouraged the growth of research potential, the assumption being that growing research capacity would benefit the development and dissemination of new technologies in Russia's key regions.

By contrast, the "national research university" (NRU) programme that began in 2008 was, as its name suggests, explicitly meant to promote university research. Indeed, the very introduction of the notion of "research university" was an important policy shift. No less important was the so-called 5-100 initiative launched in 2013 to help Russian HEIs to move up in international university rankings and, hopefully, to reach the top-100 tier (Frumin & Povalko, 2014). Insofar as research productivity is one of the most important parameters in these rankings, this approach also promoted the introduction of research—and more specifically, international publications—as the overarching imperative for HEIs. The lists of HEIs that participated in these programmes overlapped to a significant degree, and altogether about three dozen institutions were involved in them.

These programmes also had a number of common features that reflected the new policy paradigm. First of all, participants were selected through competition (with the exception of the first two NRUs, which received this status by presidential decree). Secondly, the selection criteria emphasised not only metrics of existing capacity but also strategic development plans that each institution had to develop and present. Thirdly, the programmes brought with them additional funding that was contingent on meeting specific targets set in the strategic development plans, as well as on providing co-funding for these efforts from the universities' own resources. Fourthly, these programmes emphasised quantifiable indicators and, most notably, the amount of publications in international journals indexed by the Web of Science (WoS) and Scopus databases. Indeed, the 2012 presidential decree called for increasing Russia's share in the total global volume of such publications as a strategic goal (Prezident Rossiiskoi Federatsii, 2012). Fifthly, the efforts to boost research capacity focused not only on supplying equipment (which was also procured

through a number of other government programmes that targeted both HEIs and Academy of Sciences institutes) but also on such "soft" dimensions of research capacity as governance, research management, academic mobility, presentation skills, and, especially, internationalisation. The premium was put on cooperating with leading international universities, recruiting foreign scholars and Russians with experience abroad, and developing academic writing skills, including the ability to write in English.

While these programmes were aimed at a select group of leading HEIs, they also set the tone in the higher education community at large. Indeed, they were a part of a broader regulatory framework introduced by successive ministries that emphasised the notion that conducting research should be the norm at any HEI. Most notably, the so-called Monitoring of the Effectiveness of HEIs, an annual assessment exercise launched in 2013, listed research as one of a handful of parameters that were used to evaluate all institutions. The excellence programmes were supplemented by other initiatives such as the "mega-grant" programme (Pravitel'stvo Rossiiskoi Federatsii, 2010) that was based on similar principles: distribution of funding based on the evaluation of competing research proposals; assessment based on quantifiable indicators (number of WoS and Scopus articles); and promotion of international research cooperation and "modern" methods of managing research projects. While these initiatives were not targeted at leading HEIs as such, these institutions were naturally in a strong position to win a fair share of grants.

What Happened at Universities?

The effectiveness of these programmes is a hotly debated question. None of the HEIs that participated in the 5-100 programmes managed to reach the top 100 in global rankings overall, although many of them did make significant progress, and a number of institutions now rank among the top 100 globally in specific subjects. According to the Accounts Chamber of the Russian Federation, the share of participating universities in the total number of WoS-indexed publications by Russian scholars increased from 17.4% in 2012 to 33.3% in 2019. In absolute terms, the number

of such publications produced by 5-100 participants grew from slightly over 5,000 in 2010 to almost 29,000 in 2019. For many of the participants, R&D now accounts for as much as 25% or more of their total revenues. On the other hand, it has also been acknowledged that programme funding, while large by Russian standards, was puny when compared to the budgets of leading research universities in the US: participants of the 5-100 programmes received anywhere from the maximum amount of USD 15 million to as little as USD 2 million annually (Schetnaia palata Rossiiskoi Federatsii, 2021; see also Agasisti et al., 2020).

An important feature of policies towards HEIs in the 2000s–2010s was that the government rarely used direct administrative pressure to force universities to develop their research capacity. Instead, it mainly relied on a series of competitions to promote the idea of the research university and to incentivise research at universities. It was only in 2013 that the Ministry of Education began to monitor the publication activity and contractual research performed for third parties at HEIs (Monitoring effektivnosti, 2013). Even at this point it only set the minimal requirement at levels that were relatively easy to meet for the absolute majority of HEIs.

For understanding how HEIs responded to these incentives and how these incentives affected their corporate culture, teaching processes, and governance, it is crucial to look at university autonomy in such matters as organising the R&D process and spending allocated funds that the universities received in the early 1990s and that they still largely enjoy today. This autonomy allows universities to ignore the incentives and competitive pressures introduced by the government or to choose different ways of responding to them. It also allows them to be flexible in designing the organisational structures for conducting research (Kuzminov et al., 2013, p. 30).

Given the severe underfunding HEIs experienced in the 1990s, it is no surprise that, when additional resources first became available in the 2000s, universities tended to use them to bridge deficits. For example, a significant portion of the funding allocated in 2006–2008 for the implementation of “innovative educational programmes” (the very first excellence initiative) was earmarked for the modernisation of educational, laboratory, and research equipment. Similarly, 77% of the federal funds

allocated in 2008–2019 through the national research universities programme went for equipment purchases (NTF, 2015, p. 44).

Nevertheless, in response to incentives from the state, HEIs eventually also began to design their own strategic development programmes, in which the modernisation of the organisation of research was always an important component, and to use the project approach, which required a more flexible attitude to the traditional institutional structure of universities. Indeed, government programmes often explicitly required universities to make significant changes to their organisational culture. As Russian HEIs did not have much experience of elaborating research missions prior to the late 2000s, they increasingly adopted international best practices from leading universities abroad. This experience of independently defining strategic development areas, including research priorities, allowed universities to move from the strategy of survival to that of progressively building their research capacity. A glance at HEI responses to the government programmes of the 2000s–2010s shows that both the institutions that participated in these programmes and those that remained outside them adopted a variety of new practices designed to foster research.

One important trend was external recruitment efforts—not only nationally but also internationally. (The international recruitment of students and academic staff was actually a requirement of the excellence programmes of the 2010s). Over the period 2013–2019, HEIs participating in the 5-100 project hired over 1200 academics and administrators with experience at leading foreign and Russian universities and research centres, many of whom were recruited to lead laboratories. This number also included nearly 200 foreign experts hired by universities to develop academic mobility (Polikhina et al., 2020). An important innovation in the context of post-Soviet academia was the introduction of postdoctoral positions at HEIs designed to attract promising early career scholars. Critics have alleged, however, that, rather than nurturing their own research capacity organically, participating institutions used the additional funding to "buy" internationally competitive scholars (or their publications) from other institutions: when the supply dried up, the progress stopped.

Indeed, the most publicised and controversial of the new practices adopted by HEIs in recent years in response to the new system of incentives was the payment of monetary awards for international publications. At some institutions, these bonuses attained as much as USD 1000 or more per month and were structured in a variety of ways—from one-off payments to regular salary supplements paid over the period of a year or longer; sometimes bonuses were also paid to the authors' academic units. The downside is that, in some cases, the pressure to publish led both institutions and individual scholars to turn to predatory journals or pay for their articles to be accepted. While the contribution of such articles to the total number of publications produced by HEIs participating in the 5-100 project in 2010–2016 was no more than 11% on the whole, it was significantly higher at some universities and, in one extreme case, as high as 49% (Guskov et al., 2017, pp. 11, 13).

The public outcry against publications in predatory journals, along with the rise in the number of international publications (and, consequently, the volume of payments), forced HEIs to finetune their policies. In particular, they began to pay bonuses not only for publications but also for citations: for example, at Peoples' Friendship University, a one-time bonus for a citation in a foreign journal of a WoS/Scopus-indexed publication authored by an academic staff member can range from 2100 to 4500 roubles (RUDN University, 2020). An especially important and noticeable trend in recent years has been the introduction of bonus schemes that reward publications in higher-ranking journals (as measured by their standing in the Web of Science and Scopus databases).

More importantly, besides directly stimulating research outputs, many institutions began exploring more systemic solutions that support motivation for research in general and create an environment conducive to research. These efforts included active cooperation with various international consultants that helped universities both to revamp their governance structures and to improve their international visibility. Another increasingly popular practice was to establish special units that acquaint academic staff members with the basics of academic English and the rules of submitting articles to international journals. Tomsk Polytechnic University was one of the first to launch this so-called Hirsch rocket service (a playful reference to the Hirsch index) in order to assist its

academics to publish abroad and to raise the impact of their work (Tomsk Polytechnic University, n.d.). Soon, this name became a household term in university circles. "Whereas there were only a dozen scientists with a Hirsch index at TPU at the beginning of the 5-100 project, there are now over 240" (Tomsk Polytechnic University, 2020).

The implementation of policies incentivising research at HEIs often lead to greater internal differentiation within universities, as some departments become more research active and/or more entrepreneurial than others. However, this was something to be expected, as the competitive mechanisms introduced by the excellence initiatives at the federal level were increasingly reproduced within the HEIs themselves. The 5-100 project, for example, enabled universities to independently distribute internal university grants on a competitive basis to support strategically important research projects and units. Overall, there is evidence that the older, more hierarchical ways of managing research are being gradually replaced by forms with clear signs of a matrix organisation. Most notably, many universities have eliminated smaller, narrowly focused "chairs" (*kafedry*) that used to be the basic type of administrative unit at HEIs and created larger departments and/or institutes, while also encouraging their academic staff to set up formal and informal groups and networks based on common research interests and joint research programmes.

Conclusion

Promoting research at HEIs has been one of the key elements of higher education and research policy in Russia since the collapse of the USSR and especially since the late 2000s. In particular, the government has identified and supported "research universities" as a separate category while implementing a slew of other programmes designed to incentivise research at HEIs in general and to present it as the defining feature of a university. The implementation of these programmes has led to some tangible successes. Over the period 2008–2019, "national research universities" accounted for nearly 30% of all Russian publications in WoS and Scopus-indexed journals and for 35% of citations of Russian publications in such journals (both figures based on fractional counting). In

addition, the volume of R&D per academic staff member has doubled (Pravitel'stvo Rossiiskoi Federatsii, 2020, pp. 119–120). By 2015, the HEIs' share in the total volume of Russian publications in the Scopus database (38%) had overtaken that of the Academy of Sciences (Guskov et al., 2017, p. 7). Today, over half of all publications from Russia have a university-based author (Chankseliani et al., 2021).

It would probably be safe to say that these leading HEIs have internalised their research mission and that efforts to turn the higher education system into the driver of Russian R&D sector have been relatively effective. At the same time, this process has also led to a growing stratification among HEIs, with research universities becoming an elite club (Drantusova & Knyazev, 2013, p. 271; Platonova & Semyonov, 2018, p. 354; Talovskaya & Lisyutkin, 2018). On the whole, most government measures have affected no more than 20–25% of HEIs directly. We estimate that a further 20–25% have been affected indirectly: they have also internalised their research mission to some extent, introduced changes to their organisational structure, and sought to build links with industry and the Academy of Sciences. The remaining Russian universities appear to have failed to internalise their research mission and lack the resources to do so. Although they sometimes pretend to be very research-active, data on revenues and publications do not confirm their claims. The striking and growing stratification within such a large and diverse system as the Russian higher education sector creates risks of the deterioration of a large part of the Russian higher education system that are still not fully appreciated by the government and society.

Finally, the earlier programmes are being currently replaced by a new version of Russia's excellence initiative. While the goal of increasing global competitiveness as measured by international rankings is increasingly out of sync with the current political climate, the new policy initiatives continue to emphasise the importance of research while reformulating the metrics used for the latter. The "Priority-2030" excellence initiative and new national project "Science and Universities," both launched in 2021, aim, among other things, at increasing the volume of R&D performed by HEIs to make Russia rank number 10 worldwide in this indicator and at stimulating the establishment of consortia between HEIs and research

institutes, including the creation of umbrella governance structures and even outright mergers, which were considered taboo in the previous decade.

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8

Ukrainian Universities and the Challenge of Research Capacity Development

Nadiia Kachynska

Introduction

Before discussing how public universities in Ukraine have internalised their research mission over the past three decades, we should note that the teaching mission has been historically prevalent over the research mission[1] at Ukrainian universities. The first Ukrainian universities were established to train the ecclesiastical and political elites of the Rzeczpospolita (Poland) and Austro-Hungarian and Russian Empires and were mainly teaching-oriented institutions (Oleksiyenko, 2014). By 1941, Ukraine had 161 higher education institutions, of which only 6 were comprehensive universities, and the rest had the status of specialised

[1] In this chapter, I use the term 'mission' as a broad concept to describe a university's basic purpose. From this standpoint, teaching and research are usually perceived as the two core mission of a university (Scott, 2006).

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institutes (Rumyantseva & Logvynenko, 2018). Under the Soviet model of higher education that existed in Ukraine for over seven decades, universities tended to prioritise teaching activities over research. Fundamental research was mainly concentrated in research institutes directed by all-Soviet and republican academies, while the bulk of applied research was conducted at industry-oriented applied institutes (Hladchenko et al., 2018; Rumyantseva & Logvynenko, 2018). For their part, all HEIs with the exception of a few comprehensive universities were primarily monodisciplinary teaching-oriented institutions specialising in different industrial sectors of the planned economy. Even though the higher education sector in Soviet Ukraine employed almost 36 per cent of all 'doktor nauk' and close to 40 per cent of all 'kandidat nauk' degree holders, these academics were expected to spend the bulk of their time on teaching (Egorov, 1995).

By the end of the Soviet period, there were ten comprehensive universities in Ukraine that enrolled about 100,000 students. All other institutions were highly specialised pedagogical, agricultural, medical, art and culture, or technical higher education institutes (Rumyantseva & Logvynenko, 2018). From 1990 to 2008, the student population in Ukraine grew from 900,000 to almost 2.4 million. This expansion was mostly due to the growth of enrolments in 'soft fields': social sciences, economy and law, humanities and arts, and education. Specialised higher education institutions were forced to expand their narrow study programmes by offering degree studies in humanities and business that met with great demand. In this way, they began to resemble comprehensive universities, although their research capacity and traditions remained weak (Borisov & Zapryagaev, 2001).

In the early 1990s, the European TEMPUS-TACIS programme stimulated the 'universitisation' process in Ukraine (Hladchenko et al., 2018, p. 120). Hladchenko (2018) explains that 'this change in organisational form was essentially an institutional "relabelling"' (p. 121). The initial policy idea was to grant the university status only to higher education institutions that participated in the TEMPUS-TACIS consortium.

However, this policy became incoherent over time, and many institutions that had only declared their intention to participate in the programme were 'relabelled' as universities. Between 1993 and 1994, fifty-seven higher education institutions were designated as universities that were authorised to conduct fundamental and applied research. However, as this 'relabelling' did not attract any research funding to these new universities, it appeared to be a mere 'symbolic exercise' that helped these institutions to attract more fee-paying students (Hladchenko et al., 2018, p. 121).

In 2020, there were 281 higher education institutions in Ukraine, including universities, academies, and institutes. Among them, 135 public institutions had university status (State Office of Statistics of Ukraine, 2020). Still, no Ukrainian university has made it into the top 100 of global rankings (e.g. ARWU and QS), and only a few universities are visible in them at all. A drastic decline in research funding, strong Soviet legacies in the structural arrangement of research and higher education, economic and political crises, 'failed' reforms, corruption, and other factors have been widely explored by scholars to explain the barriers experienced by Ukrainian universities in building research capacity and internalising research mission (Arel, 1995; Hladchenko et al., 2018; Oleksiyenko, 2014; Osipian, 2009; Rumyantseva & Logvynenko, 2018).

This chapter explores how public universities in Ukraine sought to internalise their research mission over the three decades of post-Soviet transformations, focusing on the period since 2014 when new legislation on higher education and research was introduced. To tackle this research question, the chapter delves into two conceptualisations rooted in the new institutional theory—policy transfer logic and organisational identity. Studies of policy transfer argue that policy ideas do not diffuse spontaneously in a vacuum but are actively transferred and translated in a historically shaped context of ideas, actors, traditions, and institutions (Pope & Meyer, 2016; Stone, 2012; Suárez & Bromley, 2017). That explains why a certain degree of path dependency is inevitable, even though it must be recognised that individual agents and social networks are key to this process of translation (Czarniawska & Joerges, 2011). Organisations respond to shifting institutional environment by adapting their culture and identity (Greenwood et al., 2011; Kodeih & Greenwood,

2014). Thus, the concept of organisational identity is crucial to understanding research culture or a lack thereof in different public universities in Ukraine.

I begin by analysing socio-economic and political factors to show how and why the idea of a research university, pervasive in the European policy context over the past two decades, was transferred into Ukrainian higher education. I further suggest that this discourse acquired a significant national interpretation and was embedded in three main policy logics: vertical system differentiation, competitive and base research funding, and research evaluation framework. In the next section, I discuss my empirical findings on the different organisational strategies undertaken by Ukrainian universities to internalise their research mission. In the concluding section of the chapter, I revert to the concept of organisational identity to discuss the range of strategies used by Ukrainian universities and suggest directions for future studies.

Research Design, Method, and Data

The study employs the following data sources: country-specific literature published in Russian, Ukrainian, and English; country-specific document analysis; semi-structured interviews with policy experts, university leaders, and the academic staff of universities and academies of sciences; national statistical data; and other quantitative and qualitative data from university and ministry web pages, national and international reports, and media coverage. The bulk of qualitative data was collected during the field research in Ukraine in summer 2019. Overall, I conducted 16 semi-structured interviews with five higher education experts, four university leaders, and seven academic staff members of universities and academies of sciences. Higher education experts who participated in the study were current or former senior officials of the Ministry of Education and Science of Ukraine (MESU). Interviews were conducted in Ukrainian and Russian, translated into English and then coded.

The Idea of a Research University in Ukraine

The developmental path of the higher education system in Ukraine has reflected the socio-economic and political transformations that have taken place in the country since the collapse of the Soviet Union (Rumyantseva & Logvynenko, 2018). The past 30 years have been characterised by rapid transformations in the socio-economic and political environments (especially in foreign relations), and dramatic demographic changes have formed the wider context in which the Ukrainian higher education system has evolved. Several interviewees explained that none of the Ukrainian governments prioritised university research or invested in the development of new research clusters in Ukrainian higher education. As a policy expert explained, '[the] political and economic challenges undermined demand for research and innovation in the country; the crucial role of science and university research in economic development was understood neither by politicians nor by society at large' (Policy Expert Interview).

In the 1990s, Ukrainian universities became highly dependent on fee-paying students. Some study participants claimed that Ukrainian universities had unwritten policies to retain every fee-paying student even at the cost of imitating teaching and faking academic performance. Coping with the rapid growth of the student population and competing with new private universities for fee-paying students, public universities focused on teaching instead of research. As a faculty member with over 30 years of academic experience explained, 'the crisis of the academic profession caused by severe university underfunding and low academic salaries led to faculty members to teach at several universities at once at the expense of research or, even worse, to engage in corruption'. (NASU Member Interview).

The idea of Europeanisation or, more precisely, 'catch-up Europeanisation' was widely seen as a way of overcoming the crisis. Fimyar (2010) suggests that there was a widespread narrative to align existing Ukrainian norms, capacities and ethical standards with those in Europe and the rest of the world by moving from the 'old' (post-Soviet) to the 'new' (European) model. This narrative manifested itself in

Ukraine's joining the Bologna Process in 2005 and its introduction of the idea of a research university as an ideal model of the Western university that prioritises research in its mission (Altbach & Salmi, 2011). The research university model was initially introduced into the Ukrainian context by the pro-European government that came to power after the Orange Revolution of 2004. It was an example of the policy of 'vertical system differentiation'. A policy expert explained that the 'national research university' project introduced in 2007 was a reformist plan to identify flagship universities that have the capacity to expand knowledge production to meet the demands of a globalising economy (Policy Expert Interview). Fourteen national universities were granted the status of a research university. Several study participants told me that the new policy of granting the research university status was highly welcomed by the leadership of these 14 HEIs, which were engaged in a growing competition for students amid the early signs of a demographic decline (Interviews). Historical comprehensive universities, on the other hand, lost their privileged status when many HEIs gained the university status in the 1990s due to 'relabelling' and 'status granting favouritism'[2] practised by the previous governments (Hladchenko et al., 2018; Polischyk, 2010). The selection of national research universities was based on such parameters as the number of students and faculty members and the number and profile of academic divisions, research units and science parks, rather than their research productivity. As a result, the largest universities in Ukraine were designated as research universities. However, this project called neither for allocating additional funding nor for promoting systemic changes in research governance at these universities.

The ten years between 2004 and 2014 were a period of balancing between 'old' and 'new' rules in Ukrainian politics. The introduction of the 'national research university' category was basically 'window dressing', as there were no further reforms of university governance or additional funding (Policy Expert Interview). As interviewees explain, a significant shift in the public understanding of the role of research in Ukraine took place as a result of the 'Euromaidan' revolution or

[2] From 1991 to the mid-2000s, university status could be granted to HEIs in return for the political support of their rectors rather than by the established criteria (Hladchenko et al., 2018).

'Revolution of Dignity', the subsequent annexation of Crimea and the ongoing armed conflict in Eastern Ukraine. A senior faculty member suggested that 'although Ukraine lost a lot of infrastructure and research personnel in Crimea and Donbas, citizens' and politicians' attitudes towards science have been transformed in a positive way by the recent events: they realised that Ukrainian scientists and engineers are still able to supply our army with modern defensive and offensive weapons' (Faculty Member Interview). A senior administrator supported the earlier statement by adding that 'for many in the Ukrainian academic community, the revolution signalled the right moment to abolish Soviet-rooted practices in research, implement long-awaited reforms, and finally integrate Ukrainian research into the global knowledge system' (Senior Administrator Interview). Discussing this shift from the perspective of public policy, an expert explained that the idea of the research university was revived at the policy level by 'post-Maidan' politicians at MESU 'advocating the abolishment of all vestiges of the Soviet model in research and higher education governance' (Policy Expert Interview).

In 2014, the new law 'On Higher Education' made a number of significant changes to the system. The law limited the functions of MESU to developing and implementing national higher education strategy and policy frameworks rather than supervising higher education institutions on a day-to-day basis. Universities received more autonomy to manage financial and human resources without ministry approval. The law also established the National Quality Assurance Agency for Higher Education and the National Research Foundation, among other changes. Most importantly, it mandated a research mission for HEIs with university status on par with educational activities. Section 3 of the law prescribes that universities have to 'conduct research activities, train highly qualified research staff and assure the application of research results in the educational process' (Higher Education Law, 2014). A senior university leader said that these shifts had a major symbolical impact that encouraged the university academic community to de-construct long-standing perceptions (rooted in the Soviet higher education model) that research conducted by Ukrainian universities was of lower quality and lesser importance than research done at academies of sciences (University Leader Interview).

The All-Ukrainian Academy of Sciences was established in 1918. After independence, NASU became an autonomous public organisation coordinating the system of academic and industrial research institutes in Ukraine. This organisation has autonomy in selecting research topics, strategic priorities and in other matters of research governance. Since the mid-1990s, successive governments have heatedly discussed whether Ukraine should follow the example of those Western countries in which research is mainly concentrated at universities. These discussions led to several attempts to introduce a research university model. Nevertheless, such reforms were opposed by academicians at NASU, who favoured the traditional Soviet model that anchored research in academies (Hladchenko et al., 2018). Drawing on its traditionally strong political connections in government, this academic opposition was quite successful over the years in preserving NASU's structure and role (NASU Member Interview). In particular, this meant that NASU retained its control of the allocation of research funding from the national budget. For example, the National Academy of Sciences of Ukraine and five other state academies received three-quarters of all budget funding for fundamental and applied research in 2016 (Schuch et al., 2016).

The first structural changes took place at NASU only in 2018 after the first external evaluation of 94 institutes by Ukrainian and foreign reviewers. The review stated that almost 20 per cent of institutes (21 out of 94) were underperforming and conducting research in fields that were not relevant to the country's economic needs (Schiermeier, 2019). More than 200 research departments at NASU institutes were subsequently merged with each other or universities or closed altogether. The idea of merging NASU research departments and labs with universities stemmed from the desire to '[create] European-style research universities and link research and teaching' (Schiermeier, 2019). Although it is quite common for NASU academics to hold part-time positions at universities, official cooperation between research institutes and universities remains very limited (Interviews). Following another round of research evaluation in 2019, NASU currently includes 160 academic research institutes and 38 industrial research organisations.

In 2018, Ukraine's Ministry of Education and Science approved the 'Roadmap for Ukraine's Integration into the European Research Area

(ERA-UA)'. Several study participants stated that this political shift enabled universities to reconsider their research strategies and practices (Interviews). The political turn towards the ERA resulted in a shift from a 'nation-building rationale' that prioritised publishing in Ukrainian in domestic journals towards the 'Europeanisation rationale' of publishing in English in journals indexed by international databases such as Scopus and the Web of Science (Faculty Member Interview). Thus, starting with September 1, 2022, all candidates seeking to obtain the degrees of the doctor of philosophy (PhD) and doctor of science[3] have to publish five scholarly papers in journals indexed by Scopus and/or the Web of Science to be eligible to defend their dissertations (MyESU, 2018).

This shift was introduced with the help of a series of changes in research funding mechanisms and research evaluation. Before these reforms, the Cabinet of Ministers distributed research funding for fundamental research. As the then Ukrainian minister of Education and Science said, 'creating an effective mechanism for the competitive funding of science, which should reach forty per cent of the total state funding for research, was one of the key EU recommendations provided by an independent external audit of Ukraine's research and innovation system' (Ministry of Education and Science of Ukraine, n.d.). In 2018, the National Research Foundation of Ukraine (NRFU) was established to distribute funds based on the competitive basis depending on the quality of research. The NRFU's financial resources come from the state budget and voluntary contributions from private companies and individuals, including non-residents of Ukraine. The NRFU provides individual, collective, and institutional grants. Research funding applications are subject to peer review.

Another major change in the distribution of research funds involves the introduction of basic research funding for universities that were traditionally considered to be educational institutions. Until recently, the government provided universities with research funding to implement short-term research projects that were selected through an annual MESU

[3] While Ukraine maintains a dual system of doctoral degrees, the 2014 reforms replaced/renamed the Soviet 'kandidat nauk' degree by the doctor of philosophy (PhD) degree. The degree of 'doktor nauk' remained unchanged.

competition. For the first time ever, the 2019 budget of Ukraine stipulated that basic research funding for universities (in the amount of USD 3.6 million) was to be distributed according to the results of a national research evaluation. The results of this evaluation, which was significantly delayed, were announced only in March 2021. At the time this chapter was written, it was not yet clear how the 2019 budget funds would be distributed after such a delay.

In 2019, MESU introduced a research evaluation framework called 'attestation' to identify universities eligible for receiving basic research funding (Government attestation of research productivity, 2017). The evaluation framework identifies seven research areas in which universities conduct research. The evaluation is designed as a peer-review process where an expert in the field evaluates an institution's achievements over the previous five years and assesses the five-year development plan proposed by the institution to leverage its research capacity. The evaluation includes such criteria as the institution's contribution to the given research field measured by the number and quality of publications, the societal impact of research, international cooperation, and the quality of the development plan. The research development plan is expected to be very comprehensive, including a list of anticipated research projects for the following five years. Each plan has to include strategies for maintaining or expanding human resources in the research field, including a forecast of how many new scholars will be trained for the area. It should also present previous research activities and the achievements of young scholars, existing research infrastructure and any capital development plans, measures for assuring academic integrity, research productivity targets, and plans for cooperation with industry.[4]

The results of the ministry's first research evaluation were announced in March 2021. All 135 public universities were evaluated. The evaluation assigned one of three categories to all universities in each of their research areas. The highest category meant that a university conducts research of national or global importance and works at a 'world-class level'. The other two categories were assigned to universities conducting

[4] To the best of my knowledge, these research development plans have not been made publicly available so far.

research at a good or acceptable level, respectively. Only universities in the top two categories receive basic research funding, figure on the register of research institutions supported by the government, and participate in National Research Foundation infrastructure projects.

The first round of evaluation identified Sumy State University as the country's leading research university that ranked highest in four research areas and highly in a fifth one. The Taras Schevchenko National University of Kyiv, Ukraine's historical flagship university, was evaluated in six research areas and ranked highest in only two—biology and public health, and mathematical and natural sciences. The fact that the vast majority of universities were assessed in only two or three research areas reflects the persistent specialisation of Ukrainian universities and their difficulties of developing research capacity in other fields. Many universities failed the evaluation altogether. It remains unclear what would be the consequences for universities that scored low or failed besides their ineligibility for basic funding and other privileges as defined by the framework. A policy expert commented that these consequences are not defined in the documents and that underperforming universities are apparently expected either to find their own means of improving research performance for the next round of evaluation or 'consider significant restructuring—merging with other universities or closing' (Policy Expert Interview).

It is too early to assess the exact impact of the new evaluation framework on university research. However, during the data collection phase back in summer 2019, I asked my respondents about their opinions on and expectations for the upcoming research evaluation. They had many doubts about how much of a difference this evaluation could make in view of the low research funding, outdated infrastructure, significant brain drain, and other challenges accumulated by Ukrainian academia over the past three decades (Interviews).

At the same time, the main point of concern about this new policy framework related to the new rules on academic publications. Since 2018, there have been two main categories of journals defined by the ministry (MESU, 2018). The higher category includes international and Ukrainian journals indexed by Scopus and/or the Web of Science. The lower category includes all other Ukrainian journals that have met the

databases' requirements yet have not been included in them so far. The evaluation framework gives different weights in the formula for publications in these two groups of journals. Publications in journals with a higher impact factor have more weight. University leaders commented on the new framework by stating that universities that want to compete for basic research funding should prioritise two organisational goals: bringing their existing in-house journals to the level of Scopus or the Web of Science and encouraging their academic staff to publish in the indexed journals. Both priorities would require considerable investments, which remains the biggest challenge in view of the scarce internal resources that can be allocated for these purposes (Interviews).

NASU research institutes remain the main competitors of Ukrainian universities in attracting public research funding. According to the research evaluation results, only eleven Ukrainian universities (less than 10 per cent) have two or more departments that rank high enough to compete with NASU research institutes for basic research funding and capital investments from NRFU. For most universities, limited project-based research funding from the Ministry of Education and Science of Ukraine remains the only option, unless they can attract private resources, which has been a huge concern over the past few decades (Korolyova, 2019). I shall examine these and other challenges and common university strategies for meeting them in the next section.

University Strategies of Improving Research Capacity

Several strategies have been used by Ukrainian universities to build and sustain their research mission. University leaders said that, under deteriorating public research funding conditions, Ukrainian universities are trying with varying degrees of success to attract external funding such as industrial contracts and international research grants, including Horizon 2020. While participation in Horizon 2020 is considered very prestigious and could be very rewarding, it is not an easy solution for Ukrainian universities, especially if they remain specialised. Small specialised universities have a lot of difficulty finding potential partners, whether in

Ukraine or internationally, to collaborate on the programme (Interviews). In response to this challenge, some universities have introduced new administrative positions (e.g. research grant manager/administrator) and organisational structures (e.g. research grant office/department) to build their administrative capacity for supporting staff members in managing research grants and overcoming the persisting red tape at the national level. As a university leader explained, this support may include preparing grant proposals, communicating with international funding agencies, and managing grant finances, all the more so as 'many of these practices are very new to [Ukrainian universities]' (University Leader Interview).

University leadership teams are still constrained in making decisions on such matters as remuneration packages, enrolment numbers, and spending, which all require ministerial approval. Even when universities manage to secure research contracts with private companies or external funding agencies, they still suffer from excessive bureaucratic control over how they spend this money. Universities cannot even make decisions regarding purchasing equipment and materials on their own insofar as procurement is centralised, requires applying to MESU, and is regulated by MESU, the Ministry of Finance and Financial Inspection (Interviews). These obstacles make the process ineffective and unattractive to international partners (University Leader Interview).

Several university leaders identified training and retaining academic personnel as another strategic priority area for building research capacity at their universities. Over the last ten years, the number of doctoral students[5] declined by 23 per cent in Ukraine. A particularly great reduction in doctoral students took place at NASU research institutes, where student numbers declined by more than half (from 5109 students in 2010 to 2199 students in 2020). Universities also experienced a decline of about 18 per cent, albeit less than the national average and far less than the reduction at research institutes. A similar trend was observed in the number of doctoral programmes offered by universities and research institutes: the number of doctoral programmes at universities dropped by

[5] In the Ukrainian context, 'doctoral students' refer to students who are studying in the *aspirantura*—a post-graduate programme for the *kandidat nauk* degree.

just eleven programmes, while the number of doctoral programmes at research institutes decreased by ninety-four.

Another change observed in doctoral programmes is the shifting focus on the language of publications. After gaining independence in 1991, academic writing in the Ukrainian language was prioritised as part of broader nation-building efforts. Until 2011–2012, scholars seeking doctoral degrees were required to publish in the Ukrainian language in national journals and provide only short abstracts in English. Lack of academic writing skills and low English proficiency represent a significant barrier for Ukrainian scholars seeking to get published in international journals, compete for international grants, and partner with English-speaking peers in other countries (Kachynska, 2019). Training and hiring academic staff with English language skills and international professional connections was identified by study participants as another strategic priority for universities that want to improve their publication rate in indexed journals.

University leaders believe that international mobility has greatly helped academics to develop their English language skills and international ties, among others. The international mobility of Ukrainian researchers is mainly fuelled by international projects, grants, and exchange programmes. In 2014–2019 alone, Erasmus+ programmes funded 1322 mobility projects for over 13,000 academic and administrative staff members and students from Ukraine. Of them, nearly 10,000 students (in bachelor's, master's, and PhD programmes) and 3000 academic and administrative staff members went to universities in Europe. Some universities highly encourage their doctoral students and academic staff to participate in mobility programmes, as one academic explained:

> Some universities are very keen for their students and academic staff members to travel to other European universities to gain contacts. They support them by accommodating such mobility in academic planning, providing additional financial support through small yet attractive internal incentives, and dedicating staff in international offices to help students and faculty members write proposals and make the necessary travel arrangements. (Faculty Member Interview)

Another university leader supported this claim by noting,

> we try to support and stimulate our academic staff members to cooperate with international colleagues and publish in indexed journals in English by providing incentives for these activities; it may not be a lot, yet it is still something, and it is great that we have the capacity to allocate some funds to this end—many regional universities lack this opportunity altogether. (University Leader Interview)

To illustrate this process, many study participants shared stories about the growth of Ukrainian research publications in English in indexed journals and the efforts of academic staff to send one or two publications to Scopus journals every year. These changes have had some positive results already. Ukrainian research publications indexed in the Scopus database have increased almost threefold over ten years (from about 5800 in 2009 to almost 16,000 in 2019). Ukrainian universities are responsible for the largest part of all Ukrainian publications in the Scopus database (Nazarovets, 2018).

At the same time, after sharing these preliminary positive observations, many university leaders expressed their concerns about the persistent barriers and challenges faced by the academic profession in Ukraine. In their opinion, these challenges can hardly be addressed at the university level and require system reforms. A faculty member I spoke with voiced the following regrets:

> While the problem of insufficient salaries is not unique to Ukrainian higher education, it should be said that the stability and prestige of the academic profession have been declining over the past three decades. High teaching loads (almost 30 contact hours per week), employment contracts limited to 3–5 years, and 'unrealistic' requirements to publish in Web of Science or Scopus-indexed journals to maintain employment forced many academics to leave public universities in Ukraine. Those who stay in public higher education and continue to engage in teaching and research may be called true heroes and patriots of Ukraine. (Faculty Member Interview)

All academic employment contracts at public universities in Ukraine are now limited to three to five years. The renewal of these contracts is

competitive and unpredictable to a certain extent. The renewed contracts may have different employment terms. For example, a full-time five-year employment contract may become a part-time three-year contract after renewal. As an interviewee stated, 'the academic profession has become very unsecure' and 'less attractive to a new generation of academics'.

While teaching loads are lower for senior academics according to the national legislation (about twenty contact hours for senior faculty members in comparison to thirty contact hours for junior members), university leaders raised concerns that these levels are still too high to allow academics to produce research publications of the required quality for indexed journals (Interviews). University leaders believe that the lack of university autonomy has prevented them from taking steps to reduce teaching loads for faculty members with promising research potential (Interviews). In particular, one university leader remarked that the practice of hiring doctoral students as teaching and research assistants was common in universities in Europe and North America yet still nonexistent in Ukrainian higher education (University Leader Interview).

Other university strategies mentioned by university leaders and academics included efforts to index domestic journals in the Web of Science and Scopus databases, select research projects through internal competitions, and establish internal reward mechanisms for publications in indexed and high-impact journals. Some universities award internal publication grants to academics who successfully publish in indexed journals. Grant amounts usually range from 150 to 300 USD and are awarded automatically to all faculty members after the publication of the qualifying articles. While these amounts may not even cover the publication costs, many interviewees considered the support of publication activities to be a positive trend.

Conclusion

This chapter showed how the initially alien idea of the research university has been gradually transferred and adapted to the context of Ukrainian higher education through the concepts of policy transfer logic and organisational identity. The new law on higher education ended a period of

neglect of the research mission of Ukrainian universities, forcing them to become a lot more research-oriented. The research evaluation framework that was introduced in 2019 identified the research leaders among the 135 public universities in Ukraine. Unsurprisingly, comprehensive universities came in first in this evaluation. The evaluation also identified the research fields in which universities perform well, have the potential to conduct research, or significantly underperform. The national research evaluation demonstrated that the majority of Ukrainian universities are competitive in at most two research fields and so remain highly specialised. Three decades of research underfunding and insufficient university governance reforms have also played a role in the universities' persistent specialisation and focus on teaching. Under such circumstances, the specialised higher education institutions that were massively relabelled as universities in the early 1990s could not leverage and diversify their research capacity. Several universities could not pass the research evaluation in any research field at all. The policy consequences for these universities are still unclear. Will they find the means to improve their research performance in time for the next round of evaluation and survive? Or will the number of universities in Ukraine decline significantly over the next five years as a result of the evaluation policy? As it usually happens in public sector reforms, there will be winners and losers among Ukrainian universities, and further research is necessary to analyse future policy outcomes.

This chapter also identified the different strategies employed by Ukrainian universities in response to the shifting environment. Due to the absence or shortage of public funding, Ukrainian universities have prioritised the attraction of external research funding by participating in European research programmes. They have also focused on developing administrative capacities to support and promote research mission, training and retaining academic staff, promoting English language proficiency, and establishing internal research competitions and incentives to promote academic integrity and research excellence. Although my findings are entirely based on interview data and publicly available documents, they point to several new strategies used by Ukrainian universities to build research capacity. Further research would be needed to develop these findings. The aforementioned research development plans

elaborated by Ukrainian universities during the national research evaluation process could serve as comprehensive resources for this purpose once they become publicly available.

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Part II

University Research Capacity in the Caucasus

9

University Research in Armenia: The Aftermath of Independence

Sona Balasanyan

Introduction

Through continual efforts to establish post-Soviet research infrastructures, Armenia found itself embedded in a complex interplay of frequently contradictory national and international approaches towards the governance of higher education and research. Researchers in the country have looked on passively as post-Soviet (after 1991), post-Bologna (after 2005), post-Velvet Revolution (after 2018), and post-War (after 2020) circumstances prompted an endless chain of policy priority changes in the state governance of universities.

In 2005, the Armenian government followed the path taken by Western European countries by formally joining the Bologna Process

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(see, e.g. Karakhanyan et al., 2011). Joining the Bologna process was said to have been a predominantly top-down decision made by the government (Balasanyan, 2018). It resulted in the excessive focus on the role of university management without enhancement of teaching capacity or requesting any input from academic staff (Karakhanyan, 2011).

In 2018, a nationwide protest movement called the "Velvet Revolution" dislodged the semi-authoritarian political regime in Armenia, and the country finally began to take strides towards democratisation (Lanskoy & Suthers, 2019, p. 85). Several issues related to the state of Armenian universities became subject to public discussion: de-politicising the boards of trustees of Armenian state universities; fighting corruption in higher education and research; plagiarism; protecting the right to education and academic freedom; university autonomy; and the broken link between research and university education. These issues and debates had previously been covered in numerous reports on the country's higher education system (see, e.g. CEU, 2013; World Bank, 2019) but had never become subjects of discussion among university governing bodies, academic staff, or students themselves. Yet, when Armenia had arrived at this positive turning point in its history of state-building (Balian & Shorjian, 2018), a new six-week war broke out in Nagorno-Karabakh in 2020. The current (2020) post-war situation in Armenia will most probably again lead to the promotion of a new set of state priorities in university governance and research.

Reviewing the major changes in higher education and research in the wake of Armenia's independence, this chapter attempts to show why Armenian universities were largely unable to internalise their research missions. The universities failed to develop their capacity to define and carry out their research missions in a sustainable way. According to the Armenian National Quality Assurance Agency, research and development has been the weakest point of the Armenian higher education, with the lack of research promotion and research-based teaching persisting as system-wide problems (ANQA, 2018). This chapter argues that the ever-changing political context and the related changes in university policy priorities have led to a growing distance between state-led governance structures and what has been called "academic collegiality" (the academic culture or normative framework, as well as the researchers' own beliefs

about what is organisationally appropriate) (Austin & Jones, 2016, p. 125). Universities have been plagued by a lack of capacity for change management (Gvaramadze, 2010), while the researchers themselves have relied on what they call "individuality of governance," through which they have developed their own ways of doing research following localised rather than collectively shared research missions within and across their university environments.

The present chapter is based on qualitative document analysis and key informant interviews. Legislative documents, university and news websites, announcements, and annual reports of research institutes were analysed. Reflections on Armenian research developments were collected through 17 semi-structured interviews that aimed to explore major current research development trends in Armenia. The interviews were held with three policy-makers, four academic (and research) leaders holding management positions at universities and a think tank, and seven academic researchers from different subfields (Science, Technology, Engineering, and Mathematics [STEM] and Social Sciences and Humanities). There are in-text references to the policy-makers, researchers, and academic leaders next to quotes or ideas extracted from their interviews. Some parts of the text use direct quotes from interviews to emphasise contradictions between the views of policy-makers and the logic of university reforms.

Conducted in October–December 2019, the interviews supplemented the document analysis, providing up-to-date information on not-yet-documented issues within the research community. The document analysis continued longer (until April 2021).

Qualitative in nature, the research methodology aimed to capture dynamic processes within the ever-evolving research landscape in Armenia as described in the following sub-chapters. Our qualitative study understood temporality as a basic characteristic of Armenian higher education research (McLeod & Thomson, 2009).

Rather than testing any particular theory, the study approached the collected data using inductive reasoning to derive theoretical meanings based on data-driven observations (de Vaus, 2001, pp. 5–6).

University Landscape

The universities of Armenia are subordinated to the Ministry of Education, Science, Culture and Sports (MoESCS). The Supreme Certifying Committee (SCC) and the State Committee of Sciences (SCS) are also subordinated to MoESCS. The Supreme Certifying Committee (SCC) of Armenia, founded in 1993, maintains research qualification standards, awards research degrees and titles, and assures the quality of research work implemented by Armenian universities in compliance with state standards (MoESCS, 2020a). The task of the State Committee of Sciences (SCS), established in 2007, is to ensure the progressive development of research as a key element of the economic development of the country (MoESCS, 2020b). The SCS develops state policies and drafts legal acts for the Republic of Armenia in the field of research in collaboration with universities and different research institutes and laboratories.

Established in 1943, the National Academy of Sciences of Armenia is still one of the most influential research institutions in the country (SCI, 2020). Following the creation of the Third Republic of Armenia (1992), the Academy was renamed the "National Academy of Sciences" and has been operating under the Government of Armenia ever since (SCI, 2020). The academy is governed by a presidium of 15 members who are nationally renowned academics—all males with a majority (11 out of 15) specialising in Science, Technology, Engineering and Mathematics (STEM). The Academy has five main sub-divisions, only one of which specialises in Humanities and Social Sciences with a focus on Armenology and Ethnography. As of 2019, 3585 academic staff members were working at the Academy (SCI, 2020). In principle, the Academy specialises in research rather than teaching; however, it has an international research educational centre that offers master's and PhD programmes (currently, the centre has around 700 master's students and up to 200 PhD students).

According to recent statistics and records, there are 51 universities (27 state, 4 inter-state and 24 private) in Armenia with around 69,000 students and 7000 academic staff members (ArmStat, 2018; MoESCS, 2020–2021). Compared to institutions founded by the state, inter-state (inter-governmental) and private universities (mostly established as

limited liability companies), as well as independent research institutes and think tanks, tend to be more market-oriented as they get less state support.

The biggest state university of Armenia is Yerevan State University (in the size of the student body—18,000 in 2020 with 1200 academic staff members; YSU, 2020). Established in 1919 by the Council of Ministers of the (First) Republic of Armenia, it was the country's first academic institution. In 2014, YSU was restructured from a state non-commercial organisation into a foundation by the decision of the government (in the 2010s, many other state universities underwent similar transformations). Serzh Sargsyan, president of Armenia at the time, was elected chairman of the YSU board in 2015 (president.am, 2015); as a result, the university was criticised for being politically influenced by the government until the 2018 revolution and the resignation of rector Aram Simonyan in May 2019. New members were nominated to the YSU board after the Velvet Revolution. Once again, these new members included not only academics and student representatives but also representatives of the new government.

Other major Armenian state universities are the Yerevan State Medical University with 1100 academic staff members and around 8000 students, which separated from YSU in 1989; the National Polytechnic University that was established in 1933 and currently has 800 academic staff members and around 8000 students; the Armenian State University of Economics that separated from YSU in 1975 and currently has 457 academic staff members and 5269 students; and some others (e.g. the State Pedagogical Universityz, the Brusov State University, the National Agrarian University, and the National University of Architecture and Construction). These universities are mostly registered as non-commercial organisations and governed by boards of trustees.

As Armenia moved towards a free-market economy following independence, the number of private universities in the country peaked out in 1997 with a total student body of 56,154. This number gradually decreased afterwards with the number of students at private universities falling by 31 per cent in 2009–2018, and 16 universities being closed (World Bank, 2019, p. 8). The overall situation of private universities in Armenia is currently uncertain. Governance structures and election

processes for rectors (who may also be the founders/owners of these universities) have not become transparent yet (World Bank, 2019, p. 23). Private universities mostly concentrate on specific domains of the Humanities and Social Sciences (e.g. political science, psychology, economics, languages, and law) and certain medical disciplines (e.g. pharmacy, dentistry, and traditional medicine) (MoESCS, 2020–2021). Higher educational policy has still to regulate private universities; it is unclear whether they will undergo specific assessment and quality assurance procedures, form consortia/joint universities or continue business as usual.

New Policy Developments

Recently, two important laws on higher education and research in Armenia have signalled new policy developments. The Law on Higher Education and Science (MoESCS, 2019) states that higher education reform had been limited by the previous political regime in Armenia (before 2018). The new law points to the lack of collaboration between universities and the Academy of Sciences. It states that post-graduate programmes leading to the degree of candidate of sciences (inherited from Soviet times) shall be transformed into PhD programmes and that the higher cycle of studies for the doctor of sciences degree ("doktorantura" maintained since Soviet times) shall be eliminated. This means that future researchers will finish the post-graduate cycle in around three years rather than six. The new law calls for increasing the autonomy of universities and liberalising internal management by shifting from a bureaucratic to a more dynamic approach. The Academy of Sciences opposed the law, arguing that it should mention the Academy as the leading basic research body that provides methodological guidance to universities and other research institutions. The Academy has traditionally favoured an academic system of research and striven to maintain the centralised management of its sub-divisions and sought to confine research to its institutes, maintaining the status quo. At the time of this writing, the president of Armenia has not yet signed this Law on Higher Education and Science and has asked the Constitutional Court of Armenia to examine the conformity of the law to the RA Constitution (president.am, 2021).

The Law on Research and Development drafted by the SCS is more research-oriented (SCS, 2017). This law describes different types of research organisations and defines a "research university" as a state higher education institution or research organisation that combines the functions of a higher education institution and a research organisation operating on the basis of the principle of unity of education and research activities. Interestingly, contrary to the Law on Higher Education and Science discussed earlier, this law continues to use the Soviet terms "candidate of sciences" and "doctor of sciences."

Approaching the new research policy developments implied by the changes in the higher education and research legislation framework through the agency theory (Lane & Kivisto, 2008), we explored the response of university researchers to the aforementioned legislative initiatives. Competing expectations of government officials on decisions made by institutional officials as well as bureaucratic government achievements can affect policy effectiveness and institutional autonomy (Austin & Jones, 2016, p. 35), especially when there is a clear contradiction between what policy-makers mean by "complete" autonomy and what university researchers target as "institutional" (not individual) autonomy. One researcher formulated his expectations as follows: *"The state must set a clear task, demanding and assuring that a researcher works in the proper way."* At the same time, a policy-maker said, *"The state may commission* [research], *but, when we talk about university research autonomy, it should also mean that they* [the universities] *can take the initiative and propose something to the state. Universities do not use their autonomy."*

Another remark by a policy-maker shows that changes imposed by the state in Armenia are openly criticised even by the decision-makers themselves as impediments to the development of university autonomy: "*every major turning point in the management system* [of education and research] *was a compulsion. These changes resulted from coercion. The political system* [lacking coherence among its own research governing bodies] *is mistakenly trying to impose changes on universities, ignoring their autonomy and the principle of academic freedom.*" On the whole, individual policy-makers and researchers in Armenia seem to be disappointed with constant changes in state governance of universities. This frustration is illustrated by the following statement made by a researcher: *"Let's have a*

look at how many reforms we've made in the 30 years since 1991. We are constantly reforming and already getting tired of it." As a result, regardless of what has taken place in state-led research governance in the country, individual researchers have found their own ways of doing research detached from shared research environments. As a result, one often hears that there are individual researchers in Armenia yet no shared university research environment.

Even such momentous developments as the Velvet Revolution did not necessarily make the politically environment more hospitable for implementing new policies. After the head of the SCC changed in 2018 in the wake of the Revolution, the number of post-graduate dissertation defences in Armenia greatly decreased (by around 50 per cent, from 550 in 2015 to 266 in 2019, see the Open Access Repository of Armenian Electronic Theses and Dissertations; Armenian ETD-OA, 2020). This was attributed to the fact that the SCC began to examine theses for plagiarism more closely to combat academic dishonesty and strengthen academic integrity. An important contribution of the post-revolutionary head of the SCC during his tenure in 2018–2020 was his stress on the fight against plagiarism for enhancing the quality of PhD theses across universities. However, neither the MoESCS nor the universities themselves spoke out publicly in support of this policy. Due to tensions between the MoESCS and the head of the SCC, who ordered the careful examination of all plagiarism cases, including those involving the newly appointed university rector, the SCC head resigned in 2020. Currently (2021), the future of the SCC is unclear: it may become part of the MoESCS, close altogether or continue to operate as before. The case of the SCC shows that important decisions do not emerge in the vacuum, but form through interactions within a complex network of interested parties and stakeholders (Padure & Jones, 2009).

Research Funding

Research in Armenia is funded from the following sources: the state budget of RA; foundations, other countries, and international organisations; various grants; loans; and revenue from research and

development, publications, consulting, and other activities, (SCS, 2017).

In 2021, the Armenian government increased the budget for research activities, initially set at AMD 13 billion (USD 29.7 million), by AMD 2 billion 784 million (around USD 5.5 million; SCS, 2021a). State funding for research is coordinated by the SCS through open grants. There are three major types or schemes of funding: basic funding for programmes of fundamental importance, the maintenance and development of infrastructure or infrastructure modernisation, the maintenance of research facilities of national importance, staff training, and salary bonuses for academic degrees; targeted funding based on pre-defined priorities; and contractual funding for thematic programmes.

Basic funding is provided on a competitive basis to projects in priority research domains for work on issues of national socio-economic, technical, and cultural significance. As one policy-maker stated, such funding is "*given for solving important problems for the state. Such research is generally large and long-term, implemented with the government or jointly with several* [selected] *research institutes.*"

As evidenced by the interviews, the choice of priority domains eligible for basic funding has not been made clear yet. The SCS has also introduced a new model for allocating basic funding to encourage universities and other research institutes to become more active. It is basically an attempt to introduce a research rating system in Armenia. It makes use of the following criteria: research efficiency, human resources, material and technical infrastructure, integration into national and international research educational spaces, commercialisation of research results, and financial efficiency. Research organisations shall be classified into four categories, with the first two getting most of the funding, and the third and fourth being subject to optimisation programmes (Sargsyan et al., 2019).

Despite the willingness of the SCS to promote fundraising for collaborations between business and academia (through a separate grant scheme), universities frequently follow the Soviet logic of doing research: separate institutes are entrusted with applied research, while academia is given a limited capacity to conduct basic research. As one researcher explained, *"We do not have institutes or units that are qualified enough to collaborate*

with technology centres for doing applied research." There is a notion inherited from the Soviet era that real academics should not be conducting applied research. One respondent believes that *"those who do applied research are different; their research must be commissioned and funded by specific firms, institutions or venture funds"* (researcher interview). According to data published on the SCS website for the year 2020, the distribution of research funding resulting from nine SCS open calls for applications from universities, research institutes and individual researchers (SCS, 2021b) shows that the National Academy of Sciences (with 57 total awards) and Yerevan State University (with 37 total awards) are the top award-winning institutions.

An analysis of thematic projects funded in 2011–2013 and 2018–2020 (SCS, 2011–2013, 2018–2020) shows that, while the number of awards in the social sciences, on the one hand, and Armenology and the humanities, on the other, has increased over the years from 8 to 16 and from 21 to 25, respectively, the number of awards in the STEM fields rose from 99 in 2011–2013 to 123 in 2018–2020. The interviewed social scientists accentuated the asymmetry of development and funding between Armenology, humanities, social sciences and STEM fields. As one researcher put it,

> *This comes from the USSR. You see this disproportion in the fact that people who are appointed to research posts* [high positions]*—the chair of the SCS, the president of the National Academy of Sciences, etc.—are all representatives of the natural sciences, and their approaches are based on the logic of these sciences. Yet many things that are important in the social sciences and humanities are not formally included in the standards for assessing the effectiveness of our research.*

In conversations with social scientists, it became clear that STEM field is perceived as getting more attention due to their closer and more direct link to the economy than social sciences and their capacity to generate economic impact. Even there, however, the choice of projects to be funded does not necessarily appear transparent. *"It is at best a bureaucratic game that cannot work. Those who govern research are far removed from actual research; there are* [only] *beautiful words like 'nano', 'bio', 'cognitive research', 'big data', etc."*, thrown around as one researcher from a STEM field said.

Since 2019, SCS calls require research teams that apply for grants to collaborate with a scholar/advisor from abroad with an h-index of at least 10 in Scopus. When a call for proposals was directed at the promotion of women leadership in research, all awards were given to women in STEM. One explanation for this is that scholars in Armenology and social sciences and humanities might have had difficulty finding a foreign colleague with an h-index of at least 10 in their research fields. The calls for proposals for 2020 took this into account, setting different h-index requirements depending on the field.

Among other sources of funding, worth mentioning is the initiative of YSU that pays salary bonuses from around USD 100 to USD 400 for different types of publications. For example, for publishing of a monograph (min. 120 pages) a researcher receives a bonus of around USD 400. The highest bonus (around USD 600) is paid to those who receive a doctor of sciences degree. For a publication in a journal with an impact factor, a researcher gets a bonus of around USD 300. However, the introduction of the bonus system does not seem to have resulted in an uptick in publication activity. According to YSU's annual reports (YSU, 2014–2019), the number of journal articles published by its academic staff was 2015 in 2014–2015 and only 1314 in 2018–1019.

Among sources of research funding from other countries or international organisations, the EU is a prominent donor, all the more so as Armenia enjoys full access to the EU's Horizon 2020 grant programme. According to the Horizon 2020 Armenia country profile (EC, 2020), the Armenian State Medical University, the American University of Armenia (AUA), and the Russian-Armenian Slavonic University were among the top organisations receiving funding in 2020. The Academy of Sciences and its institutes received four grants the same year. The Armenian research community has always benefitted from different independent sources of funding for Armenian Studies (or Armenology), including those provided by the state and Armenian diaspora (see e.g. SAS, 2013; VGS, n.d.; CGF, 2020; ANSEF, 2020; NAASR, 2020). In general, statistics on research funding in Armenia are scarce. Beyond the records of state funding provided by SCS, no study has examined the opinions of university academic staff members about the diverse sources of research funding and their experiences with them.

Research Collaboration

A common belief that is evident in many interviews is that there are individual researchers in Armenian universities yet no shared university research environment. Each Armenian university and even each university department defines its own scope of research that are not necessarily aligned, at least not completely, with the university's overall research missions. As one interviewed researcher stated, *"We do not serve any externally defined research mission, yet we are held responsible for the texts that we produce."*

Every research institution seeks to establish itself, attract more funding, and win grant competitions, yet the lack of networking between research institutions and of synergy between research projects remains an ongoing challenge.

> *There is a very difficult situation in Armenia. I visit research centres on different occasions and offer to cooperate and engage in joint projects, because we have good equipment. But it is in our mindset that each of us shall have everything. We need to expand research areas and use research centres more efficiently—not just one institute per research domain. Major systemic and structural changes are needed here. We have to mobilise our resources, both human and financial.* (Researcher Interview)

Some of the researchers stated that there are isolated research communities and leaders "on the islands of science." Research collaboration between them has not been properly mapped, and these teams follow their own localised rather than collective research missions. There is also a latent conflict between different types of research organisation, for example, between think tanks and universities. The following quote from an academic leader interview expresses the typical perception of think tanks:

> *The university must stay as far away as possible from the pervasive reach of NGOs, businesses and all that, because if NGO-ism penetrated the university sector and people began to follow its principles, then research would die. As a rule, the analytical centres operating in Armenia are very primitive and tend to be money-makers rather than practitioners.*

Similarly, a policy-maker stated, *"The work of private research organisations is not very reliable: at least, I do not know of any exceptions."* Meanwhile, the leaders of think tanks and research institutes argue that their research develops at a faster pace than at universities, because they strive for methodological innovations.

There is also informal international collaboration at work that is based on individual initiatives and individual social networks:

> *Through informal international cooperation, we borrow and adopt some methods. We see what they* [the international partners] *are doing and learn a lot… We've been working on a single project with … the University of Washington for 5 years; it has made us work in new formats. I don't know of any specific targeted programme. That's how we develop our capabilities*. (Researcher Interview)

According to our interviews, a number of German research institutions have been working with Armenian researchers on STEM projects over the past several years. There is also collaboration between Armenian researchers and Russian institutions as well as numerous instances of individual collaborations with Armenian expats, which remain undocumented, however, with the exception of co-authored publications in peer-reviewed journals from around the world.

According to researchers, most of the academic staff at Armenian state and private universities as well as think tanks has received some sort of research training abroad. This could explain why Armenia has a strong record of publications with international partners (Chankseliani et al., 2021). However, there is no qualitative data on this, and it is largely a matter of individual initiative. A look at the webpages of individual researchers makes it clear that, over the past 20 years, an increasing number of academics have participated in internships or fellowships or done post-graduate studies abroad. As one researcher said, "*An outsider may think that many academic staff members come from abroad, yet it's not true even in the case of the American University of Armenia. Most of them are Armenians like me who have returned after studying abroad"* (Researcher Interview).

Some researchers (especially from state universities) actually complained about too much individual autonomy, which may be understood as academic self-governance without sound institutional frameworks, controls, or quality. "*We have absolute freedom, yet it's too much. There is no sense of common purpose, everything is left to individual initiatives*," one researcher pointed out. Another academic leader expressed his concerns as follows: *"A problem that exists at all universities* [in Armenia] *is the 'individuality of governance', that is, of everything being decided by individuals. The responsibility is on one person: it is not shared."*

While this individual autonomy has been the driving force of Armenian universities, researchers' decisions have been channelled through informal structures without coalescing into effective structures of collegiality that would allow for coordination between various university subdivisions in order to facilitate institutional decision-making (Bess, 1988).

Conclusion

The key contention made in this chapter is that the lack of synergy between research institutions and the absence of a holistic vision of reforms and state policy in the field of education and research have become a major problem for the Armenian research community.

Before the Velvet Revolution of 2018, governments tried to impose changes on research institutions, ignoring autonomy and the principle of academic freedom and pushing through structural changes in order to adhere to the requirements of the Bologna Process. After 2018, many policy issues have been raised and discussed, yet the desired changes have not been implemented so far.

While all the key actors involved in monitoring and promoting research reforms in Armenia have accentuated the problem of the broken link between the Academy of Sciences (that seeks to maintain the status quo) and universities, there seems to be no agreed solution on how research should be promoted to facilitate the formation of research universities. Another major issue is that academic researchers believe that the role of the state is to create demand for research, while policy-makers point to the lack of initiative on the part of universities. Nationwide

priorities have clearly not been translated into university policies and practices; achieving this would require better research management and integrity at universities that could turn into academic self-governance.

Due to the disconnection between the state and universities and between university management and researcher priorities, much within the Armenian research system has been decided by individuals within their own research communities, the situation that has been described as the "individuality of governance." While this may be a precondition for academic freedom and a good starting point for the development of academic self-governance, it may not be enough for research capacity building. The absence of internalised university research missions that would promote a common vision between research institutions and the development of common goals among research communities has resulted in a lack of collaboration and even a lack of trust between policy-makers and universities and between universities and other research institutions.

On the positive side, the establishment of the SCS gave Armenian universities an opportunity for the transparent and effective use of the state research budget. However, STEM, Armenology, and social sciences and humanities have not been provided with equal opportunities for advancement in post-Soviet Armenia, and there have been almost no opportunities for development or collaboration between different research domains. Importantly, the SCS is working towards designing better and more equitable mechanisms of research funding so as to promote high-quality research and research-based teaching. Information and statistics on non-state research funding sources and collaborative networks between Armenian researchers and foreign colleagues could help to shape the further policies of the SCS.

In addition to new laws on higher education and research, regulatory mechanisms are needed to build links between state, university and researcher priorities in all three domains discussed earlier: new policy developments, research funding, and research collaboration. Given the ever-changing political context of Armenia, it is particularly important to establish and prioritise academic self-governing bodies (including research ethics committees) and draw state attention towards university management and academic collegiality to foster the better development of university research in the country.

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10

Defining the Research University in Azerbaijan: Imported Global Trends or Rebranded Soviet Legacy?

Abbas Abbasov and Arzu Jafarli

Introduction

Expenditures on research and development (R&D) often indicate a country's commitment to advancing research and innovation. As a part of the Sustainable Development Goals (SDGs), Azerbaijan has committed to "enhancing research and upgrading industrial technologies" (SDG 9, Target 9.5) (SDGs Voluntary National Review, 2017, p. 56; Ritchie & Mispy, 2018). However, Azerbaijan's trajectory of gross domestic expenditure on research and development (GERD) tells a different story. The country's most recent GERD amounts to 0.18% of the GDP (Fig. 10.1). Compared to its highest peak of 0.55% in 1993, this marks a 0.37% decrease in GERD in proportion to the country's GDP. Such a downward trend raises questions about research capacity in Azerbaijan.

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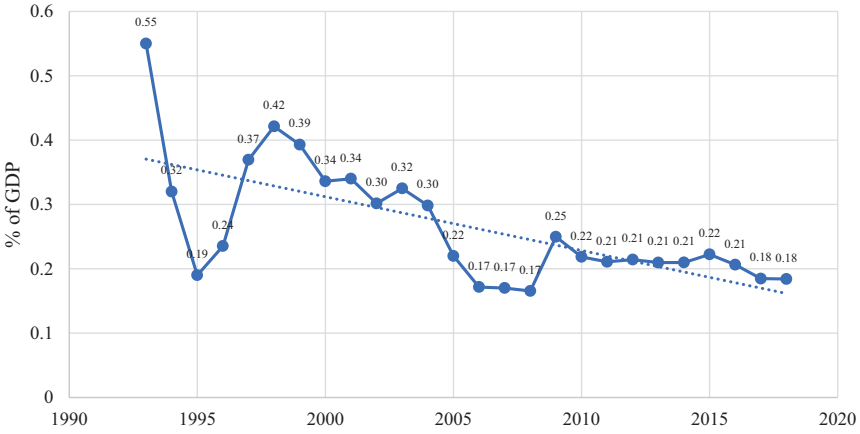

Fig. 10.1 Gross domestic expenditure on R&D as percentage of GDP in Azerbaijan during 1993–2018 (Source: UNESCO Institute for Statistics, 2018)

Higher education institutions (hereafter, HEIs) have long been recognised as engines of R&D and as infrastructure for the knowledge economy (Branscomb et al., 1999). Despite the declining total R&D spending in Azerbaijan, the share of higher education in GERD has increased by 8% in 2013–2018 (Fig. 10.2). This might be a sign that universities are increasingly likely to engage in research. However, in comparison with neighbouring countries in the South Caucasus, Azerbaijani universities do not seem to be doing enough to raise R&D spending. In 2018 alone, universities in Armenia and Georgia attracted 13.3% and 76.8% of the overall R&D funding in the country, respectively (UNESCO-UIS, 2018). In comparison, their Azerbaijani counterparts accounted for only 12.1% of GERD (see Fig. 10.2). The disproportionately high share of government involvement in R&D is a stark contrast to the meagre role HEIs play in developing research capacity in Azerbaijan.

These statistics bring to light an often overlooked research question pertaining to R&D in Azerbaijan: what is the role of universities in building research capacity in the country? While research is one of the main missions of the university, the concept of a *research university* is a novelty in Azerbaijan. For the first time in 2016, the Government of Azerbaijan adopted regulations listing requirements for HEIs to obtain the newly

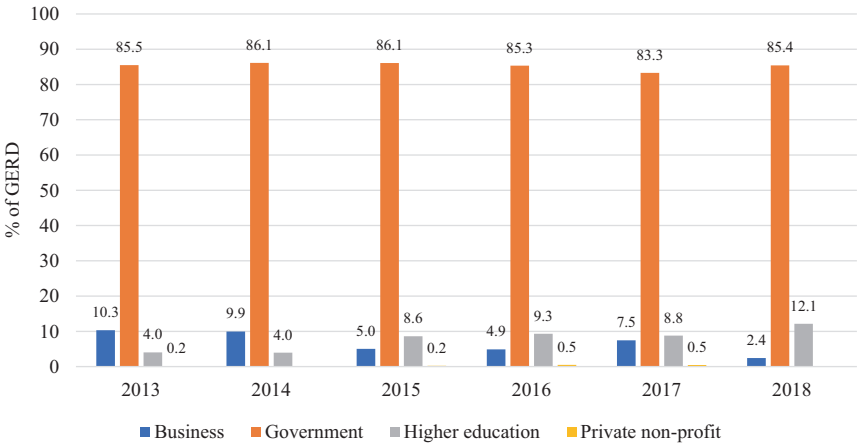

Fig. 10.2 Share of R&D performed by different sectors in Azerbaijan during 2013–2018 (Source: UNESCO Institute for Statistics, 2018)

Table 10.1 Requirements for receiving research university status

No.	Requirement
1.	Availability of adequate infrastructure (a digital library, modern technical equipment and scientific instruments, etc.) and a research centre open for collective use (i.e. by other HEIs)
2.	Scholars affiliated with the HEI have to account for at least 10% of published research articles (annually at a national level) indexed by international citation indices (e.g. Web of Science, SCOPUS)
3.	Employment of at least five professors or docents who are able to supervise doctoral dissertations for each major offered at a doctoral level
4.	Functioning of at least one dissertation board
5.	International accreditation of master's degree programmes
6.	Utilisation of an anti-plagiarism system
7.	At least 20 grants received in the last five years from local and international funding organisations in any research field

Source: Decision of the Cabinet of Ministers of the Republic of Azerbaijan "On the approval of requirements for granting research university status to HEIs" (August 2016)

introduced *research university* status (Table 10.1). In so doing, the government set criteria for achieving higher standards in research and further stratifying HEIs into teaching-focused and research-centred institutions.

While establishing a ground for excellence, some of these requirements (especially, nos. 1, 5, & 6) are more likely to be measures of finances and infrastructure rather than research excellence. Moreover, although the requirements were adopted five years ago, it is still not clear how they are being monitored or which universities shall receive *research university* status.

Furthermore, a recent study on research and teaching self-efficacy (i.e. perceptions of confidence in carrying out research- and teaching-related tasks) among university academic staff in Azerbaijan suggests that Azerbaijani academics have lower self-efficacy in research than teaching (Ismayilova & Klassen, 2019). Its authors found that academic staff with zero to seven years of work experience are more likely to report lower self-efficacy for research (Ismayilova & Klassen, 2019). They recommend "expanding the use of competitive funding to increase the quality and relevance of research" at universities (Ismayilova & Klassen, 2019, p. 65).

In this chapter, we draw upon the scarce literature on research capacity in Azerbaijan to examine the experience of early career researchers (hereafter, ECRs) at two HEIs that have recently instituted staff promotion rules and guidelines for incentivising research. Foreign-educated ECRs in Azerbaijan have unique experiences of being trained abroad to do research as an important part of their job while being employed at institutions where research capacity is limited. Through these experiences of foreign-educated ECRs, we aim to gain a better understanding of whether Azerbaijani HEIs perceive research as a crucial part of their mission. This chapter explores why universities prioritise research as an activity—if at all—and what mechanisms they use to incentivise it. In so doing, we raise larger questions about research metrics, academic productivity, and the pre-occupation with measurement.

Charting the National Research Landscape

Like other Soviet republics, research and knowledge production in the Azerbaijan SSR was largely concentrated in academies of sciences that functioned in parallel to higher education institutions. After gaining independence, Azerbaijan implemented policies reforming university

research capacity by enhancing post-graduate education at HEIs. To harmonise doctoral degrees and the accreditation of degree-granting institutions, a presidential decree of 23 April 1992 established Azerbaijan's first independent state agency—the Supreme Attestation Commission (hereafter, SAC)—that assumed full responsibility for granting doctoral degrees. Since 1994, the SAC reports directly to the Presidential Administration of Azerbaijan (SAC, n.d.).

Three relatively recent developments are shaping discussions around research capacity in Azerbaijan today: (a) accession to the Bologna Process (BP); (b) adoption of the Law on Science; and (c) establishment of the Council on Coordination of Scientific Research (hereafter, CCSR) and the Science Development Foundation (hereafter, SDF). In post-Soviet Azerbaijan, the development of research capacity at HEIs has often been linked with the BP (Huisman et al., 2012). Along with Armenia, Georgia, Moldova, and Ukraine, Azerbaijan joined the BP in 2005 (Heyneman & Skinner, 2014), committing itself to implementing a set of education reforms. Aiming to harmonise educational standards, "particularly with regards to curricular development, inter-institutional cooperation, mobility schemes and integrated programs of study, training and research" (Heyneman & Skinner, 2014, p. 68), the BP calls for fundamental changes to degree structure, including doctoral programmes.

One of the first steps towards the integration of Azerbaijani HEIs into the European Higher Education Area was the 2009 revision of the Law on Education which aligned higher education degrees to the BP and determined the typology of institutions (Isakhanli & Pashayeva, 2018). The law served as the legal framework for establishing a new hybrid of Soviet-style and Western doctoral education (Isakhanli & Pashayeva, 2018). Subsequently, in 2010, Azerbaijan upended the Soviet legacy of two-tiered post-graduate studies (*aspirantura* and *doktorantura* leading to the degrees *of kandidat nauk* and *doktor nauk*, respectively) (Ministry of Education, 2010). As a result, the Ministry adopted new guidelines for establishing *Doctor of Philosophy* (replacing *kandidat nauk*) and *Doctor of Science* (replacing *doctor nauk*) degree programmes, eliminated the *aspirantura*, and introduced new admission rules (Ministry of Education, 2010).

More specifically, according to the 2010 rules on the establishment of doctoral programmes and admission guidelines, PhD programmes can be administered either by the Azerbaijan National Academy of Sciences (hereafter, ANAS) or, alternatively, by any HEI or so-called scientific research and production entity—usually establishments affiliated with various state institutions. Procedurally, a university or research organisation wishing to offer a doctoral programme should first obtain a formal authorisation from the Cabinet of Ministers of Azerbaijan, which gives its final verdict upon receiving a satisfactory reference from the ANAS and the Ministry of Education. In principle, prior to the verdict by the Cabinet of Ministers, the eligibility criteria for offering doctoral programmes are scrupulously reviewed to assess the institution's research and innovation potential. As such, the new guidelines for establishing doctoral (PhD) programmes at universities ended the dominance of the ANAS over research and further increased the share of HEIs conducting research. Rather indirectly, the ripple effects of the Bologna-inspired institutional reforms have bolstered university research.

Secondly, the National Parliament Milli Majlis adopted the new Law on Science in 2016. This law, along with subsequent presidential decrees, also became an impetus for developing research capacity within Azerbaijani HEIs (ANAS, 2016). Most prominently, the new law determined the rights and duties of organisations engaged in research activities, put in place funding mechanisms aimed to stimulate research, and defined the legal and organisational framework for using research results (ANAS, 2016). Clause 12.7.1 of the document defines a *research university* as an institution that "aims to integrate research and education by engaging educators and learners in the research process" (ANAS, 2016). For the first time in Azerbaijan, this law introduced a comprehensive concept of the *research university* and solidified strategic goals for stimulating R&D (Mammadov, 2019). In line with this definition, the aforementioned criteria for HEIs to receive *research university* status (Table 10.1) were introduced.

As another extension of the law, the government instituted a new body within the ANAS—the CCSR—to oversee research at the national level and act as the country's supervising body for conducting a somewhat systematic assessment of research at universities (Cabinet of Ministers,

2016). For the purposes of this assessment, universities submit a list of publications indicating their research output to the CCSR. However, as surprising as it may seem, universities are not active members of this council, and, except for doctoral education, no connecting mechanisms appear to exist between the universities and the CCSR. Led by the former head of the presidential administration Ramiz Mehdiyev, the Council has only three university representatives: rectors of Azerbaijan Medical University, the Baku branch of Lomonosov Moscow State University, and the National Aviation Academy (CCSR, 2020). The remaining members of the Council are ANAS members, ministry officials, and representatives of other state institutions (CCSR, 2020). It is unclear how the newly introduced *research university* status can play a role in facilitating research at the national level, since HEIs' membership in this coordination unit is limited at best.

Last but not least, universities receive state funding for implementing research initiatives through three channels: (1) the state budget approved by the National Parliament Milli Majlis on an annual basis, (2) funding from the Ministry of Education budget, and (3) funding from state agencies for specific research centres and initiatives. One of the direct channels through which the state supports research projects is the state-controlled SDF under the President of the Republic of Azerbaijan. The SDF was established in October 2009 under the guidance of the person in charge of the CCSR, Ramiz Mehdiyev, as part of the National Strategy for Science Development. During 2010–2015, the Foundation allocated close to USD 35 million[1] for different research-related initiatives. Of this amount, 18.8% was allocated to more than 120 research projects implemented by 23 HEIs (SDF, n.d.-a). At the same time, 74.4% of the research funding went to various institutes and research centres within ANAS, while the remaining 6.7% was allocated to ministry-affiliated institutes, state agencies, NGOs, and so forth (SDF, n.d.-a). In comparison to the 23 universities that received state research funding, the number of ANAS-affiliated organisations (38) and other state

[1] The total has been converted using the real currency exchange rate for 2015 as compiled by UNCTAD Statistics (AZN 35,758,237=USD 34,901,112.1).

institutions (45) that benefitted from SDF research grants was quite high (SDF, n.d.-b).

These recent developments pertaining to R&D seem to point to increasing support for university research capacity. The accession to the BP, the adoption of national frameworks, and the involvement of state agencies have created more opportunities for universities to develop doctoral programmes, pursue research funding, and reframe themselves as research universities. In the next section, we explore how these recent developments have impacted university research capacity by studying the experiences of foreign-educated ECRs at two HEIs.

Methodological Considerations

To study university research capacity, we chose to hone in on the experiences of foreign-educated ECRs, defined here as scholars who had received their PhD degrees from HEIs outside of Azerbaijan during the preceding five years or were in the process of receiving them. Focusing on the experiences of foreign-educated ECRs, we tried to gain a better understanding of how they navigate institutional policies related to research productivity and promotion. We analyse how ECRs perceive the research environment at their institution and in the country at large and, more specifically, how they see their role as researchers at their respective universities. The perspectives of foreign-educated ECRs are especially important, as they provide a window into how the national research environment and institutional policies have impacted this new generation of scholars.

This chapter focuses on the experiences of ECRs in two major universities in Azerbaijan: ADA University (ADAU), formerly known as Azerbaijan Diplomatic Academy, and the University of Economics (UNEC), formerly known as Azerbaijan State University of Economics. ADAU and UNEC are comparable cases insofar as they are leading public specialised HEIs (Isakhanli & Pashayeva, 2018) that have recently implemented policies to incentivise research productivity in line with the national research framework. Using an in-depth case study approach, we seek to understand the interplay between the national discourses

surrounding R&D and their impact on ECRs and on the institutional research capacity at ADAU and UNEC. To better situate the experiences of ECRs within the institutional context, we conducted semi-structured interviews with senior administrators overseeing staff affairs. Our final sample included four foreign-educated ECRs and two senior administrators. In addition to interviews, we sampled a diverse set of data sources, including university websites, legal documents, policy documents, and several media reports.

ADAU and UNEC as Research Universities

Established originally as a professional school for diplomats in 2006, Azerbaijan Diplomatic Academy merged with the Information Technologies University and became a comprehensive university in 2014 after establishing four new schools—the School of Public and International Affairs, the School of Business, the School of Information Technologies and Engineering, and the School of Education. Despite its relatively young age, ADAU now boasts over 1400 alumni from 45 countries and "continually strive[s] to be a world-class university in Azerbaijan with the excellence in teaching and research and embedded in innovative learning culture" (ADAU, 2019).

In contrast to ADAU, UNEC is one of the oldest Azerbaijani HEIs, established in 1930. With close to 18,000 students, UNEC is the second-largest university in the country after Baku State University. UNEC has its head campus in Baku and branch campuses in Zaqatala, Azerbaijan, and Darband, Russia. While UNEC offers degrees predominantly in economics and business, students can also major in international relations, engineering, and ecology (UNEC, 2020). Building upon its Soviet legacy, UNEC is implementing a mission "to conduct high-quality research and provide education and social services based on universal values" (UNEC, 2020). Currently, the university has 31 research centres in different areas of economics (personal communication, 2019).

At the institutional level, ADAU and UNEC take different approaches to improving their research capacity. As mentioned above, ADAU strives to follow global trends, attaching a lot of importance to the *world-class*

university brand it cultivates (see Marginson, 2013). In contrast, UNEC takes pride in its Soviet legacy and emphasises the history and tradition that stand behind its brand. Thus, their status as *research universities* builds upon the institutional memory and logic that is deeply rooted in these narratives.

Teaching Before Research

Several themes emerge as the central threads for explaining the similarities and differences in the approaches to research and knowledge production at ADAU and UNEC. First, we find a striking misalignment in the relationship between the self-positioning of these two universities as research-oriented institutions and the perception or knowledge of their research missions among their academic staff. Although document analysis suggests that both ADAU and UNEC present themselves as research universities, interviews with ECRs show quite a different story. We find that many ECRs are either unaware of their institution's research mission or interpret this mission primarily through teaching. When asked about whether research is reflected in the mission of the university, one researcher at UNEC referred us to the university website:

> To be honest, I don't know because … uhm, well … I used to be a student here for six years but now it is my first year as a lecturer. […] Calls for research have been presented through many channels including internal communication. […] If you look at the webpage of the university, you'll find the necessary information. (*Male ECR at UNEC*)

Similarly, while ECRs at ADAU see research as an integral part of their career path, they do not seem to relate it to the institutional mission. None of the respondents at these two institutions saw research as a mission-driven endeavour. Nevertheless, they considered it to be an important part of their job as well as being essential to the success of these institutions.

Furthermore, a senior staff member overseeing academic staff affairs at ADAU noted that research was not part of the mission of the university

but rather served as a strategic tool for achieving certain objectives and goals. This is also evidenced by the fact that the ADAU Strategic Plan specifies that the university strives to "attract, develop and retain the best staff who truly share the ADA vision and excel in innovative teaching; also support their research efforts selectively and in prioritized areas" (Strategic Objective 3: Staff and Research, ADAU, 2019).

In fact, our informants at both institutions defined the latter's mission through references to teaching, furthering the country's socioeconomic development, and "training highly-skilled solution providers and problem solvers" (personal communication, 2019). Given the recent initiatives to introduce *research university* status in Azerbaijan, we might expect these institutions to be more research-forward in their day-to-day activities. Nevertheless, our interviews suggest that ECRs at both ADAU and UNEC define the institutional missions and their roles first and foremost in terms of educational quality, and the employment outcomes of their graduates.

To demonstrate how academic staff members make sense of their institutional mission through job training, one researcher at ADAU honed in on her school's profile:

> our mission as the School of Public and International Affairs is slightly different from the mission of other schools. You know, politics is so big. We also prepare public servants, public administrators, and public managers, which is really important. We are working more for governmental institutions by preparing potential future employees for them. (Female ECR at ADAU)

In addition to facilitating their personal career advancement, our informants explained how research can be instrumental to their institutions. ECRs at ADAU and UNEC saw research as a way of advancing the standing of their institutions in the university league tables. When asked about the importance of research at ADAU, one researcher commented,

> Yes, it is important, and it is encouraged within the schools by the administration. [...] First of all, the university is interested in having really strong staff with good research. Whenever we publish, the affiliation [with ADAU]

> is stressed. This will also help, or so I think, with the accreditation process in the future—for ADAU as a university, too, because not only schools are applying for that accreditation, but the university should also get into global rankings. So, the more research we have, the better it is for the staff and for the university. (Female ECR at ADAU)

This quote suggests the university's pre-occupation with global university rankings and visibility. At both ADAU and UNEC, research productivity seems to be a part of the institutional logic for achieving better placement in the international league tables. Our informants could have considered research as a process whereby HEIs attach values to it and/or engage in it for larger societal impact. Instead, we observe research, once again, as being secondary to teaching and used as a tool to advance HEI visibility.

At UNEC, university staff members and ECRs described their research output as a contribution towards the university's aspiration of climbing up the ranking ladder. One interviewed senior administrator at UNEC noted the importance of research for the university's national and global standing and for achieving UNEC's goal of being ranked among the top-500 global universities by 2030 (personal communication, 2019). Similarly, an ECR from ADAU pointed out that research is prioritised predominantly for the sake of improving the university's international recognition (personal communication, 2019).

Basic Versus Applied Research

After talking about their perceptions of institutional missions, we probed interviewees about the type of research prevalent at their institutions. We specifically inquired about the importance of basic versus applied research. Given the specialised nature of both institutions, we expected that the ECRs would report a tendency towards applied research. The ADAU's comprehensive education approach notwithstanding, the training of diplomats and civil servants has been one of its core missions since its foundation. Thus, we sought to examine whether interviewees at ADAU specifically put an emphasis on applied or basic research in the areas

pertaining to public affairs, international diplomacy, history, and policy analysis. One of our ADAU informants noted during the interview,

> Especially at the School of Information Technologies and Engineering, we have [inaudible] applied research outputs. [..] Our staff are actively engaged in research together with students and alumni. In 2019, the school had introduced something called a 'senior design project' which requires students to design engineering projects during their final year of studies. [..] So, they have applied research going on and, at the end of the final year, they have a product. (Female senior administrator at ADAU)

It is clear that ADAU academic staff members engage in applied research that directly relates to student outcomes and learning objectives despite its specialised nature. In other words, applied research is seen as a part of teaching and learning at ADAU. At UNEC, due to its specialised focus on economics, we also expected to find the prevalence of applied research. A senior administrator gave us the following historical perspective:

> Generally speaking, fundamental research was prominent in Soviet times. During those years, I used to work at the National Academy of Sciences, where we conducted fundamental [basic] research. Applied research was poorly developed during the Soviet regime. However, with the introduction of the market economy, preference has been given to applied research. Still, conceptually speaking, hegemonic countries [e.g., the USA] that are key players in world affairs pay close attention at the strategic level to developing fundamental research in order to change the world and influence others, whereas smaller countries prefer applied research. (Male senior administrator at UNEC)

This quote brings up an important point about the role and importance of basic versus applied research within UNEC's institutional memory. By recognising the Soviet legacy and UNEC's past as well as acknowledging the larger structural changes in Azerbaijan, the informant argues that applied research has garnered a lot more interest in Azerbaijan due to market needs as well as the country's geopolitical standing. His views on research typology suggested a balanced amalgam of both basic

and applied research. "In addition to applied research," the interviewee emphasised, "it is important to conduct fundamental research. That's how universities can stay relevant in their field and foresee technological developments in society."

Western Import Versus Local Novelty

We chose to focus on ADAU and UNEC, because both universities have recently introduced new staff promotion guidelines that directly tie research productivity to salary and pay. While their guidelines may seem to be similar at first sight, they are entangled in the narratives and discourses with which each institution has chosen to identify. For instance, whereas ADAU's staff promotion policy resembles a locally adapted version of the US academic tenure system, UNEC's ranking-based point system seems to be a local novelty.

Both ADAU and UNEC have embedded financial incentives into salary structures in order to promote research and encourage staff to publish. At ADAU, academic staff members advance through a three-tier (assistant, associate, full) professoriate structure. Starting as an assistant professor, an academic staff member is promoted to the associate professor level after three years on the condition that he or she publishes at least one article in a high-impact academic journal every academic year. In political science, this would mean an impact factor of no less than 1.5. While this system is similar to the academic tenure-track system in the US, it is different from the latter in two ways. First of all, the concept of lifetime academic tenure does not exist at ADAU or anywhere else in Azerbaijan. Secondly, instead of necessitating a six-year commitment as an assistant professor prior to tenure, ADAU requires a three-year successful publication record to consider a staff member for promotion to an associate professorship.

ADAU's staff promotion policies present a cumulative incentive structure similar to the US system that allows staff members to be promoted to a more senior position with higher pay. Yet it in no way guarantees the academic freedom for the professoriate as it does in the US (AAUP, n.d.).

In response to a question about the factors influencing the motivation to do research, one ADAU assistant professor said the following:

> As a professor, I know the requirements. [Publishing] is what I have to do here. If I publish my research, I know that I will be fully recognised as a professor. [..] So knowing the requirements that the university sets for professors here is a kind of motivation. (Female ECR at ADAU)

This informant's remark is indicative of a trite global trend in academia dubbed *publish or perish* (see Van Dalen & Henkens, 2012). While they offer a clear-cut path to success, staff promotion rules and guidelines directly tied to research output can backfire. This quote also illustrates how staff members view research as a tool to achieve personal promotion.

By comparison, the staff promotion guidelines at ADAU involve somewhat lower stakes than academic tenure in the US. Unlike the US tenure system, where an unsuccessful tenure review means the termination of the academic appointment, ADAU assistant professors who do not meet the publication goals are required to teach seven class sections instead of six. In so doing, the promotion policy allows the staff to sort themselves into research- or teaching-intensive job profiles.

In contrast to the ADAU's US-inspired staff promotion policy, we observe a more agile salary structure at UNEC. To incentivise the staff to publish more, UNEC has adopted a differential salary system that takes the number of publications into account (UNEC, 2019). According to the new policy, UNEC staff can apply for researcher status within the university if all of the following requirements are met without exception:

- At least 100 citations over the past five years
- H-index no lower than 8 in the past five years
- No more than two self-citations in each publication in the total amount of citations in the last five years (Qaydalar [Guidelines], 2019)

Note that in contrast to Western practices where all professors are automatically also assumed to be researchers, the term *researcher* applies differently in the context of most Azerbaijani HEIs. Professors at UNEC, for example, are not required to do research by default, and the adoption

of the new incentive structure is intended to stimulate more staff members to publish.

Staff members are required to submit their Google Scholar profiles at the end of each academic year to be considered for researcher status for the next two years (UNEC, 2019). This applies both to professors and assistant professors. The downside of this policy is that scholars who have received researcher status may have it withdrawn if they do not satisfy the aforementioned requirements upon the completion of the two-year term. On the other hand, this policy brings them a 50% increase in salary for duration of this period (Qaydalar [Guidelines], 2019).

In addition, the most productive staff members are rewarded through a rank-based system à la global university league tables. This system ranks staff members on the basis of their research output, teaching load, and professional development activities (Trend, 2015). According to the performance-based salary system developed at UNEC, staff members with the highest output during a given academic year (September through June) are ranked as top-100 staff members and receive financial incentives accordingly (Reytinq [Ranking], 2019). Staff who are ranked among the top 10 scholars at UNEC receive a salary increase equivalent to double the amount of their salary for the upcoming academic year, while those ranked 11th–30th, 31st–60th, and at the bottom of the Top 100 (61st–100th) receive 1.7, 1.5, and 1.2 times their usual salary, respectively, as long as they maintain their ranking (Modern.az, 2018; Personal communication, 2019). These individual rankings are subsequently published on the university website.

While the university touts the new performance-based salary system as a progressive mechanism borrowed from the business sector (Modern.az, 2018), one wonders how it came up with such a cumbersome model of incentivisation. By ranking the staff members in a league table, UNEC's research incentivisation system seems to benefit those with a track record of publications and discourages collaboration within the university. It also creates a hierarchy between departments, fields of research, and, naturally, researchers. Unsurprisingly, ECRs at UNEC have not been able to benefit from the system. Thus, although this system may be an effective short-term strategy to bolster research, it can eventually demoralise and demotivate staff members from doing certain kinds of research, teaching,

and service. On the other hand, compared to ADAU's staff promotion policy, UNEC's differential salary system is a more agile and low-stakes approach that provides additional benefits without any punishments.

Discussion and Conclusion

An underlying thread that runs through the findings discussed earlier is the prevalence of metrics and the pre-occupation with measurements at both ADAU and UNEC. Asked about the role of research in the university mission or the importance of basic and applied research in their day-to-day practices, ECRs and staff members refer to performance indicators rather than to how they make sense of their research within the context of their institutions. As argued by Oancea (2019), the crux of the *measurement problem* is that it might be impossible to avoid prioritising metrics over the actual quality of research. In other words, pre-occupation with metrics purports a territory where measurement is purely operational, and the ritualised use of data, metrics, and evaluation practices is simply ceremonial (Oancea, 2019).

Similarly, conversations about staff promotion and salary structures as well as a university's global standing tend to involve metrics and measurement. To better understand this new post-Soviet shift towards metrics in university research capacity in Azerbaijan, let us try to envision how the cases of ADAU and UNEC might inform policy-making and future research in this area. While not being representative of the national landscape, ADAU and UNEC are at the forefront of educational reform and have the authority to dictate the way research is organised and measured elsewhere in the country. Therefore, we might expect a spill-over effect leading to the adoption of the aforementioned practices by other HEIs in the country.

At the same time, developments at ADAU and UNEC might be shaped by the national agenda and legal frameworks that promote measurement. In this sense, both institutions could represent a response that is reactionary rather than pioneering. Regardless of how events transpired in reality, these cases exemplify common problems pertinent to research productivity in other parts of the former Soviet Union (Jonbekova, 2020;

Kataeva & DeYoung, 2018; Lee & Kuzhabekova, 2019). Nonetheless, it is worth noting that this chapter does not claim to be nationally representative or applicable to most Azerbaijani universities and colleges. Rather, it serves as an in-depth study of two purposefully selected HEIs.

At the time of writing, university research capacity in Azerbaijan is once again being discussed by the National Parliament Milli Majlis. A recent meeting of a working group tasked with drafting the new Law on Higher Education suggests that aspirational requirements for *research university* status might soon be introduced (Azerbaijan News, 2021). Thus, after repeated attempts to give research centre stage at universities, the new law might finally become the promising start of a new era of *research universities* in Azerbaijan.

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11

University-Based Research and Development in Georgia

Shalva Tabatadze and Ketevan Chachkhiani

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.

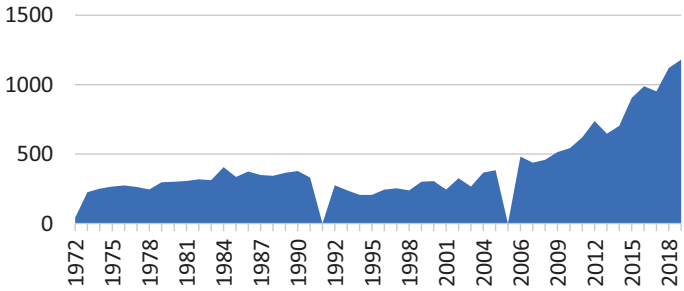

Fig. 11.1 Number of Georgian publications between 1972 and 2019 (WoS)

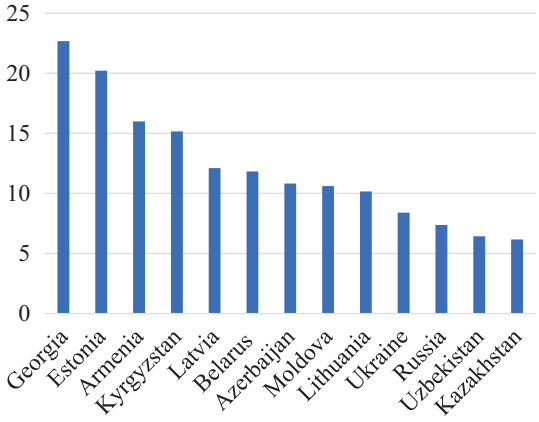

Fig. 11.2 Average citations per document in post-Soviet countries 2019 (WoS)

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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Part III

University Research Capacity in Central Asia

12

Thirty Years of Research Capacity Development in Kazakhstani Higher Education

Aliya Kuzhabekova

Introduction

Just as other former Soviet republics, Kazakhstan has significantly transformed its system of higher education and research since independence. This transformation was shaped by an array of internal and external influences, including, most importantly, (1) the new geopolitical reality, which led to the rearrangement of economic, cultural, educational, and scholarly ties with the country's neighbours and international partners; (2) the inevitability of the country's integration into the global economic system and the growing pressure to participate in the global economic race, which is increasingly driven by research and innovation; (3) the difficult search for a new national identity in a multi-ethnic and multilingual society and the transition to democratic institutions in the context of a persisting centralised approach to government; (4) the lack of qualified local

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researchers as a result of the legacy of the Soviet Union; and (5) the growing pressure from other public sectors, which has affected the share of allocated budgetary funds and the amount of attention to research and higher education from policy makers.

As the complex influences changed over the years since Kazakhstan's independence, the process of research capacity development in higher education has gone through three distinct stages. In this chapter, I shall provide an overview of the three stages based on my insights from the information in government policy documents, reports prepared by the government and external advising organisations, scholarly research on the topic, as well as public and expert reactions in traditional and social media to the corresponding reforms. For each of the stages, I shall describe the main rationales, approaches, and specific initiatives of the government, as well as the way universities implemented the anticipated changes.

First Decade of Independence: Demise of the Soviet Research and Higher Education System

In many ways, the first decade after the dissolution of the Soviet Union witnessed similar processes in the universities of the newly independent states. As a result of the Kazakhstani economic decline, higher education and research institutions became severely underfunded, salaries dropped, the state of research facilities degraded, and interaction with researchers in other former Soviet countries shrank. Between 1992 and 2004, the funding for research declined from 0.36% to 0.25% of the GDP. A significant share of the country's researchers left the country due to the exodus of non-Kazakhs to their historic homelands and the transition of specialists to jobs in other sectors of economy that offered higher status and salaries (OECD, 2007). This decline was just as severe in other public sectors competing for attention from the government, which was preoccupied with creating new institutions, negotiating international agreements with old neighbours and new partners, formulating new laws, and conceptualising long-term development strategies and programmes.

Due to its lack of experience in domestic and international policymaking in the context of new economic and political realities, the government largely followed the advice of international development organisations such as the International Monetary Fund and the World Bank (Silova & Steiner-Khamsi, 2008). The latter offered a package of reconstruction reforms tested previously in post-colonial Africa and Asia, within which higher education and research were given low priority in comparison to public income deficits and subject to radical privatisation so as to be cut off from the deteriorating public budget (Silova, 2011).

After the introduction of the recommended voucher system and fee-based studies, universities began to focus on teaching rather than research. It was more important for universities to develop and offer new academic programmes that were in high demand among students (e.g., in business or law) than to promote research. Research centres at national and regional universities continued to be supported by rectors only if they were important for the university's reputation, if they were initiated and partially supported by large industries, or if they received government block funding aimed at supporting strategically important scholarship. Many promising researchers, including university staff members, left the country or the profession at this time due to dwindling salaries, precarity of employment, decline in researchers' status, and the ambiguous future of research in Kazakhstan. This was particularly true for the new generation of scholars, who still had chances to restart their careers outside academia. The academic staff members who stayed at universities made their living by teaching part-time at other universities, too. This overcommitment to teaching prevented them from engaging in research.

The effects of the first period of independence on the research workforce continue to exert an impact on the development of research capacity in the country thirty years after the dissolution of the Soviet Union. By the middle of the second decade of the new millennium, the number of researchers in Kazakhstan per capita had declined by 37% (Karatayev et al., 2016), becoming three to four times smaller than the figures for OECD countries with comparable populations such as Belgium and the Netherlands (OECD, 2017). Furthermore, the Kazakhstani research workforce had aged, with 43% of researchers being older than fifty-five years of age, became less qualified with less than 50% of researchers

having a doctoral degree, and came to be disproportionately distributed across the country with 40% of the country's research personnel residing in the largest city of Almaty (OECD, 2017).

Second Decade of Independence: Research in the Background of Educational Reform

The end of the economic turmoil of the early days of independence was linked to the discovery of major deposits of oil in Kazakhstan's Kashagan reserve in 2000, which strengthened the geopolitical importance of the country and gave it the potential to become one of the leading oil-producing economies in the world. As foreign investments flooded into the country and oil production increased, government policies switched from the survival mode to the promotion of strategic planning and competitive initiatives. Kazakhstan now had excellent prospects of achieving its goal of entering the top 30 leading global economies and joining the club of "Asian tigers" (Kazakhstan-2030, 1997).

Many of the government's plans and activities were motivated by the understanding that, in the context of technologically driven economic growth, the only way for the country to win in the global competition was to enhance its human capital via education and to stimulate the development of innovation-intensive industries so as to re-orient the extraction and mining-based economy of the past towards the emerging technologies of the future (Strategy for the Industrial-Innovative Development of the Republic of Kazakhstan for 2003–2015, 2003). In this approach, enhancing the quality of higher education and research became a key reform priority, even if more attention continued to be paid during the first decade of the new millennium to the modernisation of higher education, including post-graduate education. Given the irreversible losses of highly qualified research and teaching staff during the preceding period of economic and political turmoil, the focus on creating a system for training a new generation of teachers and researchers was quite logical. In its search for new approaches to the reform of post-graduate

education, the government turned to international experience and internationalisation.

One of the key initiatives implemented by the government in the early days of independence was the creation of the Bolashak scholarship for education abroad. The original purpose of the Bolashak scholarship was to train master's-level specialists, who, after receiving an education from the best universities across the globe, were expected to fill top leadership positions in business and government (Perna et al., 2015). In 2006, as the government started to switch its attention from setting up state and financial institutions to turning the country into a competitive innovation-driven middle-income economy, the programme was expanded to include doctoral students that would lead the research and innovation efforts of the new economy (Sagintayeva & Jumakulov, 2015).

While many Kazakhstani universities were interested in hiring internationally trained PhDs, few were able to re-integrate them successfully (Kuzhabekova et al., 2019). First of all, public universities could rarely offer the returnees competitive salaries or start-up funds. Private universities such as the Kazakhstan Institute for Management, Economics, and Strategic Research could afford paying attractive salaries yet were primarily interested in the returnees as teachers rather than researchers due to the general orientation on teaching. The few returnees who chose to work at public universities had trouble integrating into the local research environment insofar as their thematic interests and methodological approaches differed from those of locally trained researchers. In addition, with their knowledge and experience of foreign universities, many PhD holders became distracted from research by administrative duties.

Doctoral education was also reformed in the framework of the European Bologna process, which Kazakhstan unofficially joined as a model of educational modernisation (Tampayeva, 2015). Consistently with the Bologna declaration, the Soviet Doctor of Sciences degree was replaced by the PhD. The change of name only marginally affected the actual approach to training doctoral students at universities, except for the creation of international mobility opportunities and the recruitment of foreign dissertation committee members. By the end of the second decade, the problem of the low quality of PhD studies had come to the fore, motivating the Ministry of Education to introduced the

controversial requirement of the publication of seven articles for defending the PhD (Kuzhabekova & Ruby, 2018).

The third key initiative which affected the development of doctoral education was the establishment of several private international universities, including the Kazakhstan Institute for Management, Economics, and Strategic Research, the Kazakh-British Technical University, Suleiman Demirel University, and Kazakh-German University. These universities were the first to offer innovative PhD programmes with the primary goal of preparing teaching staff. As the universities sought approval for the programmes from the Ministry of Education and Science, they encouraged the Ministry to develop a better understanding of international practices in doctoral education, which became important later on in the reform.

While research-related reforms were less prominent than the reforms in post-graduate education, several important initiatives did take place during the second period. These reforms laid the foundations for the in-depth transformation of the organisation of university research and the research system in general during the third stage of educational modernisation. These reforms were formalised in National Programmes for the Development of Education and Science and in Strategies for Innovative Industrial Development, which were adopted by the government every four or five years in keeping with the past practice of Soviet strategic planning.

One of the key government efforts was the adoption of research-related legislation, including the Law on Science, the Law on Education, the Law on Authorship and Related Rights, the Law on State Acquisitions and Contracts, the Law on Taxes and Other Budgetary Contributions, and a few other laws that determined the rights and responsibilities of universities and research centres in the domain of scholarship. Another important development was the establishment of an institutional infrastructure for research and innovation, including the Committee on Science within the Ministry of Education and Science, the National Center for Scientific and Technical Information, the Science Fund of the Republic of Kazakhstan, and the National Scientific Research Council.

The reform's most controversial initiative of the second decade was the new status of the National Academy of Sciences in 2003. At the dawn of

independence, the research contribution of the Academy declined, its staff aged and its reputation weakened. This was the result of underfunding, the exodus of junior research staff, and, most importantly, the loss of connections with industrial enterprises, many of which shifted to private (and, frequently, foreign) ownership and became disinterested in serving as experimental platforms for Academy research. The institute heads spent more time on political manoeuvring, trying to maintain their reputations as top Kazakhstani scholars and to attract research funding to their institutes. After a series of media publications compromising the members of the Academy, a new law changed the Academy's status from a public entity to an NGO, thus cutting it off from guaranteed public funding. Subsequently, the Academy experienced a drain of scholars, some of whom joined university research centres as contracted employees.

In parallel with this process of reorganisation, a mechanism was developed for distributing research funding, which included (1) block funding for supporting research at key non-university research institutes/centres and research universities and (2) grant funding allocated on a competitive basis by several sectoral ministries (e.g., Ministry of Health, Ministry of Education, and Ministry of Agriculture).

A lot was done by the government to improve the material base of research. To address the problem of aging research infrastructure, shared-use research facilities were established at several research universities. To facilitate research commercialisation, the government invested in the creation and development of technoparks and business incubators (Radosevic & Myrzakhmet, 2006). A related measure was the purchase of a national subscription to international bibliographic databases, which was made available to all public universities in the country.

Nevertheless, the different initiatives launched by the government to develop doctoral education and strengthen research did not lead to significant improvements in research related indicators. As of 2016, Kazakhstan still ranked below average for industrialised democracies in the number of publications (85th among 218 countries) and citations (108th) (MES, 2016). Kazakhstan's researchers published on average 200 publications indexed by Scopus per year, while the average number of citations per publication was as low as 4.7 (Kuzhabekova & Ruby, 2018). Most articles were published in Russian journals with an impact factor of

less than 1 (BISAM, 2016). Only 12% of university academic staff and 20% of research staff had publications in international journals between 2010 and 2015 (BISAM, 2016).

One explanation for these unimpressive research indicators was related to the way universities internalised the government's research policy. Few universities in Kazakhstan were able to redesign the format of their PhD programmes significantly so as to include methodological and theoretical training or to benefit from government funding for the mobility of doctoral students or the recruitment of foreign committee members. As we mentioned earlier, the most successful were private universities that had international partners to whom they could turn for advice. At other universities, only doctoral students with research-active supervisors got good training (Kuzhabekova, 2020). Such supervisors were a rare commodity in Kazakhstan, however.

Few students could fulfil the Ministry's requirement for publishing seven articles on account of their own and their supervisors' deficiencies in both language and research skills. With funding dependent on the number of accepted students rather than on the quality of education, universities turned a blind eye to students publishing in predatory journals. As a result, during the second decade of independence, Kazakhstan was still far from becoming one of "the top 30 countries in the world" (a strategic goal set by President Nazarbayev) yet managed to make it to the top of rankings of countries publishing the greatest number of articles in predatory journals. In addition, plagiarism became endemic in papers published in local journals.

Although policy initiatives promoted the discourse of the importance of university research and the mutually reinforcing nature of teaching and research, universities continued to separate the two missions in their organisational practice. As in Soviet times, most academic staff members continued to focus on teaching. Few of them had engaged in research after their dissertations and lacked the necessary English language skills to participate in international-level scholarship actively. In addition, with salaries based on teaching loads, most academic staff members were overcommitted to teaching and had little time left to act as PhD supervisors or engage in research. Only a limited number of private universities that did not depend on government-regulated salary levels had the flexibility

to give salary bonuses to research-active academic staff members (OECD, 2007). Moreover, universities received only 40% of their very limited research funding from the government and had very small budgets for the academic mobility of staff members and the purchase of equipment, chemicals, and software (OECD, 2007).

In the meantime, few of the research institutes and centres that universities had inherited from Soviet times or created after independence with the former staff of the Academy and industrial research centres became highly active in research. One reason for this was the lack of a clear funding scheme for university centres/institutes whose staff was hired on precarious contracts paid mostly from competitively distributed research grants. Universities had little influence on the level of the research staff's salaries, whose limits were set by funding agencies and frequently could not guarantee the regular payment of salaries throughout the year due to the fact that grant funding was linked to the centralised public budgeting cycle, which always had a several months' delay between the approval and the actual allocation of money.

Given that the survival of many researchers became dependent on grant money from the Ministry of Education and Science, the process of grant distribution became highly politicised and corrupt (Mukanov, 2019). Members of the National Research Council, which was responsible for allocation, frequently gave preference to applications from their acquaintances or accepted bribes for supporting specific projects. As a result, research grants were distributed on the basis of arbitrary criteria rather than scholarly merit, undermining the development of research capacity.

Research capacity also developed unevenly across disciplines. Capacity was best preserved in the natural sciences, which had been well established during the Soviet times, especially basic research in physics, chemistry, mathematics, and biology. Scholars in these disciplines had been organised in research communities during the Soviet period and maintained links with similar communities in Russia and other republics of the former Soviet Union after independence. Some of these communities, especially at top research universities, were supported by both universities and the government due to their strategic importance, which helped them to survive the period of economic decline, successfully

integrate into the global research community, and influence the decisions of policy makers on science-related issues.

Compared with scholars specialising in basic research, few applied scientists were able to make this transition successfully (Radosevic & Myrzakhmet, 2006). This became particularly evident when many Bolashak post-graduates trained in biotechnology, nanotechnology, robotics, and other areas prioritised by the government for study abroad had problems with employment after returning from their studies, because the innovative industries for which they had been trained had still not emerged when they came back to Kazakhstan. In addition, these issues were raised by a study on technoparks conducted by Radosevic and Myrzakhmet (2006). Envisioned by the government as sites where university researchers and industries would work together to develop and commercialise innovative products, technoparks ended up predominantly attracting low-tech small businesses serving as business incubators.

In short, the second stage of the development of research capacity in Kazakhstan was characterised by a policy emphasis on the reform of doctoral education, the creation of the institutional and legal structure of the National Innovation System, the reorganisation of the Academy of Sciences and the modernisation of research infrastructure at universities. These changes were not accompanied by a radical increase in public funding for research, the establishment of an efficient system of research grant distribution or the creation of a system of incentives for academics and industry to engage in joint research. Therefore, these changes failed to turn universities into key centres of research activity. There was no significant increase in the research productivity of academics, cooperation between university and industry did not develop, and research activity in the social sciences did not expand sufficiently to balance the research activity in the natural sciences.

Third Decade of Independence: Research in the Foreground of the Reform Agenda

During the third decade of independence, research capacity development finally moved to the foreground of the policy agenda. Moreover, a paradigm shift occurred in the government's approach, according to which universities or, more specifically, "research universities" were expected to become the main drivers of research and innovation. This shift was explicitly stated in the State Programme for the Development of Science (SPDS) for 2011–2020.

The main motivation for the shift was the dissatisfaction with the indicators of publications, citations, and patent acquisitions, which clearly put Kazakhstan at the bottom of innovative economies. The government realised that the key reason for this was the persisting disconnection between the process of training the research and innovation workforce, the process of research, and the process of economic production, which was not grounded in locally conducted research. A solution to the problem was offered by the idea of world-class universities, which was brought to the policy agenda of many transitional economies by the seminal work of Jamil Salmi at the World Bank (Salmi, 2009).

In 2010, the first research university was established in Kazakhstan to serve as a model for other universities to emulate. Nazarbayev University (NU) was founded by a special decree of Kazakhstan President Nursultan Nazarbayev, after whom the university was named. NU was created using a unique model—a consortium of schools built in partnership with leading universities from around the world, including the University of Pennsylvania, the University of Cambridge, University College London, and Duke University. The vision for Nazarbayev University was to become the leading research institution in the region that would provide high quality education for the most talented students in Kazakhstan, conduct research relevant for the region and the world as a whole, and introduce the model of a Western-style research university to be emulated by other universities in the country. In accordance with the parameters of a successful world-class university described by Jamil Salmi, NU was given complete autonomy from the Ministry of Education and Science, while

receiving 100% of its ample funding from the government of Kazakhstan. Almost 90% of the staff members of the university were recruited from abroad, with the remaining specialists hired among doctoral graduates of the Bolashak mobility programme and other local holders of overseas doctoral degrees. NU began to recruit the most talented students in the nation, to whom it provided full scholarships and offered instruction in English. Unlike other universities in the country, it had some power to change the government's regulations, including immigration and import-related regulations, so as to meet the needs of its international employees and purchase teaching and research literature, equipment and supplies from abroad. NU is governed by a Board of Trustees and is subject to external quality control by its partner universities. It has the best research facilities, library resources, and equipment in the country and receives significant allocations for research, which are distributed across the university in the form of competitive grants. In addition, researchers from NU can apply for funding from other Kazakhstani agencies, such as the Ministry of Education and Science, and are increasingly attracting external funding from abroad.

NU has played an important role in the development of individual research capacity in Kazakhstan. NU offered its first doctoral programme in 2013 and had several fully functioning doctoral programmes as of 2021. The university has adopted regulations on post-doctoral positions and hired the first group of post-doctoral fellows in each of its schools. Its doctoral programmes are organised similarly to doctoral programmes in its partner universities in Britain, Singapore and the US with students receiving substantial theoretical and methodological instruction, advising from a special post-graduate committee, and degrees conferred at the school level. During their studies, post-graduate students have many opportunities to participate in university-based and university-funded research and publication. In addition, NU provides funding for student participation in conferences and summer schools.

NU has become the most attractive place of employment for Kazakhstani young scholars who receive a post-graduate education abroad, most notably the alumni of the Bolashak programme. Many Bolashak alumni work at Nazarbayev University as full-time academics, researchers, and post-doctoral fellows. At NU, these junior scholars are

excellently positioned to continue their development under the supervision of seasoned academics with access to high-quality research facilities and library databases.

NU contributes to the development of individual research capacity in Kazakhstan not only by educating the next generation of scholars but also by offering professional development seminars conducted by university-based academics for outside scholars from schools, different universities, medical institutions, and government think tanks. Sharing experience and disseminating the best practices among local scholars and institutions is one of the missions of NU and, consistently with this mission, staff members are expected to participate in capacity-building activities in other institutions and organisations as a part of their social mission.

With academic staff from around the world, ample funding provided by the government, and top-notch research infrastructure, NU has quickly become one of the main centres of research activity in Kazakhstan. NU staff members have authored around 3000 publications since the university opened (Yergaliyeva, 2020); as of 2016, it was the second most productive research university in the country after Al-Farabi Kazakh National University.

One of the most notable aspects of NU is its emergence as an important centre of applied research. It is situated in proximity to Astana Financial Centre, University Medical Centre, National Space Centre, and Astana Business Centre, which, together with the university, form a research and innovation cluster. Each of these organisations is involved in research conducted at NU schools and laboratories.

Another important contribution of NU was the introduction of the ethics review process into university research. To comply with the requirements of publishing in international peer-reviewed journals, the university had to set up the sophisticated process of internal ethics review. Moreover, given that many of the university's projects are conducted in collaboration with local organisations, NU started to require partner organisations to conduct their own ethics reviews.

Finally, local post-doctoral fellows and staff members at NU are frequently engaged in the formulation and review of Ministry of Education and Science's policy proposals on research reforms in the country. One of

the key consultants of the Ministry of Education on new initiatives in research development is the Young Researchers Association, an organisation created and led by doctoral students and postdocs at NU. In addition, several of NU's local staff members have been involved as experts and reviewers by the National Research Council, contributing to the development of a new mechanism for the distribution of research grants by the Ministry of Education and Science.

Despite the significant contribution of NU to the development of research capacity in Kazakhstan, there are several drawbacks in a model whereby one university receives most of the country's funding and relies almost completely on scholarship conducted by foreign staff members. One of the main issues with this model is that NU's international staff rarely engage in collaborative research with academics based at other universities in Kazakhstan and much of the research know-how remains within the walls of NU (Kuzhabekova & Lee, 2017).

While much of the change in research capacity in Kazakhstan during the third decade of independence has been due to the establishment and rise of NU, research came to the forefront of the government's development agenda for higher education in general towards the end of the decade as well as becoming the focus of organisational change at other universities.

In the spring of 2021, some important changes were introduced in doctoral education. The publication requirement for graduation was decreased from seven to four articles in journals included in international bibliographic databases such as Scopus and the Web of Science or on the list of local journals approved by the MOES. Moreover, students can now apply for the dissertation defence only if they publish two articles in Q1–Q2 journals. Thus, article quality has become more important than quantity for obtaining a thesis. Instead of the option of writing a traditional dissertation, doctoral students can defend their dissertation by publishing several related articles. In addition to changes in doctoral education, the government has created an institutional grant to promote the establishment of post-doctoral positions at universities. Post-doctoral positions had never existed in Kazakhstan before, so the grant programme had to provide a definition of a post-doctoral fellow and the format of the fellowship, as well as using a specialised post-doctoral funding scheme to

encourage universities to offer post-doctoral positions which are important for both training budding scholars and developing research capacity at institutions. One of the first public universities to introduce post-doctoral positions was Al-Farabi Kazakh National University. Moreover, post-doctoral fellowships are now funded by the Bolashak programme to supplement international mobility schemes for academic staff.

Following the example of Nazarbayev University, many higher education institutions have introduced a system of incentives promoting high quality research. At a growing number of universities, promotion decisions are based on the number of publications in high impact journals, and staff members have an opportunity to increase their salary levels or receive bonuses for publishing in international peer-reviewed journals.

In 2021, radical changes were made to the government's competitive research funding scheme in order diversify and increase its efficiency and hinder subjective decision-making. Firstly, the goal was set to increase the share of research funding to 1% of the GDP by 2025. Secondly, separate funding programmes were created for short-term, long-term, basic, and applied projects, as well as for commercialisation initiatives. Thirdly, new criteria were adopted for membership in the National Research Council (NRC) (the primary criteria being a non-zero number of publications in international peer-reviewed journals) in order to increase the quality of expertise provided by the council. Fourthly, a requirement of transparency and public broadcasting was introduced for NRC meetings. Fifthly, a mechanism for identifying and excluding potential conflicts of interest of NRC members was developed. Finally, a set of criteria used by the members of the Council for assessing the merit of grant applications was selected.

Finally, the Ministry of Education and Science has published a list of research universities (including Al-Farabi Kazakh National University, Satpayev National Technical University, Ryskulov Kazakh Economic University, and Gumilyov Eurasian National University) that are expected to develop an active research portfolio and emulate the international partnership model used by Nazarbayev University. These universities have been provided with ample public funding and granted autonomy in decision making. The latter became possible due to recent governance reforms in higher education in Kazakhstan. In 2018, universities received

a significant level of autonomy in decision making. They are now allowed to determine the format and curriculum of their academic programmes, award their own degrees, determine hiring and promotion criteria and set salary levels and incentive payment schemes. In addition, rectors are now elected rather than appointed by the country's president and report to boards of trustees.

These changes in research policy have led to the improvement of research capacity indicators. Some optimistic numbers appeared in April 2021 on the website of the prime minister of Kazakhstan (https://prime-minister.kz/). The number of articles published by Kazakhstani scholars in Scopus-indexed journals has increased by more than seven times since 2011. The impact of Kazakhstani research has also improved: the number of Kazakhstani articles included in the top 1% of global publications has increased by 12% between 2011 and 2020, while the weighted citation index has risen from 0.91 to 1, which corresponds to the global average. Over the same period, the share of Kazakhstani authors in international collaborative publications has grown by a factor of 10.

Future of Research Capacity Development in Kazakhstan

During the first two decades of independence, Kazakhstani universities remained relatively disengaged from research and research capacity development. Changes in the research system were largely made from the top rather than initiated from the bottom. This was due in great part to the Soviet legacy, whereby universities remained mostly teaching institutions with a limited involvement in research, as well as due to the significant loss of research staff due to the economic decline following the dissolution of the Soviet Union. In addition, universities received only limited funding for research and did not have the required level of autonomy to be able to make research-related decisions.

By the end of the third decade of independence, several important preconditions had been met for strengthening research capacity in Kazakhstan further—in particular, for tapping the ability of universities to engage in

the process of research capacity development. First of all, a legislative framework has been developed to regulate the relations between research stakeholders. Secondly, a new generation of junior scholars have been trained abroad to replace (at least, partially) the old generation of scholars, and academic mobility funding has become available for retraining domestically educated researchers in other countries. Thirdly, Kazakhstan has introduced the new model of the international research university and successfully tested the model on Nazarbayev University, which has managed to attract talented researchers from other countries, train a new generation of scholars, and produce research relevant to the needs of the region and the global community. Fourthly, research funding has gradually increased, and a mechanism has been created for the competitive distribution of funding for different types of research. Fifthly, research policy has been increasingly based on the use of objective science and technology indicators and developed in concert with a variety of stakeholders. A system has been created for the modernisation of research infrastructure and the shared use of research facilities. Essential institutions of the National Research and Innovation System have been established. Most importantly, the recent shift to board governance and elected rectorship has given universities the necessary autonomy for the development and implementation of creative approaches to research management.

The question of whether Kazakhstani researchers and universities will achieve a research productivity comparable with countries with a high scientific and research potential and produce the necessary research and innovation for achieving economic growth and competitiveness in the global knowledge economy depends on some important developments that are yet to come. First of all, research should become the second professional activity of university staff members, who are currently engaged primarily in teaching. This, in turn, will improve the quality of doctoral education and lead to the reproduction of a well-skilled academic workforce. Secondly, incentives should be created to encourage the development of cooperation between universities and industry and increase the share of private research funding. Thirdly, the public funding of research should rise to 3% of the GDP, as in the case of countries with developed science and technology capacity. Fourthly, Kazakhstan is yet to see the development of local research communities and learned societies, which

should be able to enter into dialogue with global communities and communicate their needs to research policy makers. The development of such communities can be supported with public funding schemes. Fifthly, if the current imbalance between the development of the natural sciences, on the one hand, and the social sciences and humanities, on the other, is not overcome, it will be impossible to integrate research and the needs of society. Hence, in the pursuit of economic competitiveness emphasising the development of hard sciences, the government of Kazakhstan should not forget to support and to promote the development of social sciences and humanities.

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13

Evolution of Research Capacity at Higher Education Institutions in Kyrgyz Republic

Duishon Alievich Shamatov and Rouslan Jalil

Introduction

This chapter examines the evolution and current state of research capacity in higher education institutions (HEIs) of the Kyrgyz Republic. Historically, as in other former Soviet states, the prerogative of conducting research was delegated to the Academy of Sciences. Since gaining independence in 1991, Kyrgyz Republic introduced some reforms that, in one way or another, sought to develop research capacity at HEIs. One of these reforms was institutional restructuring and the creation of academic research units within HEIs to coordinate research activities. Another change was the introduction of the "Western" PhD degrees at selected HEIs with the aim of drawing advanced academic research to universities. Both of these reforms can be characterised as efforts to

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reorganise the Soviet research tradition dominated by the Academy of Sciences and making universities more research-oriented. Nevertheless, the findings of our study show that research capacity at Kyrgyz HEIs has remained relatively stagnant.

The educational sector in Kyrgyz Republic has traditionally been highly centralised and controlled by the Ministry of Education and Science (MoES). At the same time, Kyrgyz Republic has been open to the participation of various domestic and international agencies in policy formation, and its higher education sector has become more diverse thanks to a plethora of international and academic institutions and programmes (Merrill, 2011). Heymeman (2010) notes that changes in Central Asian republics were similar in nature and could be characterised as efforts to restructure Soviet-style tertiary education, decentralise higher education, diversify its makeup, adopt new curricular structures, and introduce market mechanisms.

A major change was the expansion of the higher education sector over a relatively short period of time (DeYoung, 2011; Heyneman & DeYoung, 2004; Merrill, 2020). Kyrgyz Republic has experienced a significant increase in the number of post-secondary institutions as well as in student enrolment. According to the MoES of the Kyrgyz Republic (MoES, 2021), there were only nine institutions of higher education in the country at the time of independence in comparison to 73 in 2020, with 33 state and 40 private institutions. Over 180,000 students are enrolled in HEIs; only 16% of them are funded by the state, while the rest pay fees. More than 12,000 academic staff members work at HEIs, of whom 6.2% have *doktor nauk* (Russian 'doctor of sciences') degrees and 26.8% *kandidat nauk* ('candidate of sciences') degrees, 4.9% of the academic staff are professors, and 17.8% are docents (Omurov et al., 2020).

In Bishkek (the capital city) alone, there are 30 public and private universities, including a number of institutions founded by international agencies. According to DeYoung (2011), the rapid multiplication of HEIs and the increase of their enrolment took place in the context of the decline of state funding and the falling quality of higher education. Once a rare commodity, higher education in post-Soviet Central Asia has become accessible to much of society at relatively low cost and with little effort (DeYoung, 2011).

One of the most visible reforms has been the structural reorganisation of the higher education system from the Soviet-style five-year diploma track to a two-tiered degree structure with bachelor's and master's programmes based on the "Western" (the US/European) model. This two-tier degree structure was introduced by Government Decree # 496 of August 23, 2011. This change was part of an initiative to bring the content and structure of higher education into line with the Bologna process (Merrill, 2011; TEMPUS, 2010).

According to Merrill (2011), many reforms of the higher education system were related to efforts to integrate and align Kyrgyz Republic's higher education system with the Bologna framework. A report on the impact of the Erasmus+ programme (2019) lists curricular development, modernisation of teaching methods, internationalisation, and student/academic staff exchange programmes as key aspects of the programme's activities in the Kyrgyz Republic. At the same time, HEIs have taken part in European academic exchange programmes such as Erasmus+ or Jean Monnet, enabling Kyrgyz academics to make research visits to European universities and participate in joint research projects (Bedelbaeva, 2014).

However, Kyrgyz Republic has not fully shifted to the three-tier degree system, and the international PhD degree has not replaced the *kandidat nauk* and *doktor nauk* degrees delivered through Soviet-style post-graduate programmes (*aspirantura* and *doktorantura*). A report on HEIs in Kyrgyzstan (Omurov et al., 2020) states that attempts have been made to introduce a PhD system on a national basis, which has only been piloted at some selected universities so far. In 2019, amendments were made to the Law "On Education," to which the qualification of PhD was added. Government Decree #601 introduced regulations for PhD programmes and degrees. However, students can still get traditional *kandidat nauk* and *doktor nauk* degrees, which are awarded by the Higher Attestation Committee (HAC) after the defence of a thesis yet do not require research coursework (Merrill, 2011; Foley, 2003). As a result, both *kandidat nauk* and *doktor nauk* students have to acquire research competencies on their own or with their supervisors' support.

According to governmental policy provisions such as the Education Development Strategy of the Kyrgyz Republic for 2012–2020 (MoES, 2012), higher education institutions are required to organise research

activities and produce research outputs. Another document, the Concept of Education Development for 2021–2030 (MoES, 2021), states that HEIs are required to develop scholarly knowledge and culture through research and creative work (Concept of Education Development, 2021). The internal institutional provisions of many HEIs also emphasise research and the training of research personnel. Yet, the highly centralised and tightly controlled higher education and research organisation inherited by the Kyrgyz Republic from the USSR has given limited institutional autonomy to higher education institutions (Kataeva & DeYoung, 2018). In this context, there exists little empirical evidence on how HEIs are developing the research capacity of their academic staff members. The purpose of the present study is to explore the evolution and current state of research capacity in Kyrgyz HEIs by considering the example of two national universities.

Data and Research Design

This chapter is based on in-depth exploration of situation at two national universities, Kyrgyz National University (KNU) and Osh State University (OSU), where a series of in-depth interviews was conducted.

Kyrgyz National University (KNU) is one of the oldest and largest higher education intuitions in Kyrgyz Republic. Located in the capital city of Bishkek, KNU was founded in 1932 by expanding Kyrgyz Pedagogical Institute. Currently, KNU offers bachelor's and master's programmes. In addition, it offers post-graduate programmes leading to *kandidat nauk*, *doktor nauk*, and PhD degrees. KNU has over 1700 academic staff members and over 17,000 students (Omurov et al., 2020) and offers over 60 academic programmes. As a flagship state university, KNU has historically enjoyed special attention from the central government that has tried to turn KNU into a research-oriented higher education institution.

Osh State University is one of the largest HEIs in Kyrgyz Republic. It is situated in the ancient city of Osh in the south of the country. It was established in 1939 as Osh Teacher's Training Institute. In 1992, it received the status of a state university. There are close to 3000 academic

staff members and over 36,000 students at OSU (Omurov et al., 2020). OSU aspires to become one of the top five universities in Central Asia.

A total of 12 participants took part in the study: one representative from the Ministry of Education and Science, one member of the Higher Attestation Committee, two university administrators from each national university, and three academics from each university. The in-person interviews were conducted in 2019–2021 in Kyrgyz and Russian. The interviews served as the main data collection tool, while documentary analysis provided supplementary information. The key policy documents used for this study are given in the reference list.

Institutional Hierarchy and Research Capacity

Kyrgyz Republic inherited the Soviet system of research production that prioritises a specific set of institutions responsible for conducting research. The Academy of Sciences of the Kyrgyz Republic is the country's main research institution, which was established in 1943 and has been at the top of the national research hierarchy ever since. It oversees a network of research facilities and institutes that "implement state policy in the field of science" (Academy of Sciences Charter, Article 4). The research activities of the Academy of Sciences are funded by the government. Historically, the Academy of Sciences has entered into little or no direct collaboration with HEIs, although the majority of members of the Academy of Sciences are seasoned scholars who occasionally hold senior administrative positions and/or teach courses at HEIs.

The other organisation in the hierarchy is the Higher Attestation Committee (the HAC), which is the governmental agency responsible for overseeing and awarding advanced academic degrees. The HAC is a Soviet-style organisation that was initially entrusted with the mission of coordinating *kandidat nauk* and *doktor nauk* academic dissertations and awarding academic titles. As a rule, *kandidat nauk* and *doktor nauk* candidates learn to conduct research at post-graduate *aspirantura* and *doktorantura* programmes regulated by the HAC. As an independent organisation, the HAC does not collaborate with HEIs in regulating academic research, nor does it have a mission to improve HEI research

capacity. HAC policies are targeted only at improving the procedures for earning advanced academic degrees. According to the HAC's former vice-chairperson, the HAC has initiated two major initiatives for developing the research capacity of doctoral candidates. One is the inclusion of a research methodology course as a core course of the graduate programme, and the other is requiring graduate students to publish a minimum of two scholarly articles in non-zero-impact journals (interview with the vice-chairperson of the HAC).

As noted earlier, the Higher Attestation Committee coordinates the conferral of *doktor nauk* and *kandidat nauk* degrees. It sets down the legal provisions, procedures, and technical requirements for dissertations. HAC dissertation committees predominantly consist of university academic staff and are based at universities; however, the committees follow HAC guidelines and procedures for supervising doctoral candidates. The institutional hierarchy of research in Kyrgyz Republic has produced a peculiar situation in which HEIs have involuntarily begun to play a passive role in developing research capacity.

The former HAC vice-chairperson notes that the quality of university education in Kyrgyz Republic has indeed been declining: "many universities do not really pay serious attention to the quality of research. For example, I believe that around 80% of all bachelor's and master's theses are partially or completely plagiarized." The former HAC vice-chairperson further argues that, since the quality of university education is poor, HEIs cannot ensure the quality of academic research at an advanced level. For him, the decision to retain the HAC's monopoly on issuing advanced degrees stems from the HEIs' lack of academic integrity. He says that discussions about restructuring the HAC and delegating the functions of awarding advanced academic degrees to HEIs have existed for a long time. It has been argued that this change could boost the HEIs' research capacity by helping them to engage in advanced research. However, these suggestions have been systematically rejected because of the concern that HEIs may be unable to ensure the quality of advanced graduate research projects.

An advisor to MoES, however, says that universities should first teach research effectively and only then expect students to produce quality theses. At the same time, he believes that the HAC will not give up the rights

to award graduate degrees to HEIs easily. He explained, "This is primarily because senior scholars holding powerful positions are reluctant to abandon a system that is helping them to make a lot of money from the corrupt post-graduate study and degree award system." He further continued, "We need radical changes. For example, the National Academy of Sciences has to change. There was a working group which analysed the work of NAS and recommended its abolishment. However, many conservative scholars were against [the abolishment]."

The aforementioned legacy of the Soviet-style centralised hierarchy of research governance has impeded the development of research capacity at HEIs. There seems to be a lack of effective strategies both at the governmental (macro) and the institutional (meso) levels that could steer HEIs to become research-oriented.

HEI Research Strategies

According to such governmental policy provisions as the "Education Development Strategy of the Kyrgyz Republic for 2012–2020" (MoES, 2012) and the "Provision for the Educational Organisation of Higher and Professional Education" (Decree on Higher Education #53, 2004), higher education institutions are required to organise research activities and produce research outputs. The latter document states that one of the missions of a higher education institution is "the development and advancement of science through research activity" (pp. 1–2). It stresses that "it is obligatory for HEIs to conduct fundamental and applied research, which provides a basis for the high-quality training of bachelor's, master's and specialist degree students" (Article V, 5.1, 2004). At the same time, the internal institutional provisions of many HEIs emphasise research and the training of research personnel. For example, the Development Strategy of Osh State University states that engaging in research "leads to [the creation of] new technologies, the organisation of their production, and the creation of an innovative economy." The strategy further declares that "the goals of research conducted by scholars working at the university include, first of all, compliance with the priority research areas of the Kyrgyz Republic and, secondly, the contribution

of the research produced by faculty, university researchers, graduate and undergraduate students to the economic, social, cultural and spiritual development of the country" (pp. 4–5). Similarly, the institutional documents of other Kyrgyz HEIs outline a general policy of encouraging research without describing specific measurable targets or strategies for developing research capacity.

As a rule, Kyrgyz universities have a vice-rector for research and a department of research and innovation that coordinate and oversee research. They develop the policies and strategies that regulate research and shape the university research culture. At the department level, there are such positions as "vice-dean for research." The main responsibility of these administrators is assisting the development of academic research, facilitating the diffusion of research methods and technologies, and promoting contacts with international research communities. Specifically, they define the fields where research projects are to be conducted, organise the publication of academic works, coordinate academic exchange visits, organise conferences, coordinate undergraduate and post-graduate theses, and manage the professional development of academic staff. The vice-rector for research at KNU commented that her academic unit is responsible for promoting research at the university, overseeing research activities, and establishing links with international research communities. Her office also guides and monitors research projects; organises and coordinates academic exchange visits, research conferences, and seminars; and monitors the scholarly publications of the academic staff. Additionally, each university has a "research council"—a representative, collegial, expert, advisory, and coordinating body in charge of research and organisational activities.

Case of Kyrgyz National University

The KNU Institute of Fundamental Sciences was established in 1997 to promote the revival of science in Kyrgyz Republic. The institute emphasises the importance of introducing modern mechanisms for improving the efficiency of research, including the creation of a competitive research

environment and the introduction of flexible material incentives for researchers.

The KNU Department of Research and Innovation was established in 2017. Its main objectives are developing innovation activity at the university, ensuring the effective use of research results in the interests of the university, its employees, and its undergraduate and post-graduate students, and providing consulting and research and technical services in the innovation sphere. In addition, the department holds student research competitions and organises research conferences and exhibitions. It also plays an active role in assisting academic staff in publishing their research work.

In 2018, KNU staff members conducted 13 research projects in the priority research areas of the Kyrgyz Republic, and about 150 employees participated in these projects. This research activity is funded by the government. The MoES allocated around USD 120,000 in 2018 and USD 178,000 in 2020 for research activities.

One of the most important initiatives to develop research capacity at KNU was the introduction of an open university-wide competition for research grants. According to the Dean of the Department of Research and Innovation, these funds are allocated to KNU academics through an open merit-based contest. Instituted by the university leadership, the competition for research grants is open to all departments, and its winners are selected through a rigorous process by a designated committee that consists of academic and administrative staff. In an interview, the head of the Psychology Department commented that this grant competition supports the development of research activity at the university. An academic at KNU added that most academic staff are unable to conduct research due to budgetary limitations. She stated,

> I must say that researchers have to do a lot of things at their own expense—for example, to travel for research or even to go to conferences. Unfortunately, we don't have such a large travel budget. Researchers must instead pay for their travel themselves. Many colleagues do so because they have to collect data for research. Some are still looking for funds and donors.

In 2005, KNU established the Council of Young Scholars (CYS), a programme aimed at developing and training young academics. The CYS offers support to early career researchers under the age of 35. The goal of the CYS is to develop the creative research capacities of young scholars by organising research conferences, workshops, seminars and roundtables on current topics in education and science. The vice-rector for research coordinates the work of the CYS. The CYS organises an annual conference for young researchers from all Kyrgyz HEIs entitled "Youth in Science" and public lectures by leading scholars from local and international institutions. These lectures are intended for all young researchers, including lecturers and undergraduate and post-graduate students. Young researchers at KNU also participate in an annual research contest that is traditionally held on the Day of Science in November. In addition, the CYS holds a summer school on research methods to which it invites strong researchers as lecturers. These summer schools help young scholars to develop their research capacity (Regulations of KNU CYS, 2020).

Case of Osh State University

An academic staff member at Osh State University noted that it was a pedagogical institute in Soviet times, mostly engaging in educational research. He also observed, however, that currently a number of measures are being taken at OSU to develop the research capacity of its academic staff, such introducing competitions for research grant and paying bonuses to academics who publish in journals indexed by the Web of Science. The head of master's programmes observed, "In the last four years, we have begun to move from a classic university to a research university. Our research work is aimed at solving the current problems of our region and the country as a whole."

As the OSU's vice-rector for research explained, the university's Academic Council adopted in February 2019 a concept for the development of the research potential of the university for 2019–2024. This concept describes the directions, strategies, and means of developing research at the university. The head of master's programmes at OSU noted that research capacity is being developed at each university department and

research school. He explained that there are 15 graduate schools in different fields of knowledge. Post-graduate students are based at these schools, where they conduct research according to their projects and programmes. Currently, there are about 300 post-graduate students at the university pursuing degrees in 98 different academic fields.

According to the OSU vice-rector for research, students develop their research capacity through different activities such as participating in conferences; writing term papers and senior theses; and attending research seminars, workshops, and roundtables. He mentioned that theses and dissertations at OSU are screened by anti-plagiarism software. Not everybody shares his optimistic assessment, however. An advisor to MoES believes that *students at all public HEIs are not adequately trained to produce original research papers due to the absence of policies and procedures regulating the originality of written works. Furthermore, students are not taught effective research methods.*

Nevertheless, MoES is an important source of funding for research projects of different universities, including the OSU. The OSU vice-rector for research noted that about 10 university research projects were currently being funded by the ministry. He observed, "the government encourages universities to solve current problems in the region and researchers to get involved in these efforts." For example, a group of academics at OSU studied water management in the Osh region by analysing dam structures and their risks (see Jainakov et al., 2019).

HEI Publications and Research Capacity

Historically, the members of academic staff at Kyrgyz HEIs were not required to publish articles in international peer-reviewed academic journals. Instead, scholars published in local journals which did not have peer-review mechanisms or strong selection criteria for articles.

Since the introduction of the requirement of international peer-reviewed publications for *kandidat nauk* and *doktor nauk* candidates, the research capacity of HEI academics has improved, insofar as they get valuable comments on their results and methodology in the course of peer-review. An academic at KNU noted,

> We are learning that publishing an article at [journals indexed at] Scopus or [Web of Science] is not a simple task. Each journal has its own requirements. In general, articles need to meet structural requirements and criteria—for example, they must have an introduction, a section describing the literature consulted, methodology, results, discussions, a conclusion and references.

The Kyrgyz government has tried to improve the quality of *kandidat nauk* and *doktor nauk* dissertations by introducing requirements for international publications. These requirements include the publication of seven articles, one of which must be in a journal indexed by Scopus, the Web of Science or a Russian research database.

MoES has begun to rank universities, departments, chairs, and professors throughout the country, and one of the criteria is the number and quality of scholarly publications. The quality of articles is understood as the quality of the journals where they are published. An OSU academic said, "The quality is expressed by a score, I believe. The stricter the requirements to get published, the higher the score for the publication." As a university leader at OSU commented, "Scholarly publications did not have a lot of value at OSU before 2014 when the notion of 'bibliometrics' was introduced."

According to the annual reports on research activity (KNU, 2019), KNU academics published 992 scholarly articles in 2019. However, the number of publications decreased to 736 in 2020. Only a small proportion of all publications appeared in Scopus- and Web of Science-indexed peer-reviewed journals (12 in 2019 and 10 in 2020), while the rest was published in journals indexed by the Russian research database or local journals.

An academic at KNU commented that every academic staff member is now required to publish a minimum of two research articles in peer-reviewed journals. The KNU vice-rector for research said that the steady rise of scholarly publications provides evidence of the improving research capacity of staff members. The head of the KNU Department of Research and Innovation commented,

> Academic staff at KNU published only 48 articles journals indexed by the Web of Science in 1985–2017. However, over the three years between 2017 and 2020, this number greatly increased to 67 published articles. In the past, such articles were mostly in fundamental sciences such as physics, mathematics, biology, earth science, geography, etc. Now there are also publications by scholars in the humanities, such as historians, and archaeologists, and lawyers.

The OSU vice-rector for research also spoke about an increase in the number of publications by OSU academics in reputable international journals. According to him, approximately 800 articles were published by OSU academics in 2009, while the number of publications in 2019 rose to 1250, of which 500 were published in Scopus- and Web of Science-indexed journals. He believes that the reason for this growth was the payment of bonuses for employees who publish in prestigious journals. For example, the authors of articles published in Scopus and Web of Science journals receive 10,000 Kyrgyz som. An academic staff member at OSU commented that while "getting articles published in a reputable international journal is difficult, it also improves our research competencies." Another academic added, "It was quite a difficult experience for me to write a paper for a Scopus-indexed journal. I received a lot of feedback from the reviewers, which I am not used to. I read those comments and tried to improve my paper."

Introduction of the PhD System and Research Capacity

Kyrgyz Republic was very slow in fully adopting the three-level degree system. International PhD programmes have been piloted in eight universities of Kyrgyz Republic in recent years with the assistance from international organisations (Bekboeva & Chynybaev, 2021). In 2020, the president of Kyrgyz Republic signed amendments to Article 23 of the Law on Education, which incorporated the PhD degree into the national education system. Currently the introduction of PhD programmes nationwide is under consideration. However, it is not clear whether they

will fully replace the Soviet system or both systems will operate simultaneously, causing further confusion.

As the advisor to MoES stated, the research capacity of Kyrgyz HEIs can be enhanced through the introduction of international PhD programmes to replace the Soviet-style two-tier system of graduate degrees. He observed,

> This can help to align the higher education system of Kyrgyzstan with international, specifically Western, standards and practices. PhD programmes with their new educational practices such as coursework requirements, co-supervision, non-degree study-abroad trips and international publishing are regarded as a means of increasing the quality [of the system] and aligning it with Western standards and practices to enable it to respond to challenges associated with global economies and knowledge societies.

Nevertheless, the experience of introducing master's degrees at HEIs shows that simply changing the names of degrees cannot solve existing problems. Policymakers argue that academic programmes should be closely aligned with "international standards" and best practices that exist elsewhere in the higher education sector. For example, the "Concept of Education for 2021–2030" maintains that PhD programmes should be closely aligned with the requirements and procedures of the Bologna initiative both in terms of programme structure and thesis quality.

A recurrent theme in the interviews we conducted was that research skills are not taught in undergraduate and post-graduate programmes. HEIs do not teach the latest theory and practice of research but simply offer brief workshops, seminars, and summer schools on research methods. As the former advisor to MoES stated,

> In 2019–2011, I participated in an international project aimed at improving research at Kyrgyz universities. That project provided training for university academic staff. Subsequently, a number of research training events including winter and summer schools were offered with research seminars and workshops conducted by strong international scholars. They trained us in using research methods. Many university staff members learned how to do research at these training events. I also won a research grant and spent one semester at a European university. This experience helped me to learn

how to conduct empirical research and assisted me in doing fieldwork for my *kandidat nauk* dissertation.

The advisor to the MoES commented that there is a need for research methodology courses of international quality at HEIs. He mentioned several private Kyrgyz universities that are already working according to international standards, including the American University in Central Asia (AUCA), the University of Central Asia (UCA), and Kyrgyz-Turkish Manas University (KTMU). Unfortunately, local universities have run into difficulties in full-scale introduction of high-quality research methodology courses, as they lack strong academic staff who could design and teach such courses.

Conclusion

Our study of the evolution of research capacity at Kyrgyz HEIs analysed the cases of two flagship universities that are at the forefront of these changes. Despite the 30 years that have passed since the country's independence and the numerous attempts to bring the country's HEI system into line with international standards by closely following Bologna principles, these efforts proved insufficient to promote effective research capacity building at HEIs. While it is true that Kyrgyz Republic's two national universities have initiated a series of changes and policies directed at developing research capacity, some of these changes have remained on paper with little or no actual implementation. A government decree requiring academics to publish in high-impact refereed journals indexed by the Web of Science and Scopus has led to some improvement of research capacity at universities, however this remained limited. Moreover, there is little evidence that research training at HEIs has significantly changed or improved over the past few years, while undergraduate and post-graduate programmes still lack research courses that would teach students the methods of academic research. Furthermore, as the past three decades have been very eventful politically in Kyrgyz Republic with numerous changes of government and frequent changes in the MoES, there has been a lack of coherent and cohesive efforts towards improvement.

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14

From Policy Design to Lived Experiences: Developing University Research Capacity in Tajikistan Since 1991

Emma Sabzalieva

Introduction

On obtaining independence from the Soviet Union in 1991, Tajikistan inherited ten public HE institutions (HEIs) and a branch of what was formerly the Soviet Academy of Sciences (DeYoung et al., 2018). Participation in HE was 15% of the 20–24 age cohort for a population of five million, below the 26% rate achieved on average across the Soviet Union but comparable to Azerbaijan and Kyrgyzstan (Platonova, 2018). At the end of the Soviet period, there were 4900 university teachers, 38% of whom held a Candidate of Sciences degree, and 3% of whom held the higher level Doctor of Sciences[1] (USSR State Statistics Agency, 1989). There were just over 9000 scientists and researchers employed at the

[1] Lower than the USSR-wide rates, where 51% of university teachers had a Candidate of Sciences and 5% had a Doctor of Sciences.

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Academy of Sciences and other research institutes, of whom 37% held a Candidate of Sciences and 3% had a Doctor of Sciences[2] (ibid.). In 1986, it was reported that 8 out of 10 HEIs in Tajikistan had incorporated 'the results of scientific and research work' into the classroom (ibid.), that is to say that HEIs were drawing on research to inform curriculum content and pedagogy.

As in the other former Soviet states, Tajikistan brought forward not only a legacy of higher education (HE) and research infrastructure from the previous regime but also the values and norms associated with the Soviet HE system. In relation to research, these included the separation of teaching (which took place primarily in universities) and research (located mainly in the Academy of Sciences), high value placed on step-by-step progression up the research career ladder, and a widespread appreciation of science. The research that did take place in HEIs was tightly coupled to economic needs and to preparing the next generation of academic teachers and leaders (Kataeva & DeYoung, 2018).

However, unlike some of its former sister republics, Tajikistan's HE and research system did not have a history extending back prior to Soviet rule. Whilst a tradition of higher learning in the territory now known as Tajikistan can be traced back centuries (Nazarov, 2011), it was only in the twentieth century that a system to organize and govern education and science emerged and rapidly institutionalized. The first HEI opened in 1931, the first university in 1947, and the Tajik branch of the Academy of Sciences was founded in 1951 (DeYoung et al., 2018). This relatively recent establishment of formalized structures for teaching and research is an important consideration in understanding the subsequent trajectory of research in Tajikistan.

This chapter traces how research in Tajikistan has developed in the three decades since independence. Whereas the main thrust of this book is on research capacity in universities, in the case of Tajikistan it is also important to include the Academy of Sciences alongside HEIs in recognition of its continued role in driving the country's research agenda. In the immediate period following independence, the country was beset by civil

[2] Comparable to the USSR-wide rates, where 33% of researchers had a Candidate of Sciences and 3% had a Doctor of Sciences.

war between 1992 and 1997, as a result of which there was little change in the research functions of HEIs (Nazarov, 2011; Kataeva & DeYoung, 2018). Coupled with the aftermath of an economic crisis resulting from the collapse of the Soviet Union, the 1990s saw the outflow of a large number of established academics from the system; physical destruction of some of the education infrastructure; and serious under-funding across all aspects of HE (Juraeva, 2008).

As the effects of war subsided, reform efforts in HE have focussed on restoring the hallmarks of the highly regarded Soviet-era education system whilst delineating a Tajik national education system that was also internationalized and part of the global research community (Nazarov, 2011). However, an external study of the Tajik HE sector in 2014 noted that 'Tajik HEIs are not engaged in research since research has traditionally been conducted primarily by Academy of Sciences, with little linkage with the former' (World Bank, 2014, p. 82). This picture is not entirely correct: this chapter shows that the Tajik government and HEIs have adopted the language of research and provided guidance to academics on doing research; and academics are able to set a research agenda and take up opportunities to do research. However, this research mission has not yet been internalized at institutional level, and research in Tajikistan continues to be concentrated in the Academy of Sciences. The development of a research mission in universities is further constrained by the heavily politicized and increasingly authoritarian environment that characterizes the contemporary education and research system in Tajikistan (Sabzalieva, 2020).

Methodology

This chapter draws from policy document analysis, literature by Tajik academics, and interviews with researchers working in Tajikistani HE in the 2010s. Interviews were particularly helpful in filling the ongoing gaps in the overall body of literature and publicly available data on Tajikistan. Policy documents included laws relating to education, science, and research as well as government directives and pronouncements. Literature by Tajik academics came from books and journals published in English

and Russian languages by teachers, researchers, and scholars with first-hand experience of the country's HE and research infrastructure.

Seven semi-structured interviews were conducted by phone and telecommunications applications (Skype and WhatsApp) between December 2019 and March 2020. The interviewees were primarily working in universities in Tajikistan (6/7); one interviewee is a senior researcher at the Academy of Sciences. Of those working in universities, most had 20 or more years of experience in HE (4/6). Three of the respondents are female and four are male; five were based in the capital city Dushanbe and two in the northern city of Khujand. Most of the interviewees (5/7) had leadership experience at their institution, for example, as Head of Department or Vice-Dean/Deputy Director for Research/Science. Six of the interviews were in Russian and one was in English. Quotes and written sources originally in Russian have been translated into English by the author.

The Policy Landscape for HE and Research

Despite the 1992–1997 civil war and the economic crisis, the Tajik state maintained some basic activities related to HE and research in the early years of independence. The 1993 Law on Education establishes the structure, activities, and governance of the education system (Government of Tajikistan, 1993). The first government science and technology policy defines terms such as basic research and applied research and specifies that research can be conducted by students and faculty/staff by creating 'scientific and educational complexes' at universities as well as at the Academy of Sciences and government ministries with research responsibilities (Government of Tajikistan, 1998).

Regulations governing state accreditation of scientific organizations, which are still in force, aim to ensure ongoing improvements to the quality of research as well the preparedness of academic staff through monitoring and reporting (Government of the Republic of Tajikistan, 2000). In addition, a policy specifically targeted at research development was the establishment of Presidential Fund for Basic Research (Government of Tajikistan, 1996). The Fund, which still operates, is financed primarily by

the state and provides targeted funding for basic research in order to support innovation and stimulate economic development.

More pro-active efforts at shaping the national HE and research system emerged since the 2000s. The National Concept of Education adopted in 2002 was the first government strategy for education and it underlines the importance of fundamental research as well as the need to integrate science with teaching and industry (Government of Tajikistan, 2002). By the end of the 2000s, over 150 legislative and regulatory acts had been approved by the government (Government of Tajikistan, 2003, 2009, 2013; Ministry of Education, Republic of Tajikistan, 2005; Nazarov, 2011). However, at the same time, the state has continued to closely manage and control research, creating a political situation that 'places significant constraints on academic freedom and the environment in which research can be done' (Sabzalieva, 2020, p. 109).

The guiding principle underlying HEIs' role in research has been the integration of research into teaching through the 'elaboration of theoretical and applied problems; preparation of textbooks and manuals; training of high-skilled staff; and conducting scientific and methodical research' (Brunner & Tillett, 2007, p. 152). By this time, the Ministry of Education and Science (MoES) had set out a series of requirements for research in HEIs to be measured largely by quantitative indicators such as number of publications, number of defended theses, involvement of students in research, and number of conference papers presented (ibid.). HEIs complete annual reports on these indicators, which are evaluated as part of the state's accreditation process. Since 2019, accreditation has been undertaken in conjunction with the Kazakhstan-based Independent Agency for Accreditation and Rankings (Avesta, 2019).

Nevertheless, the Education Development Strategy to 2020[3] observed that 'HE is weakly integrated with scientific [research] activity in the Republic, which negatively affects the quality of training and also decreases the potential to develop scientific research' (Government of Tajikistan, 2012, p. 17). The country's National Development Strategy to 2030 identified an additional barrier in the ageing research and development workforce (Government of Tajikistan, 2016), which

[3] At the time of writing, a post-2020 version of the strategy had not been finalized.

elsewhere a government agency has called a 'disastrous generation gap' (National Patent Information Centre, 2017, p. 18). The implication of the generation gap is that not enough emerging scientists are coming through the research pipeline—fewer than 20% of the country's Candidate of Science holders are aged under 35 (ibid.).

The government has a declared strategy to increase research capacity in universities as part of three declared areas of reform: modernization of the content of education, greater integration of HEIs and research institutes as well as teaching and research functions in HE, and achieving access to quality education (Government of Tajikistan, 2012). The National Development Strategy envisages change occurring through the creation of clusters combining research, teaching, and industry in priority economic sectors, which are identified as agriculture, energy, and transport (Ministry of Education, Republic of Tajikistan, 2005, p. 45). In this context, laws have been passed on science parks (2011), innovation (2012), a new science and technology policy (2015), strategies for the development of innovation (2015–2020), intellectual property (2014–2020), programmes on developing the country's intellectual potential and property (2012–2020), state funding for entrepreneurship (2012–2020), developing innovation (2011–2020), a national research concept on issues relating to human development, and the continued development of democratic principles and civil society (2013–2028) (Innovative Cooperation, n.d.; Government of Tajikistan, 2015; Government of the Republic of Tajikistan, 2013).

Other post-2010 reforms include the opening of a national Higher Attestation Committee in 2011, ending the previous reliance on Russia for accreditation of doctoral degrees and therefore taking greater ownership of the system and pipeline of researcher formation. A major World Bank grant (World Bank, 2019) has led to the adoption of European Bologna Process principles, which includes greater integration between the formerly deeply separated system of teaching and research. A late 2019 presidential directive sets out a long-term vision for the development of natural sciences and mathematics in Tajikistan (Firuz et al., 2019), which is likely to lead to new avenues for postgraduate training as well as funding for research projects in HEIs.

Researchers' Views on the 'Crisis' in Science

Despite the number of policies and directives on education, the lived experiences of researchers illustrate that actual change on the ground was slow to arrive during the 1990s and 2000s, if indeed it was forthcoming. This section uses literature by Tajik researchers and scientists to highlight some of the challenges they identified (and, in many cases, experienced first-hand). The scientific community had been hit hard by the impact of the 1990s and had suffered from major brain drain with the outflow of qualified researchers (Nazarov, 2011). The capacity for research was further weakened because of a 'dearth of reliable and valid data due to the underdeveloped research tradition, the lack of research facilities, critical scholarship and the confidence to share research data' (Niyozov & Bahry, 2006, p. 212).

The underdevelopment of research was seen to be the result of Soviet centralization on the one hand, meaning that advanced research took place mainly in the centre (Moscow) and was merely replicated in peripheral Tajikistan. On the other hand, this was also seen to be related to the overtly politicized nature of Soviet-era scholarship (Niyozov & Bahry, 2006). A Tajik philosopher and academic who co-created a major long-term research project to reform the humanities curriculum that began in 1998 further identified 'a weak desire [in academia] to integrate new knowledge' (Jonboboev, 2010, p. 13). Interest in change was low despite the involvement of a team of local experts that accounted for 'indigenous traditions of Central Asia … with some modern innovations' (16). The barriers to change were the continuing central organization of HE, which limited choice for students, and the pre-existing ideological framework: 'the majority of research is still being conducted by application of Marxist-Leninist methods' (ibid., p. 17).

Whilst the government's efforts to reform education attempted to modernize the system, this has been criticized as '"catch-up" modernization, the uncritical copying of the Western [European] system of education' (Nazarov, 2011, p. 281). Attempting to 'catch up' during a period of intensifying globalization placed Tajikistani education and science—and the country as a whole—at risk, leading it to be 'constantly under

threat of being ousted to the global periphery' (Nazarov, 2011, p. 278). In his 2012 book *Games in Science*, a leading philosopher detailed what he called a 'deep crisis' in science (Navruzov, 2012, p. 9). He put this down to multiple factors, including a lack of coordination between research institutes, poor-quality training for researchers, low levels of adaptation to the needs of research in a market economy and related idealization of the past, and the continued outflow of qualified researchers from the profession because of 'poverty, the market economy and political careerism' (ibid., p. 13).

The crisis identified by Navruzov and described by others appears to have persisted. Contemporary issues faced by universities include 'meeting international standards in research and teaching' (Kataeva & DeYoung, 2018, p. 252) that stem from government control and limited institutional autonomy, the inherited institutional culture, universities having few incentives and little power to stimulate research productivity, and scarcity of public funding. The lack of funding is also highlighted by Jonbekova (2015), who cites a faculty member: 'even if salaries were increased, I wouldn't have stayed, as conditions for teaching were poor, and due to a shortage of resources, we could not undertake research' (ibid., p. 176). In an essay that is otherwise strongly pro-government, the Head of the Social Issues Analysis Department of the Centre for Strategic Research (a government agency) nevertheless notes that 'Tajik science [research] is today facing a serious financial and spiritual crisis. Having long ago lost its true mission of producing new knowledge and its leading potential in socio-economic and cultural-political life, it has turned into a barren industry' (Kurbonov, 2019).

Research Policies and Practices in Tajikistan's HEIs

This section turns to the findings from the interviews undertaken for this chapter with current faculty members in Tajikistan to uncover contemporary practices in HEIs as they relate to research.

Governance and Organization of Research

All domestically operated HEIs in Tajikistan continue to be state (publicly funded) organizations; respondents suggested that research is organized similarly across the system, with differences arising linked to the function of each HEI. Specialized HEIs often operate in fields that lend themselves more to applied research than the investigation of basic research, which are mainly taken up at the Academy of Sciences. There is also some variation based on institutional differentiation. The introduction of 'state national university' in 1997, later 'national university' status in 2008 (President of the Republic of Tajikistan, 2008), afforded autonomy and self-governance to Tajik State (now National) University, the country's flagship university. This status brought more funding for the university, which came directly from the state budget (DeYoung et al., 2018). At the time of writing, national university status had not been extended to any other HEIs.

HEIs have a governance structure for research that is usually headed by a Pro (Vice)-Rector for Research (or Research and Innovation); each department has a Deputy Dean for Research (and Innovation) whose responsibilities include overseeing and evaluating research activities and organizing conferences and other research-related events in the department. HEIs are governed by a Charter that lays out the functions and aims of each HEI and which is signed off by the MoES. For example, one of the main functions laid out in the Charter of the Technological University of Tajikistan is to 'undertake theoretical and practical research in various areas of science' (point 18), which should take place in conditions of autonomy and academic freedom (section 3). The Charter explains that research is based on a 'thematic plan' that is approved by the Academic Council (point 94) (Technological University of Tajikistan, 2019).

These thematic plans set the overall direction for research activity from which departments will work on an annual research theme that relates to the overall institutional plan. As such, the themes in departmental plans are fairly generic. The departmental workplan and research topic then feeds into the annual workplans for individual academics. This allocates

a set number of hours to which the faculty member should devote to activities such as teaching, research, pastoral and supervisory responsibilities, conferences/seminars, and community engagement. The workplan also contains planned outputs for the year, for example, the number of articles to be published or conference papers to be presented. Faculty members are required to report on their progress during the year and in an end of year report. In the late 2010s, the government introduced a points-based system for assessing faculty research productivity. This requires faculty to provide proof of their accomplishments, and also offers a financial incentive for certain activities such as publishing in an internationally indexed publication.

For the most part, faculty undertake research in their current areas of specialization (with adjustments made as necessary to fit the year's topic), although it was noted that the government will occasionally intervene by requesting research on certain topics. Topics of such state-commissioned studies have included anti-terrorism and major holidays/events that support national identity development. This may be done directly by commissioning research or indirectly through, for example, topics highlighted by the president or government officials in speeches. Sometimes faculty members will try to pre-empt research that is seen to be of interest for the government: one respondent explained that this had led to a high quantity of research on Tajikistan's independence and the country's constitution.

Funding for Research

Research is funded primarily by the government, although income from student fees supports expenditure for self-funded universities, a model introduced in the 2009 Law on HE (Government of Tajikistan, 2009). A small number of the 39 HEIs in Tajikistan had transitioned to this self-funded model at the time of writing including Tajik National University and Tajik State University of Commerce. As described by respondents, self-funded universities are all still considered to be state organizations, but do not receive any core financial support from the government. With minimal funding from grants and donations, this means self-funded

universities are reliant on student fees. The main advantages of being self-funded according to respondents are the ability to set student numbers and fee rates as well as flexibility in allocating expenditure, which usually means a pay increase for faculty members. Other HEIs are constrained by government rules which involve a transfer of some of the income from student fees to the government as well as a firm cap of 50% of total expenditure on salaries.

Although it was noted that core financing for research has improved over the past 20 years, it was also felt that funding was still insufficient to advance in some areas. This is confirmed by an external study that found that 'while the Law on HE defines that research is integral to an institution's accreditation, research at HEIs is typically under-financed primarily because research is conducted by the Academy of Sciences, which are separate institutions' (World Bank, 2014, p. vi). A respondent at one of the leading technological universities noted that a science park and other research-related infrastructure have been developed, but also relayed that undertaking basic research at that university was hindered by the lack of laboratory facilities. Another respondent conveyed how a colleague had to rely on old equipment to carry out their research on crystals, which was not only time-consuming but ineffective as the outdated equipment does not generate consistent results. Respondents also noted that there was little active institutional support for research (e.g. assistance with grant writing, fieldwork funding) although when individual researchers were able to secure outside funding, it was welcomed by HEI leaders.

Tajikistan does not have a national Research Council or similar structure that manages large-scale, consistent, and/or competitive funding for research. There are, as noted earlier in the chapter, some special funds for research although respondents did not say that this was a large or significant source of research funding. Government grants have typically been less than US $5000, 'which is insufficient to result in impactful research' (World Bank, 2014, p. 54). The main additional source of large-scale funding for research in recent years has come from a major World Bank loan and grant to Tajikistan for HE, prior to which there was 'no special allocation [of government funding] for such major functions of HEIs as research' (World Bank, 2014, p. 26).

Researchers planning to apply for research grants from other sources must first seek the approval of the MoES and may only proceed having received a letter of permission. One respondent explained that they had waited for two months for approval from the MoES to undertake research in universities for a project funded by an international organization. The issue had eventually been resolved, but only after the minister that had been holding up the project was removed from their post for unrelated reasons as part of a government reshuffle. One respondent suggested that corruption—specifically, the desire of government officials to receive a share of funding from international grants—was behind the lack of state support for research.

Identifying the Next Generation of Researchers

A key strategy raised by the majority of respondents as relevant to the development of research capacity was the identification and training of the next generation of researchers. A major shift in the Tajik education system was the introduction of European-style Bachelor's, Master's, and PhD degrees, which are in the process of replacing the Soviet-era five year Specialist and postgraduate Candidate of Sciences degrees. Not only has this led to major structural change in HEIs, but it has also increased the possibilities of integrating research into the curriculum. All students now undertake research work, whether at the level of an undergraduate essay or by obtaining experience of publishing in journals, which is a requirement for both Master's and PhD degrees.

Youth also have extra-curricular opportunities to engage in research, whether through a student society or by participating in competitions. The MoES organizes a number of these competitions, including the annual 'The student and progress in science and technology' contest. One respondent noted that the winner of one of these competitions had gone on to become a lecturer in the same department, an indication of the prestige of the contests as well as their utility in identifying future researchers. The Academy of Sciences also offers annual prizes and diplomas to student scientists, partly under the remit of its standing Council of Young Scientists and partly as a recruitment strategy for the new

postgraduate degrees that the Academy now also offers. State-funded places on Academy of Sciences Master's degrees are offered to students who rank first or second in Academy-organized competitions as well as those who complete high school with top grades (the 'Red Diploma'). The Academy of Sciences also aims to engage young people in science by inviting students to lectures and conferences and offering opportunities to publish in Academy journals/conference proceedings.

Although some respondents had concerns about the ways in which the new degree system has been introduced, there was consensus that the Master's degrees were creating new opportunities for students with the interest and potential to continue to train in research. One respondent said that the increased support for students to continue to postgraduate study was one of the main achievements in research in Tajikistan. At the Academy of Sciences, increased demand for the Master's degrees has led to there being two or three applicants for each place, whereas in previous years it was hard to fill the vacancies. It was felt that this reflected growing interest in science in the population as a whole.

There was less optimism amongst respondents in relation to the PhD, offered as an alternative to the Candidate of Sciences since the mid-2010s. The requirements for the PhD are demanding: a monograph-length thesis pursuing an original research question must be completed within three years, and students must publish a minimum of three articles in VAK[4] indexed journals and a minimum of two articles in international journals within three years. Rather than raising the bar for future researchers, these challenging obligations were seen by respondents as having led to a drop in quality. Many HEIs now expect faculty without a PhD to obtain one within a relatively short space of time. The opportunity to transition to the upgraded status of National University is opening up and one of the requirements is that at least 50% of faculty must have a PhD/Candidate of Sciences. However, current rates are nearer 25%, partly explaining the growth in demand for doctoral level study. This has

[4] VAK is the Russian language abbreviation used widely in former Soviet academic systems for the Higher Accreditation Commission, the government agency responsible for awarding postgraduate degrees. According to one respondent, there are currently only three VAK-accredited journals in Tajikistan, published by the Academy of Sciences, Pedagogical University, and the Russian-Tajik Slavonic University.

led to a boom in the number of publications and theses, widely seen to be at the expense of quality. Furthermore, the creation of the Tajik VAK in 2011 was seen to be of much lower quality than the Russian version that was previously used to assess thesis work.

Publish, Publish, Publish

According to one respondent, the new publication requirements for Master's and PhD students are partly responsible for the surge in the number of publications. This respondent had commissioned an analysis of publications at their HEI since 2012, finding that the number increased by 20–30% in less than eight years and by as much as 50% in some fields. The points-based system for assessing faculty productivity has also spurred both the requirement to publish as well as the quantity of publications being produced. More points are awarded for publishing in prestigious journals (those considered to be international and those indexed by the Russian VAK). Unsurprisingly, the pressure to publish was connected by respondents to a decline in originality, particularly for early career researchers. One respondent explained how the government also recognizes this problem and has instructed all HEIs to carry out anti-plagiarism training.

Many HEIs in Tajikistan publish their own journals which are less prestigious than those indexed by a VAK or an international journal, but still considered viable outlets. However, one respondent pointed out that these journals are hard to access as they are not published online, inevitably shrinking their readership potential. Even when articles are published online and are not plagiarized, a respondent noted that Tajikistan's relative isolation from international academic communities can lead to articles lacking innovation in, for example, applying different theories or combining theory with empirical studies. Another side effect of the push to publish has been an increase in the number of conferences organized by HEIs, which are an opportunity to publish proceedings as well as to increase prestige by inviting international delegates to participate. Some respondents saw conferences as a means of community building between universities in Tajikistan, although others were less convinced that

HEI-to-HEI coordination has improved. Respondents also explained how conferences provide opportunities to share research with the local business community.

Supporting National Economic Development, Reaching Out Internationally

Respondents discussed how research was often connected to the main issues facing Tajikistan. Most of the examples given were connected to the Academy of Sciences, rather than HEIs. Agricultural research was identified as a priority area, with multiple examples provided by respondents of research in this field. These included projects such as a food safety laboratory opened at the Institute of Botany, Physiology and Plants (part of the Academy of Sciences) in 2019 with Chinese partners, research done by the Centre for Biology and Medicine (also part of the Academy of Sciences) on medicinal herbs, research on agricultural technology and water usage at a technological university, and research that aims to develop different methods of planting as well as cultivate new types of crops that are better suited to Tajikistan's geography and climate.

One respondent pointed out that research at their HEI—which specializes in commerce—should be relevant for national economic policy. This means focussing research on economic competitiveness, entrepreneurship, and innovation. An example of this in action is the HEI's plan to partner with a local bank to support student learning and research in banking. Another respondent from a technological university also gave examples of research on satellite technology and the use of geographic information systems (GIS), also relevant to economic development. This alignment of HEI research with national priorities is arguably self-reinforcing: even in HEIs that do not have a specific mandate that lends itself to economic development such as commerce or technology, research is often directed towards projects that are thought to be beneficial to the country. This stems in part from researchers' natural inclination to better understand the world and find ways to address existing challenges, but the heavily top-down governance of HE in Tajikistan also leads towards certain choices being made.

HEIs in Tajikistan extend their research impact by engaging in international research collaborations, most of which are with other countries of the former Soviet Union are established using faculty members' pre-existing networks. The number of partnerships has proliferated everywhere, although one respondent noted that of the 200 or so agreements their university has internationally, the number of active partnerships was fewer than ten. The major World Bank project referred to previously has also stimulated new partnerships as part of the project's capacity building mission. Respondents clarified that it was funding provided by the World Bank that facilitated new institutional connections as HEIs are not typically able to self-fund costs such as per diems for visiting international researchers. The main impact of international research collaborations is co-authored publications. Respondents noted that co-authorship facilitates prestige through international publication, whether for the partner through an article in a Tajik journal, or vice versa. Generally speaking, publication is in Russian with most ex-Soviet partners and in English for other international partners.

Conclusion

The severe economic issues that stemmed from the collapse of the Soviet Union and the onset of the civil war in 1992 meant that the first decade of independence was one in which the focus was on day-to-day survival, not the future development of research. As the economic situation has stabilized, the outlook has gradually changed. Respondents agreed that more young people are now interested in a career in research and there are better defined pathways to train future generations of scientists. All HEIs engage in an array of international partnerships, the conditions for research have improved, and funding has increased since the 2000s. Notwithstanding the positively viewed steps that have been taken to enhance HEIs' capacity to undertake research as well as research advances in some fields, there remain a number of challenges for HEI research in Tajikistan.

One of the most critical issues is funding. Researchers in Tajikistan are very dependent on material support to supplement their salaries, fund

international travel, invite partners to Tajikistan, buy equipment, and so on. In universities that rely on tuition fee income, many lecturers have such heavy teaching loads (up to eight hours a day, according to a respondent) that they are unable to find the time or the energy to pursue research. The lack of large-scale national research funding schemes leads researchers to seek out grants from international organizations and HEIs. These call for specific skills that are not yet embedded in all HEIs, and also require navigating the cumbersome MoES bureaucracy.

Interwoven with the challenge of funding is that of the extensive involvement of the government in all aspects of HE. This leads to a highly prescriptive set of responses by HEIs in relation to research: the focus of research is commonly related to national economic goals, the increase in publications is a result of government requirements, and the governance of research is standardized. Academic freedom to pursue research is in principle enshrined in law and documents such as university charters, but in practice is heavily constrained by the practicalities of working within a heavily politicized environment.

It is clear that many changes have taken place, as evidenced both in respondents' testimony and in the number of policies and directives that have been introduced. However, as a respondent pointed out, the foundations of HE have remained in place. The Soviet-era characteristics of university research—its inextricable links to economic development, and central governance and control—are firmly rooted in what has since become the Tajik research model. Although the HE system is now national, it continues to be organized and structured very similarly to the inherited Soviet system. The Academy of Sciences continues to be the central institution for basic research and universities continue to be mainly teaching-centred. Although Tajikistan seeks to emulate international HEI models, it is not yet possible to say that there are research-intensive universities, a model from Western HE systems.

Despite multiple government directives, the research mission in universities has not been internalized. The capacity and the academic freedom at institutional level to carry out this mission are not sufficiently deep, even though individual academics are both willing and well-prepared to do research. The reorganization of postgraduate education may over time alter the ways in which research is approached in HEIs and

shift the orientation of the research system towards international education models. Yet, without deep structural reform and the granting of genuine autonomy to HEIs—both of which will require major political change that does not appear to be on the horizon—research capacity in Tajikistan will remain fettered.

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15

Building University Research Capacity in Uzbekistan

Kobil Ruziev and Mokhidil Mamasolieva

Introduction

This chapter studies Uzbekistan's attempts to build university research capacity since the country's independence in 1991. Uzbekistan constitutes a particularly interesting case study for two reasons. On the one hand, although Uzbekistan was one of the most economically underdeveloped countries in the former Soviet Union (FSU) in 1991 (Ruziev et al., 2007), it managed to achieve one of the highest sustainable economic growth rates in the FSU after the early 2000s. The annual growth rate for 2004–2016 was above 8%. On the other hand, Uzbekistan achieved such growth despite reducing investments in higher education (HE): the proportion of the education budget spent on HE declined

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from 10% in 1990 to around 5% in 2013 (World Bank, 2014, p. 72). In fact, Uzbekistan is the only FSU country in which the share of school leavers studying at universities fell after independence: the gross enrolment ratio decreased from 15% in 1991 to 9% in 2017 (Ruziev & Burkhanov, 2018).

At the same time, Uzbekistan has set the goal of becoming an upper middle-income country by 2030 (International Monetary Fund [IMF], 2013, p. 4). To attain this target and sustain growth, the country is trying to transform its commodity-based economy into a high-value-added economy. The current government, which came to power after the sudden death of President Karimov in September 2016, sees the years of HE neglect and underinvestment as a major hindrance to its ambitious plans for economic growth. Recognising the key role played by universities in spurring innovation and creating a more diversified economy, the government has launched fundamental reforms in this sector.

This chapter aims to assess nearly three decades of change in the country by considering policy documents, official statistics when available, and primary data generated through interviews. There were 43 HE institutions (HEIs) in Uzbekistan in 1988–1999, including 40 specialised institutes and three comprehensive universities (Ruziev & Burkhanov, 2018). The number and diversity of HEIs have gradually increased since independence. In April 2021, there were 28 universities and 37 institutes in Uzbekistan (Ministry of Higher and Secondary Specialised Education [MHSSE], 2021). While institutes specialise a priori in a narrow field (e.g., Tashkent Institute of Finance), universities can be either comprehensive (11 in all, e.g., Samarkand State University) or specialise in a narrow field (17 in all, e.g., Tashkent State University of Jurisprudence).[1] There are also academies, which focus on postgraduate training, and branches of domestic and international HEIs in the country. The new private HEIs are relatively small in size, enrolling a few hundred students each, so their role in the HE sector remains very limited.

[1] After independence, some institutes that played prominent roles in their areas of specialisation were given university status. In terms of the student body, specialised universities are usually smaller than comprehensive universities but larger than institutes (Ruziev & Burkhanov, 2018).

Methodology

We use a mixed-methods approach in our data analysis. In particular, we combine secondary quantitative data and document analysis with evidence from primary interviews. The secondary data comes from official sources. Unfortunately, official data is not always readily available and remains patchy. For document analysis, we rely on government decrees and resolutions pertaining to reforms in the HE sector. We gathered primary qualitative data on stakeholders' experiences and perceptions through in-depth, semi-structured interviews.

To select interview participants, we used the "networking" method (Bewley, 2002), which enabled us to work with a small number of interviewees chosen through a network of professional connections. We interviewed ten stakeholders, including five university vice-rectors for research (interviewees 1–5), two policy-makers (interviewees 6 and 7), and three academics (interviewees 8, 9, and 10). The interviews were conducted in Uzbek in autumn 2019; they were audio-recorded and subsequently carefully transcribed.

Higher Education After Independence: The Tumultuous 1990s and 2000s

From the very beginning, the architects of the Soviet HE model tended to separate research from teaching at HEIs (Smolentseva, 2007). As a result, HEIs largely focused on occupational training, that is, they were responsible for preparing the professional workforce for different branches of the economy. At the same time, conducting research and expanding scholarly knowledge was the main mandate of the Academy of Sciences and a network of research institutes that formed in the 1960s (Kuraev, 2016, p. 189; Graham, 1994). Only a few leading HEIs (the three comprehensive universities and some institutes) that were considered core institutions in their areas of specialisation conducted advanced research.

Some of our interviewees who had worked in the HE sector before independence cited the absence of financial mechanisms for rewarding

research as one of the reasons why research intensity was so weak at HEIs during the Soviet period. For example, interviewee 2 (a vice rector) put it as follows:

> *A person who, after defending a kandidat nauk or doktor nauk degree, decided to continue his or her career at an HEI received no financial incentives to carry on with research. Had there been a clear mechanism to reward research, more people would have conducted research in tandem with teaching.*

In 1991, Uzbekistan inherited a similar HE system and an analogous research framework as other countries of the FSU. Advanced research was conducted mainly by the Uzbek Academy of Sciences that had been set up in November 1943 and the research institutes affiliated with it. Although the three comprehensive universities and a few institutes that were considered to be core institutions in their fields of specialisation conducted some research, teaching remained the main mission of HEIs. After independence, Uzbekistan decided to keep the main functions of the Academy of Sciences and its affiliated institutions largely unchanged (Government of Uzbekistan [GU], 1995). As for HEIs, they were not formally divided into research and teaching institutions. All academic staff members at HEIs were therefore expected to conduct some research.

The economic shock as well as the abrupt cessation of financial support from the centre after the sudden disintegration of the Soviet Union in August 1991 were expected to affect Uzbekistan particularly severely as a significant proportion of its large population was poor. Ruziev (2021) divides Uzbekistan's development path into two distinct phases: the *survival phase* (from the 1990s to the early 2000s) and the *growth phase* (from the early 2000s to the present). Survival-phase policies focused mainly on assuring food security, reviving the reputation and prestige of state institutions, creating a robust social safety net to prevent potential civil strife and discontent, and achieving macroeconomic stability.

Notable education reforms introduced in the 1990s include the adoption of the Law on Education in 1992, which laid down the legal foundations and reform principles in this sector; the introduction of a centralised system of university admissions in 1994; and the adoption of the National Programme for Personnel Training (NPPT) in 1994 (Ruziev and

Burkhanov, 2016). One of the NPPT's fundamental innovations in the sphere of general education was to replace the two-level system of post-graduate degrees inherited from the USSR with a single Doctor of Science (DSc) degree.

Just as other FSU countries, Uzbek HEIs suffered from severe funding cuts after independence, as the government was unable or unwilling to maintain HE budgets at their previous levels (Silova et al., 2007; Jonbekova, 2018). As a result, the share of HE expenditures in the country's total education budget declined from 10% in 1990 to around 5% in 2013, compared to a level of over 20% in most FSU countries (World Bank, 2014, p. 72). While gradually reducing HE funding from the state budget, the government decided in 1994 to allow HEIs to raise additional resources by charging tuition fees (Ruziev & Burkhanov, 2018, p. 446). According to the European Commission (EC, 2017, pp. 4–5), around 60% of Uzbekistan's total HEI expenditures and around 90% of its expenditures on infrastructural development are funded today by tuition fees paid by students.

As a result of the economic hardships of the survival phase and the country's generally cautious and gradualist approach to reforms, improving research capacity at HEIs was simply not on the government's agenda in the 1990s and much of the 2000s. The reduction in public HE funding made retaining academic staff the single most important priority for HEIs.

This led to the loss of research personnel in Uzbek HEIs, with scholars leaving for the Global North in search of better salaries or postponing academic careers to seek opportunities in the private sector (Oleksiyenko, 2014; Graham, 1994). Low salaries, combined with the erosion of savings by hyperinflation in the early years of the transition, had a significant impact on staff retention. Some academics left HEIs to pursue new careers: "There was a time when salaries were so low that scholars quit their jobs to work as bazaar shuttle traders to feed their families. Regrettably, we lost many of our kandidat nauk holders and docents in this way" (interviewee 1). Some scholars left the country: "Strong and competent specialists who could afford to leave the country and were able to find opportunities elsewhere moved abroad. If you are good at what you do, you are always in demand" (interviewee 5). Those who stayed in academia had to combine multiple jobs to make ends meet. Just as in

many other FSU countries (Osipian, 2009; Heyneman et al., 2008), engaging in unethical and corrupt practices such as soliciting bribes from students became an endemic problem in Uzbek HE.

Overall, teaching remained the main mission of HEIs from 1991 to 2016, preventing research from becoming an integral part of the academic workload. As a result, universities lagged behind in research productivity. According to the World Bank (2014), the number of theoretical and applied academic articles published by Uzbek researchers in internationally recognised research outlets declined from over 300 in 1996, which was already very low compared to other FSU countries, to fewer than 150 in 2011. As interviewee 5 (a vice rector) noted,

> The research capacity of HEIs declined sharply in the early years of independence. During the Soviet period, there was a rule, a rule of thumb, according to which at least 55–65% of the staff of HEIs had to have research degrees. … This indicator decreased to 33% across the country in the early years of independence. At some HEIs, it fell to 16–18%.

Building Research Capacity: A Delayed Start

Uzbekistan managed to achieve some success during the survival phase of its economic development. It experienced the smallest GDP decline and managed to become one of the first transition economies to surpass the pre-independence GDP level (Ruziev et al., 2007). The country moved to the growth phase in the early 2000s, aiming to become an upper middle-income country by 2030 (IMF, 2013, p. 4). By the early 2010s, it had become clear that this strategy was working: the average real GDP growth exceeded 8% in 2004–2011 (Ruziev, in press). Unsurprisingly, most significant reforms aimed at improving HEI physical facilities, human capital and research capacity were introduced in the 2010s after the country's macroeconomic situation stabilised and government finances became robust.

The first key document was a 2011 presidential decree (GU, 2011) that focused on improving physical facilities and other tangible assets at HEIs over the period 2011–2016 (see also EC, 2017). Official

documents show that the government spent most of these funds on improving the physical infrastructure of HEIs by refurbishing buildings, auditoriums, and laboratories and creating basic IT infrastructures. Although official statistics on the scale of infrastructural investments are not openly accessible, it is clear from our interviews with stakeholders that almost all HEIs benefitted from the initiative.

The subsequent presidential decree (GU, 2012) aimed at improving the training and evaluation of academic staff at HEIs. Since doctoral degrees have always been considered as the key official indicator of research capacity, the reforms focused on restructuring the postdoctoral training system. In particular, the government formally abolished the two-level *kandidat nauk* and *doktor nauk* system in favour of a single DSc degree (*Fan Doktori* in Uzbek). However, when the new rules came into effect in 2013, they largely brought the country's postgraduate research training system to a halt, according to our interviewees. At the same time, some academics who obtained their doctoral degrees in Moscow, Leningrad, and so on during the Soviet period and were therefore seen as the "old guard" were critical of the excessive gap between the master's and the DSc. "We used to have a system in which candidates would progress from bachelor's to master's and then to kandidat nauk and doktor nauk. … At one point, one discussed the possibility of allowing holders of bachelor's degrees to start a doctorate. This was a very big jump", explained interviewee 5. For most researchers, the doctoral degree was the apex of their research careers. It was (and still is) a means of landing top administrative jobs. From this perspective, the old guard's reaction was predictable.

As a result, the criteria for assessing DSc dissertations became a lot more stringent, calling for at least three publications in international journals in addition to other requirements. Our interviews show that all of this led many postgraduate students to drop out of DSc degree programmes. Only a select few who chose research topics in the government's priority areas were awarded DSc degrees at the time.

Table 15.1 presents official data on the qualifications of academic staff at HEIs, which is available only for selected years. From 2013 to 2016, only around 100 individuals managed to get *doktor nauk* degrees in the whole country. Insofar as the SAC stopped conferring *kandidat nauk*

Table 15.1 Qualifications of academic staff at HEIs in 2013 and 2016–2019

	2013	2016	2017	2018	2019
Doktor nauk (A)	1314	1415	1666	2023	2201
Kandidat nauk and PhD (B)	7491	6451	6649	7050	7769
No advanced research degree (C)	12,893	15,436	17,103	17,224	16,867
Total (D)	21,698	23,302	25,418	26,297	26,837
Indicator of research capacity (E = [(A + B) / D] × 100)	40.6%	33.8%	32.7%	34.5%	37.2%

Source: MHSSE (2020)

degrees in 2013 and as the older generation of staff with *kandidat nauk* degrees also started retiring, the number of academics with *kandidat nauk* degrees fell by almost 1000 during this period (PhD degrees started to be awarded only in 2017). As a result, this official yet crude indicator of research capacity dropped from 40.6% in 2013 to 32.7% in 2017 (last row of Table 15.1).

After coming to power in 2016, President Mirziyoyev's government introduced a series of reforms in the HE sector (one of its policy priorities has been the rapid expansion of access to HE). Since doctoral degrees remain the key official indicator of research capacity, the new government sided with the old guard's argument in order to break the deadlock, reintroducing a two-level research degree system in 2017. Following a joint proposal by the Ministry of Higher and Secondary Specialised Education (MHSSE), the Academy of Sciences and the SAC, the government established a new two-level postgraduate system comprising a 'basic' doctorate (Doctor of Philosophy—PhD) and a 'research' doctorate (Doctor of Science—DSc) that came into effect in July 2017 (GU, 2017a).

Reforming academic degrees was just one of the steps taken towards boosting research capacity. Our interviewees noted that the government also increased academic salaries. By their estimates, salaries have grown by as much as a factor of 2.5 since late 2016. In addition, a presidential decree created financial incentives for PhD and DSc degree candidates by paying them stipends at the level of the basic salaries of apprentice researchers and senior research fellows, respectively (GU, 2017a). Our interviewees spoke favourably of this initiative. "The monthly stipend of doctoral students is about 3 million soum [approximately US$300]. In the context of Uzbekistan, this largely suffices", interviewee 2 said. These

incentives revived interest in academic jobs in general and doctoral studies in particular. According to interviewee 1,

> There were times when we struggled to attract applicants to our postgraduate programme. If we compare those times with the situation today, the difference is enormous. For example, the application deadline for our doctoral programme was a few days ago. Our admissions team worked until midnight to process applications. They were all tired; I was tired, too. Nevertheless, it makes you happy to see that interest is very high now.

Figure 15.1 shows recent data on the number of defended PhD and DSc dissertations since the 2017 change of rules. It shows, in particular, that, although the number of awarded DSc degrees remains fairly low, the number of awarded PhD degrees has increased fourfold within a very short period. Considering the strong restrictions on awarding of doctoral degrees between 2012 and 2017, this is clearly a positive development, at least in quantitative terms.

Furthermore, the new government began taking more active steps to reorganise the research and innovation system, viewing it as a vital factor of economic growth. The 2017–2021 Action Strategy aims to modernise the country's economy and views academic research as a catalyst for achieving this goal. It envisages developing the national research and

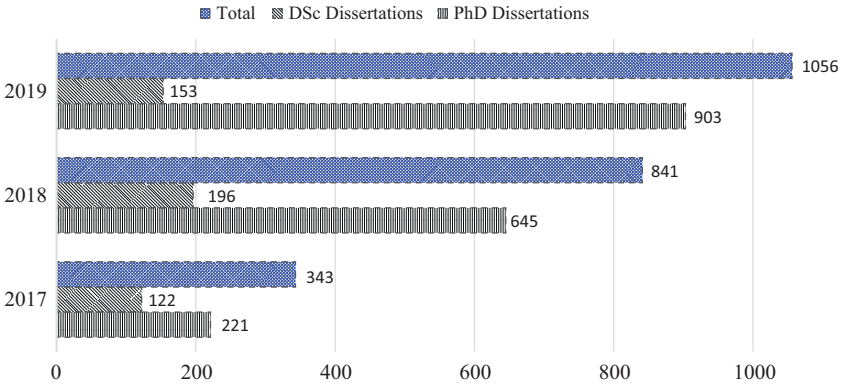

Fig. 15.1 Number of defended PhD and DSc dissertations, 2017–2019. (Source: MHSSE (2020))

innovation system by (i) creating experimental research laboratories, advanced technology centres and techno-parks managed by universities and research institutes of the Academy of Sciences, (ii) offering new incentive mechanisms to reward research and its applications, and (iii) changing the model of research funding (GU, 2017b).

Our interviews indicate that, from 1991 to 2006, research funding was allocated by sectoral ministries, which sought to meet their strategic needs. The largest share of funding went to the Academy of Sciences and its research institutes, which remain the main research producers in the country today, with the Academy of Sciences being the single largest employer of researchers. In 2021, it had a total staff of over 4700, of which over 2200 were researchers (Academy of Sciences of Uzbekistan, 2021). The share allocated to an individual HEI mostly depended on its number of postgraduate students, which in turn was determined by MHSSE. In 2006, a presidential decree allowed research teams from HEIs to submit additional research proposals and requests for funding to MHSSE and the Ministry of Finance (GU, 2006). Detailed official statistics on the amount of research funding are not publicly available. Some post-2017 regulatory documents, however, claim that only 0.5% of the basic and applied research projects funded by the government resulted in real-world applications (GU, 2017a, 2017c).

The 2017–2021 Action Strategy led to the adoption of several other new laws and policy documents. In particular, the Law "On Science and Scientific Activity" sets out the principles of a new competitive grant system of research funding. In keeping with the new law, the government transferred the responsibility for funding research and innovation from MHSSE and the Ministry of Finance to the Ministry of Innovative Development (MID) set up in November 2017 (GU, 2017c). The MID is responsible for announcing research funding competitions, collecting the applications, selecting the winners, and monitoring the implementation of the research projects. A broad community of researchers from both public and private HEIs and research centres, including the Academy of Sciences and its research institutes, can now apply for funding to the MID. Until 2016, government spending on research and development was fixed at 0.18% of the GDP, and, although the government plans to

increase this share to 0.50% of the GDP in 2020–2021 (Mamirova, 2019), official data on the implementation of this plan is not yet available.

Another important policy document is a 2019 presidential decree that establishes the key principles of development for the Uzbek HE System until 2030 (GU, 2019a). It contains a long list of targets the government would like to achieve by 2030, including increasing the HE gross enrolment rate to 50%, turning the HE sector into a "corruption free area", helping at least ten HEIs to make it into the top 1000 in world university rankings, turning the National University (NU) and Samarkand State University (SSU) into the country's flagship HEIs, helping NU and SSU to make it into the top 500 in world university rankings, and assisting national research outlets in being listed in leading international publication databases.

Thus, while the government started to introduce some HE reforms in the early 2010s, they were mostly haphazard in nature. The pace of reforms has accelerated since 2017, however. The government introduced more changes since 2017 than during the previous 26 years. Although the official regulatory documents still refer to "research capacity" in its traditional narrow sense, that is, as the percentage of research degree holders, recent reforms aim at building research capacity in a broader sense. For example, instituting a national university ranking and encouraging domestic HEIs through administrative nudging and financial incentives to make it into well-known international university rankings where research capacity plays an important role clearly indicate the current government's intentions to improve university research capacity.

Building Research Capacity at the Institutional Level

The government's recent efforts to boost research capacity at universities are clearly a step in the right direction. To start with, one of the key overarching factors contributing to the low research activities of Uzbek HEIs is the relative ineffectiveness of the existing organisational structure of research. In Uzbekistan, HEIs enjoy only a minimum degree of financial

autonomy; to all intents and purposes, it is the government that sets their research strategies. Uzbek HEIs, therefore, use a model that makes it virtually impossible to balance the research and teaching loads of staff members. For example, the annual workload of full-time academic staff at Uzbek HEIs is 1540 standard hours (MHSSE, 2015). Our interviews show that, although the model requires research to comprise 20% of the workload of associate professors, professors, and department heads and 15% of the workload of lecturers and senior lecturers, in practice contact teaching takes up almost the entire working time of academic staff members, leaving little time for research. In addition to contact teaching, academic staff members also spend considerable time on such duties as grading student assessments, supervising projects, pastoral care, mentoring, and improving curricula (MHSSE, 2015). According to our interviewees, many academic staff members try to compensate for low salaries with additional workloads, sometimes even doubling it.

As a result, senior administrators at HEIs do not emphasise research production. All of our interviewees described teaching and preparing specialists for the national economy as the main missions of HEIs; they mentioned research only when asked. In the context of Uzbekistan's economic transition (Ruziev, 2021), the presence and dominance of such a model in Uzbekistan can also be attributed to the serious funding problems faced by HEIs. This was confirmed by vice-rectors for research on several occasions during the interviews: *"teaching makes up most of the academic workload in practice"*, *"we cannot afford research-focused positions financially"*, *"the university budget is not ready to create research-focused positions"*.

Table 15.2 lists the government-imposed criteria used by HEIs for assessing the annual performance of academic staff. Since Uzbek HEIs are not formally divided into research-intensive and teaching-oriented

Table 15.2 Assessment criteria for the performance of university academic staff

Teaching activities	Research activities	Pastoral care	Contribution to the university's development	Other personal achievements	Total points
40	30	20	10	10	110

Sources: MHSSE (2015, 2018) and our interviews

institutions, in principle all academic staff members are expected to conduct some research.

Although research activities account for 27% of staff assessment, as shown in Table 15.2, this does not necessarily encourage participation in research, as the passing score is usually relatively low and does not require one to engage in research. In practice, hardly anyone fails the assessment. As interviewee 3 put it,

> *When we started assessing staff performance, the overall passing score was 33 points, which was then raised to 40 points. Now, all academic staff members have to score 50 points or above out of 110, which can come from any of the five criteria.*

While the academics we interviewed complained about heavy teaching workloads, vice-rectors for research who spearhead university research strategies pointed out that the government's crude measure of research capacity, which requires HEIs to hire and retain staff with doctoral degrees, gives such staff, especially those with DSc degrees, a lot of negotiating power. As interviewee 5 explained,

> *At western HEIs, senior managers can hold professors accountable for the research outputs they are expected to produce. Our professors have a lot of negotiating power and often feel safe in their positions even if they have not engaged in research in the recent past.*

While they received over two-thirds of their funding from tuition fees, HEIs were not allowed until recently to allocate these funds as they saw fit in any domain, including staff remuneration (Ruziev & Burkhanov, 2018). As a result, academic salaries remained generally low and failed to attract a sufficient number of talented individuals to pursue academic careers. Recently, however, the authorities have allowed HEIs to spend up to 30% of their revenues generated from tuition fees on incentives for members of academic staff, including financial rewards for research publications (GU, 2020). In practice, the amount of institutional rewards seems to vary from 0.2 to 3 times the monthly staff salaries, depending on the quality of journal publications. Moreover, as the current

government views research and innovation as a top priority (GU, 2017b, 2017c), it also started to offer significant additional monetary incentives for research publications. Our interviewees confirmed that the government has increased academic staff salaries by about 2.5 times since 2016. In 2019, the monthly starting take-home academic salary was about 3 million *soums* (around US $300), while the top salary given to professors with DScs was about 7 million *soums* (around US $700). In comparison, the official minimum monthly salary in 2019 was 634,880 *soums* (around $63.5) (GU, 2019b).

Nevertheless, the impact of the monetary incentive mechanisms introduced since late 2016 has been relatively small, as the total number of articles published in reputable international research journals only amounted to 2254 in 2017–2019 (MHSSE, 2020).[2] Both academic staff and vice-rectors for research at HEIs agree that this is mostly due to the policymakers' lack of understanding of the need to invest in tangible and intangible inputs of research. In particular, our interviewees highlighted the urgent need for longer-term investments in improving academics' language competencies, familiarity with contemporary applied research methods, and access to sophisticated statistical packages and other modern research tools.

Our interviews also show that financial incentives, pressure for quick publication results, and shortage of time and skills have encouraged unethical research practices and include a reliance on external companies that charge fees for assisting academics in placing their publications in journals. Due to a combination of these factors and as an unintended consequence of recent government policies, poor-quality papers published in junk or predatory "international" journals have proliferated. Interviewee 7 complained that *"since the introduction of the new policy for providing incentives for research publications, the quality of research papers has declined, as some academics have tried to publish more to get bonuses for publications"*. The government and HEIs have started to encourage publications in reputable international peer-reviewed journals only recently. Our interviews with vice-rectors show that Scopus and the Web of Science are most often used to measure the reputability of journal publications.

[2] MHSSE does not give a definition of "reputable" international journals. According to interviewees, the government usually considers journals listed in the Scopus database to be reputable.

Summary and Conclusions

Until the early 2010s, the HE sector was one of the least reformed areas in Uzbekistan. Years of neglect and underinvestment in HE eroded the physical infrastructure and human capital of HEIs. As the economy revived and growth accelerated in the 2000s, the government launched a series of action plans for improving the physical facilities and tangible assets of HEIs. Although the country's shift to a Bologna-style three-tier degree system was reinforced by the adoption of the NPPT framework in the mid-1990s, the Soviet two-tier *kandidat nauk* and *doktor nauk* model was abolished only in 2012. Ironically enough, this change temporarily brought the country's postgraduate training programmes to a halt. At the insistence of the academic old guard, policy-makers decided to revert to a two-level (PhD and DSc) doctoral programme in 2017. On the whole, research and research capacity building have not been the main priorities of HEIs for much of the past three decades.

The current Uzbek government that came to power in late 2016 seeks to maintain the high economic growth of the 2004–2016 period by transforming the country's commodity-based economy into a high-value-added economy. Recognising that university research can serve as a catalyst for spurring innovation and creating a more sophisticated economic system, the current government has carried out more fundamental reforms in the HE sector since late 2016 than during the previous 26 years. In particular, it started to increase staff salaries slowly but surely and instituted additional monetary incentives for research outputs, making academic careers an attractive prospect for a new generation of scholars. In addition, government spending on research and development has increased from 0.18% to 0.50% of the GDP, and a special ministry (Ministry of Innovative Development) has been set up to manage the new competitive research funding process. Recently, HEIs have received the permission to spend up to 30% of their revenues from private tuition fees on staff remuneration. All of these changes should help HEIs to

rebuild and improve their research capacities in the long run. Unfortunately, more detailed data on the implementation of these plans was not available at the time of this study.

At the same time, some key structural problems that prevent HEIs from planning and building their research capacities independently have not been addressed. For example, the Soviet-inherited organisational system of research, in which the Supreme Attestation Commission, the Academy of Sciences, and its associated research institutes play influential roles, has not been completely dismantled. Furthermore, the current national research model does not give HEIs enough freedom and flexibility to develop their own unique research strategies. Moreover, while the current government seems to appreciate the importance of investing in research to modernise its HE sector, the incentive mechanisms created so far are mostly geared at quick fixes and speedy outcomes. There are no robust and carefully designed long-term plans to improve research capacity in the broad sense, that is, to make long-term investments in people, processes, and research facilities and to link them to research outputs.

An important caveat is that the analysis presented in this study does not (and cannot) do justice to all the changes that have occurred over the past three decades, as we have only focused on key reforms, which were also highlighted by our interviewees. Although we tried to capture the relevant trends and issues as accurately as possible by conducting in-depth interviews with key stakeholders and reviewing relevant policy documents and available official statistics, a larger sample size stemming from the better availability of official statistics would improve the accuracy of some of our evidence and claims.

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16

Building Research Capacity at Universities: Imagining, Strategising, and Ordering

Maia Chankseliani, Igor Fedyukin, and Isak Frumin

Universities in the former Soviet countries remain to be seen by students, their families, and the wider public as, first and foremost, educational institutions. At the same time, selected universities frame their identity as research-active. While the idea of the organisational separation of education and research has proponents (Marginson, 2021), higher education literature recognises research as a core function of a university (Altbach,

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2013; Chankseliani, Qoraboyev, et al., 2021; Kwiek, 2012; Powell & Dusdal, 2017; Yang et al., 2021). There is a broad societal benefit of having research concentrated at universities—university education can be more engaging and intellectually stimulating for both students and academics. Research-intensive university can also offer more cutting edge education as research-active academics are likely to be on top of the latest developments in their fields. This understanding of the high value of university-based research has become more or less universally accepted globally.

In the context of the limited funding for research, universities and research institutes compete for the finite pot of research funding in the majority of the former Soviet countries. The dispersion of research funding to the two sectors leads to two consequences. First, it reduces the chance of concentrating research within the higher education sector where the research activity is likely to feed into teaching activity and produce broader public benefits. Second, it hinders the process of developing strong research universities. Thus, in the former Soviet countries with scarce funding for higher education and research, the distribution of significant amounts of research funding to institutions other than universities can have considerable implications for the sustainability of universities. In the long run, the splitting of resources may lead to mediocrity in both sectors.

The Soviet chapter in this volume described the declared relevance of research at Soviet higher education institutions which used to be rather homogeneous in terms of governance structures, funding, curricula, and approaches to teaching and learning. Yet, there were disparities in terms of the geographic concentration of research activity at Soviet higher education institutions. Selected urban centres in the Russian SFSR such as Moscow, Saint-Petersburg, Novosibirsk, as well as Kiev in the Ukraine SSR, had the largest concentrations of research capacity. The most important Soviet research projects were undertaken in the Russian SFSR. Russia subsequently became the legal heir of the Soviet Union, inheriting a large portion of the Soviet scientific infrastructure (Schneider, 2013). Russia and Ukraine, together with Lithuania, Estonia, Georgia, Latvia, Armenia, and Azerbaijan, had some universities prior to the Soviet era. Universities in all other countries were set up in the Soviet period.

Following the collapse of the Soviet Union, these countries explored the possibilities of setting up new governance structures and practices of research and higher education in order to establish the so-called knowledge economies. This aspiration—the myth, as Meyer et al. (2007) refer to it—has been common to most countries in the world (Verger et al., 2018). The research university as a new institutional model for this region has been part of these new national structures and discourses which emphasise global norms, global reputation, and global competitiveness (Chankseliani & Silova, 2018). Global is a condition in which individuals, institutions, and countries aspire to act. Higher education 'international status anxiety', a term coined by Oleksiyenko et al. (2018), does not affect universities, governments, and academics in all former Soviet countries to the same extent. The Russian and Kazakhstani governments are highly ambitious 'status seekers'—a term borrowed from Oleksiyenko et al. (2018)—as they invest significant resources to put in place policies directed at the expansion of research capacity of their universities. Governments in other countries seem to be either mildly preoccupied with university-based research or inclined to encourage the private actors and individual universities to bear the burden of developing research capacity. Whatever path the governments take, competition is at the heart of all contemporary measures of encouraging research at universities.

As part of national efforts to develop research universities, the former Soviet countries have introduced macro-level reforms of the organisational integration of higher education and research that concentrated in Academics of Sciences and state-owned applied science institutes. These countries also initiated quasi-market research policies that have been implemented at selected universities. Such policies include but are not limited to the introduction of competitive, performance-based mechanisms to distribute the research funding; assessing research outputs on the basis of quantifiable indicators; determining academic pay and incentives on the basis of their research productivity. Selected universities that work towards building their research capacity, in line with the entire higher education systems, operate within the contexts of nation-states that, in the words of Clark Kerr, 'have designs on them' (1994, p. 6). Balancing the global aspirations with the interests of nation-(re)building

have not always been congruent and led to a considerable variation in the higher education and research landscapes. Azerbaijan, Armenia, Kyrgyzstan, and Uzbekistan are good examples of countries which have global aspirations and where the national policies pertaining to the research governance and the development of research capacity hardly reflect those aspirations.

This volume has described a diversity of trajectories that the post-Soviet countries have taken in developing university research capacity. This diversity is reflective of the ways in which each of these countries has approached reforms in higher education and research, and links between these and national development agendas, as part of natural experiments of post-Soviet transformations. The diversity is also reflective of variations in higher education traditions as well as the ways in which different external and internal stakeholders shaped the development of university research capacity, stakeholders' relative political weights, and institutional frameworks in which universities and their stakeholders operated to resist changes or to steer reforms in their preferred directions.

Organisational Integration of Higher Education and Research

The case studies presented in this volume show that most former Soviet countries have been supporting the enhancement of the research mission of universities. This has been done through the organisational integration of higher education and research, albeit to a varying degree. Selected countries moved away from the Soviet model of organising research by abolishing their national academies of science and merging research institutes with universities. The majority of the former Soviet countries have promoted university research in competition with the academy and have not implemented drastic policies directed at the institutional integration of higher education and research.

Estonia, Latvia, Lithuania, Georgia, and Kazakhstan are in the first group of countries where academies transformed into learned societies and institutes integrated with universities or became independent. The Estonian, Latvian, and Lithuanian Academies of Sciences were reformed

in the early 1990s. In Kazakhstan and Georgia similar changes happened in the early to mid-2000s. Academies in these countries turned into collective bodies of academics that perform one or more of the following functions: promote research, elect research professors, support early career scholars, offer advice and recognition, and prepare annual reports on the development of research nationally. Academies have lost their research governance and financing powers. Instead, universities have developed the capacity to undertake most research and produce the bulk of scholarly output. This process of institutional reorganisation was driven by the goal of establishing knowledge economies through research-based knowledge production and increasing global competitiveness by connecting research and teaching at higher education institutions (Tamtik & Sabzalieva, 2018). The drivers of these reforms might have been different in these countries. In the Baltic States, there existed a strong internal drive from academic communities to reorganise higher education and research systems. These countries received expert support from neighbouring Nordic countries in evaluating their research systems. In the 1990s, the Danish research councils evaluated the research system in Latvia, the Swedish research councils evaluated the research system in Estonia, and the Norwegian research council evaluated the research system in Lithuania (Norwegian Research Council, 1996). These evaluations led to the establishment of research council structures in the Baltic countries and legislative changes that ended the organisational separation of higher education and research. The chapters on Lithuania and Latvia offer insights into these processes. In Georgia and Kazakhstan, the reforms of the organisational integration were part of the strong modernisation agendas of respective governments who sought international legitimation of their reforms.

All other post-Soviet countries retain powerful structures of academies: Armenia, Azerbaijan, Belarus, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan, and Ukraine. For example, the National Academy of Sciences of Ukraine (NASU) has been the major actor in the national research system. In 2018, the NASU went through an external evaluation which resulted in shutting down a number of research departments. An external reviewer described the academy as outdated and suggested that 'the academy's competitive labs should be merged with Ukrainian universities to create European-style research universities and

to link research and teaching' (Schiermeier, 2019, p. 163). To date, the NASU enjoys a strong political position and reports to the Cabinet of Ministers directly. Universities in Ukraine are under the Ministry of Education and Science. The status quo is slightly different in neighbouring Moldova where the Academy of Sciences is less powerful and there are ongoing debates about shifting the research funding from the Academy to universities. Kyrgyzstan is another country which has witnessed discussions between two opposing camps regarding the organisation of research. The working group that was set up to radically restructure the National Academy of Sciences in Kyrgyzstan was not successful because of the overrepresentation of conservative scholars who opposed changes to the Academy model. It is becoming increasingly possible that the Turkmenistan Academy of Sciences may dissolve altogether in the next few years. In 2019, gradual funding cuts were announced and a number of research institutes were merged with universities (Eurasianet, 2019). In Russia, the Academy of Sciences was subjected to constant attacks by policy-makers, who tended to favour developing universities as hubs of research, especially in the 2000s. As described in the Russian case study, policy-makers considered the Academy structure as highly inefficient but difficult to transform, unlike universities which have been seen as easier to manage, and more keen to follow the market and industry needs in research. The Academy has lost some of its autonomy and operational control over research institutes, yet these have not been integrated into higher education institutions and the Academy itself remains a major player in terms of evaluating and planning the directions of research.

One hypothetical reason for maintaining the research institute sector in these countries could be the avoidance of the Anglo-American multiversity model where research is the driving force of reputation and funding and the educational function is, therefore, side-lined. There is no evidence that in any of these countries this is the reason for keeping the organisational separation. On the contrary, all of these countries show the signs of aspiring to develop research universities, following the Anglo-American multiversity model. Selected universities use global rankings to formulate their aspirations and research productivity determines universities' standing in global rankings. Yet, the strategies of achieving this, especially in the context of keeping the research institute sector alive, are not clear.

There are significant differences between these two groups of countries—the radical reformers and others—when it comes to the ways in which doctoral training is organised. Doctoral training is a focal domain where the education and research missions of universities intersect most vividly. Globally competitive research universities in all parts of the world are not only sites of research but also producers of researchers. The Soviet model of doctoral training went through various degrees of transformation in a number of these countries. The Baltic States were the champions of full transformation to Western-style doctoral training in the 1990s. Georgia and Kazakhstan have also transformed their doctoral training systems; in these countries universities award the highest academic degree. Moreover, Kazakhstan introduced very high standards for doctoral dissertations, requiring one foreign academic as co-supervisor. In the rest of the countries, there are some signs of transformation, with the doctoral education being in a limbo with a mixture of the Soviet and Western model attributes, such as the introduction of the Western PhD but retaining the Candidate of Sciences degree; higher attestation commissions still in place and universities not in the position to independently award doctoral degrees. Most countries also retain the so-called doktor nauk degree which requires the second dissertation. There is no evidence that offering this second degree supports the development of research capacity. The fact that doctoral training is not under the full purview of universities in most former Soviet countries is a serious detriment to the development of university research capacity.

Funding for Research

The evidence on public funding for R&D is a good illustration of how declared global aspirations are not aligned with material manifestations of those aspirations. The Gross Domestic Expenditure on R&D (GERD)[1] ranges between 0.10% and 0.13% of GDP in Tajikistan, Kyrgyzstan, Kazakhstan, and Uzbekistan (Table 16.1). In contrast, Belarus, Latvia,

[1] Gross domestic expenditure on R&D (GERD) is total intramural expenditure on R&D performed in the national territory during a specific reference period (OECD, 2015). Intramural R&D expenditures are defined as all current and gross fixed capital expenditures for R&D, irrespective of the source of funds (UIS, 2020b).

Table 16.1 Key indicators pertaining to research funding

	GERD as % of GDP (2018)	GERD per capita in current PPP$ (2018)	GERD per researcher, head count (in '000 current PPP$) (2017–2018)	GDP per capita in current US$ (2018–2019)
Armenia	0.19%	$20	$17	$4623
Azerbaijan	0.18%	$33	$23	$4794
Belarus	0.61%	$121	$65	$6663
Estonia	1.43%	$504	$77	$23,660
Georgia	0.30%	$32	$12	$4769
Kazakhstan	0.12%	$34	$36	$9731
Kyrgyzstan	0.11%	$4	$8	$1309
Latvia	0.63%	$193	$37	$17,836
Lithuania	0.94%	$333	$45	$19,455
Moldova	0.25%	$19	$22	$4499
Russia	0.99%	$275	$115	$11,585
Tajikistan	0.10%	$3	$11	$871
Turkmenistan	No data	No data	No data	$6967
Ukraine	0.47%	$44	$32	$3659
Uzbekistan	0.13%	$9	$9	$1725

Sources: Own calculations using the data from UIS (2018) and World Bank (2019, 2020)

Lithuania, and Russia allocate between 0.61% and 0.99% to R&D. Three countries in the South Caucasus, Moldova, and Ukraine spend between 0.18% and 0.47% of their GDP on R&D. Estonia spends the largest proportion of its GDP—1.43%—on R&D. Compare this with the Soviet Union's spending on science which was 6% of gross domestic income (USSR, 1988).

These indicators compare unfavourably with Israel and South Korea, each spending almost 5% of their GDP on R&D, as well as Sweden, Japan, Austria, Germany, and Denmark, each spending around 3% of their GDP on R&D. Considering the substantial differences in post-Soviet countries' GDP per capita and population numbers, the variation in GERD as a percentage of GDP translates into vast differences in the GERD per capita (Table 16.1).[2] Tajikistan, Kyrgyzstan, and Uzbekistan spend $3 to $9 per capita on R&D. In Moldova, Armenia, Georgia,

[2] The UNESCO Institute of Statistics defines GERD per capita as the "total intramural expenditure on R&D performed during a specific reference period per inhabitant" (UIS, 2020a).

Azerbaijan, Kazakhstan, and Ukraine, the GERD per capita ranges between $19 and $44. Russia ($275) spends more than twice as much as Belarus ($121). Finally, the three Baltic States differ significantly in their per capita investment in R&D, with Latvia spending $193, Lithuania $333, and Estonia $504 (Chankseliani, Lovakov, et al., 2021).

Considering the differences in the institutional integration of higher education and research in these countries, there are large variations in the proportion of GERD performed by the higher education sector (Fig. 16.1). Georgia, Latvia, Estonia, and Lithuania have relatively larger proportions of GERD performed by higher education institutions. In other countries (including Kazakhstan), the higher education sector remains relatively insignificant while the government and the business enterprise perform the bulk of R&D. As the case studies in this volume demonstrate, the countries with relatively larger shares of the higher education sector in R&D expenditure have successfully overhauled their organisational structures of higher education and research (Fig. 16.1).

The GERD performed by higher education is an important indicator as it gives an idea how research-active the university sectors are in these countries. This indicator has also been positively linked with productivity growth in the OECD country context. In other words, it has been shown that the OECD countries where universities perform a higher proportion

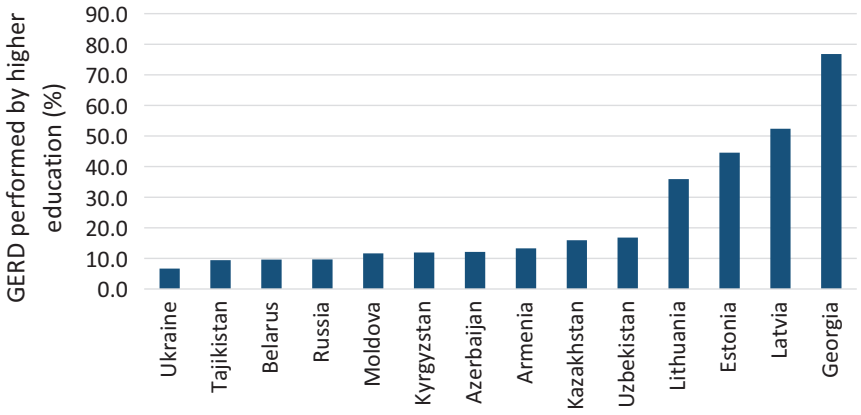

Fig. 16.1 GERD performed by higher education (%), by country. (Source: own calculations using the data from UIS (2018))

of the GERD tend to achieve higher rates of productivity growth overall (Eid, 2012). While this volume assumes that there are multiple societal benefits of research-intensive universities, we recognise that the economic development argument tends to be most influential when it comes to resource-allocation decisions.

The analysis of the share of public funding in overall R&D expenditure shows that in the contexts where higher education and research are organisationally integrated, lower shares of the R&D funding tend to come from public sources. More than three-quarters of the R&D funding comes from the government in Tajikistan, Kyrgyzstan, and Moldova. In the next group of countries—Ukraine, Uzbekistan, Russia, Armenia, and Azerbaijan—46% to 68% of the overall R&D expenditure is covered by their respective governments. Finally, the government contributes only 36% to 44% to the total R&D expenditure in Lithuania, Estonia, Belarus, Georgia, Latvia, and Kazakhstan (UIS, 2018). This finding could potentially indicate that research institutes within the Academies of Science are less successful in obtaining research funding from non-public sources than universities. Further research and analysis is required in this area.

The availability and distribution of funding for R&D have been key themes emerging from case study interviews with academics, administrators, and policy-makers. The former Soviet countries have put in place different policies for the distribution of public funding for research, with a prevailing assumption that it is the applied research that is valuable for society. There are two broad observations that emerge in relation to the expectations from university-based research and the distribution of research funding. First, a number of countries in the region have committed considerable public funding to the so-called strategic initiatives under the umbrella of science and technology parks and have discursively and financially supported an orientation on innovation, understood largely as technological innovation. It is assumed that technology-led innovation often generates productivity gains; this happens either through technology replacing labour or through technology increasing the hourly productivity of labour. Governments supporting these technology parks hoped that such spaces would directly result in more spinoffs and start-ups, leading to more innovation. Such spaces might also

have the potential to make innovation smoother by improving the flow of knowledge and technology. Examples of such initiatives include Lomonosov Moscow State University Science Park, Latvia Technology Park, Science and Technology Park of Belarusian National Technical University 'Polytechnic', Batumi Shota Rustaveli State University Technology Park, Science and Technology Park in Tashkent, and Al-Farabi Kazakh National University Science Park, among others. These examples serve as one demonstration of a general assumption in policy circles that universities should drive innovation. In an interview with *Times Higher Education*, a Russian-British scientist, Nobel Prize-winner Sir Konstantin Novoselov argues that governments all over the world look to higher education for technology transfer out of 'desperation'. He explains that contemporary universities are fundamentally incapable of doing this. 'If you want to be successful on the patent landscape in any area—material science, computer engineering, anything—you need a package of maybe 10, 20, 100 patents. You cannot even think about financing this from the university', he explains (Bothwell, 2019). Globally, this tendency is closely aligned with the aspiration to build knowledge economies which rely on the 'formation of knowledge-intensive manpower, applied research and knowledge transfer' (Verger et al., 2018).

The second observation regarding the public funding allocation for research is that most former Soviet countries now operate competitive national schemes for research project-based funding. A number of countries, such as the Baltic States, Georgia, Ukraine, Moldova, and Russia, have set up research funding agencies, modelled on Western quasi-public agencies which are intermediaries between government and research organisations. National funding agencies are tasked with administering competitive schemes for project-based funding. While such schemes aim to distribute public funding based on the excellence of the proposal, there is a risk that project-based funding can lead to a serious underfunding of basic research. There seems to be very limited recognition that basic research, funded via block grants or research council-type appropriations, can eventually lead to tangible benefits such as specific industrial applications, innovation, and ultimate economic growth.

A number of universities across the region have competitive research funding schemes in place and operate institutional grants programmes

for encouraging research activity. Some universities also offer financial incentives to academic and research staff to recognise and encourage research productivity. Financial incentives often take a form of end-of-year bonuses which are determined by research productivity (e.g. Azerbaijan State University of Economics pays twice the amount of salary to the top ten most-cited scholars; in selected Kazakhstani universities bonuses are paid based on academics' H-index); financial incentives per publication (e.g. the University of Latvia pays a reward of 1000 Euros per Q1 or Q2 international publication. Similar incentives are in place at selected universities in Russia and Uzbekistan); and various competitions with monetary prizes for winners (e.g. Ilia State University's Pascal Award for Early Career Academics who publish a single-authored paper in an internationally peer-reviewed, Thomson Reuters journal). It has been argued that financial incentives are likely to reinforce a managerial culture, encourage performative objectification of academics, and weaken their agency (Xu et al., 2021). At the same time, a recently conducted meta-analysis of global evidence shows that financial incentives help performance, especially in interesting tasks. However, the incentives–performance relationship is less positive for performance measured as quality, especially in interesting tasks (Kim et al., 2021).

The financial incentive schemes, institutional research grants programmes, and other initiatives to encourage research are often coordinated at the institutional level. Therefore, academics within the same country may have access to very different resources for research, depending on their institutional affiliation. The Russian case study, for example, clearly describes such institutional hierarchies in the largest higher education and research system in the region. There is some evidence offered in other case studies to argue that the distribution of research capacity within each country is likely to be unequal. Similar to trends in other parts of the world, in the former Soviet countries there appear to be singular institutions with a concentration of research capacity and research funding. While there are benefits to such an approach, it perpetuates an understanding of research as a high-end technical and/or laboratory-based activity rather than as a capacity with democratic potential. We will return to this idea at the end of this chapter.

Global Visibility of Universities

The post-Soviet countries chose different paths in terms of the organisational integration of higher education and research. There exist research universities in the group of radical reformers (Estonia, Latvia, Lithuania, Georgia, and Kazakhstani) as well as other countries where research institutes have not been merged with universities. We have examined the 2021 rankings of global universities from Times Higher Education (THE) and Quacquarelli Symonds (QS) to observe that all countries from the group of radical reformers have between one and four universities included in these global rankings. Kazakhstan has the largest number of research universities (three in THE and 10 in QS) included in the rankings. From the rest of the countries, only universities from Russia, Ukraine, and Belarus appear in the global rankings. More specifically, Russia has the largest number of universities (48 in THE and 28 in QS) included in the rankings, followed by Ukraine (9 in THE and 6 in QS), and Belarus (1 in THE and 2 in QS). The majority of countries that retain the powerful structures of academies, such as Armenia, Azerbaijan, Kyrgyzstan, Moldova, Tajikistan, and Uzbekistan, do not have a single university included in these rankings.

The divergent paths that countries have taken in terms of the organisational separation of higher education and research is also reflected in the proportion of globally visible research produced by university-based authors. A recent bibliometric analysis shows that in a number of post-Soviet countries, universities have become key producers of global knowledge. In Georgia, Kazakhstan, Estonia, Lithuania, and Latvia, more than 80% of all publications included in the Web of Science (WoS) database have a university-based author. In Russia, Belarus, Ukraine, and Kyrgyzstan more than 55% of all Web of Science (WoS) publications have a university-based author. In contrast, only 36% to 47% of publications from Uzbekistan, Moldova, Azerbaijan, and Tajikistan are authored by university-based academics. Armenia has the lowest proportion of publications (36%) with at least one university-based author (Lovakov, Chankseliani, et al., 2022). Very large proportions of these papers are internationally co-authored.

Interviews conducted for the purposes of the case studies demonstrate that international research collaborations have contributed significantly to the development of selected universities' research capacity. A recently published bibliometric analysis confirms that these countries have been actively engaged in international collaborations and that there is a very high proportion of internationally collaborative research that emerges from this region (Chankseliani, Lovakov, et al., 2021). It has been shown that in 1993–2019, every post-Soviet country had a higher proportion of internationally co-authored publications than the world average of 20%. Three in ten publications produced by researchers from this region were internationally co-authored, with significant country-level variations observed. Turkmenistan, Kyrgyzstan, Georgia, and Moldova have about seven in ten publications co-authored internationally. These are followed by Kazakhstan, Latvia, Tajikistan, Armenia, and Estonia, with about six in ten internationally co-authored publications. Russia has the lowest proportion of internationally co-authored publications—less than one in three—but still above the world average of one in five (Chankseliani, Lovakov, et al., 2021). Thus, while the aggregate evidence on the international funding is not available, it is clear that international funding supplements national funding for R&D. The lifting of the 'iron curtain' led to the overall increase in international contacts in education and research, with more students and academics from the region seeking mobility opportunities, undertaking international research projects, and engaging in knowledge exchanges with colleagues worldwide. These international engagements appear to be positively influencing the research motivation, expertise, and opportunities for university-based academics, as well as the visibility of universities.

Deficit and Colonial Lenses

Many of the case studies included in this volume adopt a deficit lens to investigate the barriers to the development of university research capacity at three levels—individual, institutional, and systemic. Based on the analysis of the case study evidence, the insider knowledge, and the existing literature, we have identified a number of barriers to the development

of university research capacity across the region. While these do not pertain to each and every country, they do offer a broad indication. At the individual level, the following barriers have been identified: limited time to dedicate to research; concerns about job security; poor remuneration; scarcity of research funding; bureaucracy associated with funded research; and limited knowledge of English. At the organisational level, we note the following barriers: a lack of institutional strategy and action plan for supporting the development of research capacity; one-man management, that is, top-down leadership culture; outdated or insufficient infrastructure; limited allocations of funding for research; teaching and research formalised as two distinctly different responsibilities; precarious contracts of employment; administrativisation of universities; lack of a critical mass of academics at different career stages who work in the same area and are engaged in research; attraction and retention of academics engaged in research; limited or no availability of sabbatical leave with pay; unequal availability of time for research based on discipline, with less time available for research in disciplines popular among students; insufficient practices of mentoring; and over-preoccupation with research metrics. Last but not least, at the systemic level, the barriers include a lack of national strategy and action plan for supporting the development of research universities; underdeveloped institutional autonomy; doctoral training being left in limbo between the Soviet and Western models; frequent changes in political landscape and priorities; unequal institutional distribution of research capacity; scarcity of funding for research; insufficient consideration given to research ethics and academic integrity; limited recognition of research diversity when it comes to incentives systems. This may not be an exhaustive list. Similar barriers have been identified in other global settings (Malekzadeh et al., 2020; Sawyerr, 2004; Zink, 2017). While there is a great heterogeneity by country, by institution, and at the level of individual academics, these barriers appear to have a strong negative influence on the development of research motivation, expertise, and opportunities in the region.

Some of the case studies included in the volume describe the barriers in relation to modern, Western, global, European, or Anglo-American norms and standards of university-based research. Funding and knowledge flows between the former Soviet countries and Western countries

have been influential in supporting higher education and research in this region. The idea of westernisation is in itself controversial; it can be linked with the aspirations for full academic freedom, institutional autonomy, and academic integrity. It can also be linked with increased inequalities, individualism, cultural imperialism, and the disappearance of indigenous traditions. The idea of modernisation which is often equated with westernisation has been generally viewed positively in the region. At the same time, there exists a body of critical scholarship on the westernisation, Americanisation, modernisation, and Europeanisation of former Soviet countries (Amsler, 2007; Bruno, 1998; Chankseliani, 2017; Mignolo, 2006, 2011, 2012). This scholarship explores how the former Soviet countries 'fell prey to Eurocentrism's magic and its belief in the myth of scientific knowledge over subjectivity' (Mignolo, 2006, p. 484). This critical discourse fits with the discourse on the Western Enlightenment principles of modernity and progress being underpinned by the logic of coloniality, domination, and development (Mignolo, 2012). Western influences form one part of the multi-layered coloniality framework proposed by Chankseliani (2017) for the analysis of the academic knowledge generation in former Soviet countries. This framework brings together the Western and Russo-Soviet influences in higher education and research pertaining to this region. The multi-layered coloniality framework can be suitably used to interpret most of the case studies included in this volume which show that the Soviet influences are still alive and well in a number of countries. The strongest remnant is the organisation of research through the Soviet-style Academy of Science model. At the same time, most case studies indicate how research in these countries is in deficit of financial, human, and policy resources. These deficits are described in relation to Western standards and norms; sometimes with a hint of naïve idealisation. To a certain extent, there is an impression that some of these countries share a predicament of 'self-colonization' due to the overemphasis on Western standards and norms. The reader may have an impression that the development of university-based research is a struggle between the Soviet and the Western traditions and has been largely viewed in rather pessimistic terms.

One theme that received relatively little attention in case studies was research ethics. When asked about ethics, most respondents spoke about

plagiarism and academic integrity and few referred to the ethical conduct of research involving human participants. Considerable variation was detected by country. In Armenia, participants reported the existence of 'unwritten rules' which are not institutionalised. In Lithuania, ethics committees seem to operate in all universities and in Kazakhstan a new ethics code was adopted in 2020 to regulate this domain of research activity. There were some extreme cases relating to ethics and research which involved corruption allegations. In Tajikistan, government officials allegedly delay approvals of externally funded/international research projects in order to receive a share of the funding. Overall, there is an impression, which includes the experiences of preparing case studies for this volume,[3] that strict ethical guidelines may be seen as 'Western' impositions guiding research that is funded from international sources and/or targets international peer-reviewed publications.

Deparochialising the Idea of Research

Most chapters in this volume delineate the educational and research functions of universities. This reflects the reality in former Soviet countries where teaching and research contracts are clearly demarcated. Case studies refer to designated workload, funding and human resource allocations for each of these functions. This is, however, not an exclusive characteristic of higher education in this region. In many other parts of the world, staff contracts, funding, and incentives are focused explicitly on one of these functions.

Recognising that top universities globally accumulate vast social power with research being the principle source of their reputation and funding, Marginson (2021) develops an argument in support of the organisational separation of higher education and research. The Anglo-American multiversity model of the comprehensive university, Marginson argues, needs to be disrupted so that education becomes the main source of funding and reputation for top universities. The research function can be

[3] The editors had to invite new authors for case studies where originally selected authors did not agree to follow ethics guidelines.

separated to research institutes as it is in Germany or France. Marginson (2021) adds that the latter model does not prevent research scientists from keeping links with universities, for instance by delivering guest lectures.

We argue that the genuine development of research capacity and research-intensive universities requires a vision of the unity of educational and research functions. Let us explain this by using Arjun Appadurai's thought from *The Future as Cultural Fact: Essays on the Global Condition* (2013). Appadurai explains that research has been seen as a high-end technical and/or laboratory-based activity rather than as a capacity with democratic potential. All humans are, to a certain extent, researchers as we need to be able to obtain the 'knowledge of the world', assess the trustworthiness of information, and organise and analyse information. Think of a journalist, hotel manager, tour guide, or designer. Research is part of our everyday lives. Therefore, it is important, argues Appadurai, to 'deparochialize the idea of research and make it more widely available' to people, irrespective of their interests and aspirations (Appadurai, 2013, pp. 282–283). Thus, research needs to be understood not only as the production of original knowledge but also as 'the capacity to systematically increase the horizons of one's current knowledge, in relation to some task, goal, or aspiration' (Appadurai, 2013, pp. 282–283). Research can and should be part of the educational function of a university as universities need to develop individuals' aspiration to know more, and unless individuals have systematic tools to help them learn more about the world, 'aspiration degenerates into fantasy or despair' (Appadurai, 2013, pp. 282–283). Moreover, capacity to research is essential for taking part in democratic society, especially in the context of rapid global changes, flows of information and technological developments (Appadurai, 2013, pp. 282–283). The evidence presented in the case studies that are included in this volume does not demonstrate that there exists a vision of the unity of the research and educational missions of universities in these countries and that much consideration has been given to the democratic potential of developing research capacity at universities.

We offered the following definition of research capacity in the introduction of this volume: university research capacity is conceived as the most and best research that could be undertaken now if there were the

will and the necessary resources for it to be done. Research capacity is dependent on the presence of adequate expertise, motivation, and opportunity (McIntyre & McIntyre, 2003; Murray et al., 2009). This definition builds on the economic and sociological assumptions of university research capacity and broadly reflects the understanding of research capacity in the region. Building on this definition, higher education institutions can develop into research universities by creating environments with sufficient research expertise, motivation, and opportunities for academics and students. We fully share this view. At the same time, we recognise that there is a large void between where most aspiring research universities stand and the ideal institutional form they would like to achieve. Therefore, at the end of this concluding chapter, we would like to invite our readers to try to expand this understanding by thinking about research capacity as embedded within a broader notion of research culture. Think about research culture as an ecosystem that nurtures intellectual curiosity, creativity, academic freedom, academic integrity and ethical values, as well as collective identity.

Research expertise, motivation, and opportunities can flourish only in the conditions of a well-developed research culture. Thinking about research culture here is informed by Arjun Appadurai's work on the capacity to aspire (Appadurai, 2013). Perhaps universities need to nurture what Appadurai (2013) refers to as 'collective aspiration'/'collective horizon' for establishing a well-developed research culture. This can be accomplished only through the empowerment of academics as academics facing all the individual, organisational, and systemic barriers described earlier can be ambivalent and sometimes disengaged. This ambivalence can be overcome through the processes of recognition and redistribution, and through the encouragement of critical collective debates about the development of research culture. Academics as communities need to find ways of voicing their thoughts and identifying 'locally plausible ways' (Appadurai, 2013, p. 186) of making changes. Appadurai (2013) treats voice as cultural capacity. Collective discussions and decision-making fits with the ideas of self-governance and institutional autonomy which remain somewhat unattended across aspiring research universities in this region. The nurturing of a research culture within universities by academics can also lead to the broader ideal of the democratisation of research

and the recognition that research and education are two intertwined missions of universities.

The development of research capacity within a well-developed research culture is a process that requires patience and a long-term approach. It also requires locally negotiated and agreed goals rather than top-down orders, regulations, and inspections. In other words, the foundation of this process is trust in academics and in universities. Trust brings freedom, the freedom for academics and universities to decide on their own paths of developing research culture as part of their countries' broader development aspirations.

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Sona Balasanyan

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The original version of this chapter was incorrectly having the author affiliation as S. Balasanyan (✉) Caucasus Research Resource Centre (CRRC)-Armenia Foundation, Armenia, Azerbaijan.

The correct affiliation is **"Caucasus Research Resource Center (CRRC)-Armenia Foundation, Armenia"**.

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