What does this mean for the future of world-class universities? Strikingly, while money is an important ingredient, the success of universities does not rest solely upon it. Certainly, money does not seem to have much of a material short-run effect on ARWU rankings: if it did, Australia's universities would be doing much worse than they are. Clearly, institutional strategy, hiring practices, and the quality of university management matter as well.

But it is equally plain that money makes a lot of other challenges in higher education much easier. If present trends continue, it seems likely that private American universities will keep their positions at the top of international rankings tables and perhaps even widen their lead. Top American public flagships, along with British and Swiss universities, will find it easier to cope than most.

Elsewhere, the problem seems to be in part that new money often only follows new students. That is, universities who want more money to pursue a more research-intensive path must first admit more students, mainly undergraduate ones. Governments may think they are offering universities a good bargain this way, but frankly this is not always helpful. Much of the new money simply gets spent educating the students themselves and there is very little

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The alternative to raising more money in order to pursue world-class university status is to make universities more efficient and find more "margins" within the institutions that can be reinvested in research. It seems clear that Australian ARWU-universities have been doing exactly this for some years now, and governments around the world may want to look at the ways in which institutions there have found success. Given the overall fiscal difficulty many governments are currently experiencing, this may be a more productive way for institutions to continue pushing for world-class status than waiting for further infusions of public money.

As Ernest Rutherford is reputed to have once said: "Gentlemen, we have run out of money. It is time to start thinking."

Two Central Obstacles to Russian Academic Excellence

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F or the past several years, the Russian government has been investing significant funds to upgrade 15 of the best universities to compete with the world's best research universities and join the top ranks of the global rankings as part of the Russian Academic Excellence Project, known as the 5-100 Project. At a recent meeting in Moscow, the top seven of these universities were each awarded 0.9 billion rubles (about US\$15 million) for 2016, and the others somewhat less. Most of the universities have made significant progress since the inception of this Excellence Initiative in 2013—reforming governance, streamlining administration, stimulating interdisciplinary studies, and especially improving research output.

Although Russia has a distinguished academic tradition, many talented academics, and government backing to join the top ranks of global research universities, there are two fundamental structural barriers to success—created by the traditional separation of "academic science" and "medical research" from the universities and placing them in specialized academies. There are many other challenges as well—but these two structural realities are deeply embedded in the Russian academic structure, and without changing them it will be impossible for Russian universities to be fully internationally competitive.

Key Structural Challenges

The first and most fundamental impediment is the "academy of science" system that traditionally has located research in a large number of separate institutes belonging to the Russian Academy of Sciences. Universities have traditionally been tasked with teaching and have had only modest research budgets: public appropriations to universities for research differ from what is allocated to the academies by a factor of three. The other basic structural impediment is the separation of responsibility for medical education and research from the universities. The ministry of health of the Russian Federation (not the ministry of education and science, which oversees the majority of universities) controls both the health care system, specialized universities that train medical personnel, and most medical-related research.

Change, however, may be on the way. Dmitri Livanov, the minister for education and science, has drafted a new federal law that will replace existing regulations, emphasizing the role of university-based science and R&D—in relation to the role of the Russian Academic Sciences—and reducing the bureaucracy governing science policy and implementation, currently a very serious problem for the higher education sector. Minister Livanov has, with some success, attempted reforms that would limit the power of the Academy of Science. No doubt this new initiative will meet with opposition from entrenched interests.

THE ACADEMY SYSTEM

Although the Russian Academy of Science was founded by Peter the Great in 1724, it was shaped into its current form after the Russian Revolution. Today, the so-called system of academy institutes, which after the reform of 2013 is now supervised by the Federal Agency of Scientific Organizations of the Russian Federation, has around 700 institutes and research centers and 51,000 scientific workers. During Soviet times, these institutes focused on specific areas of knowledge, and there was little opportunity for interdisciplinary research. The most talented researchers were hired by the academies, where they enjoyed higher salaries and few responsibilities beyond research. They generally were not required to write applications for competitive research grants like their colleagues in other countries or their counterparts in Russian universities, since funds were allocated to them automatically by the government. The institutes had few teaching responsibilities and few links to the universities, although many sponsored research-only doctoral degree programs. This basic structure continues to the present.

In the aftermath of the collapse of the Soviet Union, the academies, as well as the universities, were starved of funds, and standards of research in some fields declined significantly—the social sciences and humanities, which were never very strong and were dominated by Soviet ideology, suffered most, while standards were better in the hard sciences. Many scientists and scholars (up to 70,000 during the decade of the 1990s, according to some estimates) left the country. Others went into other areas such as education or business. Infrastructure fell into disrepair, or in some cases was rented out to businesses. Buttressed by their high prestige and legal independence, there was little incentive for the academy institutes to change, and many commentators have pointed to serious declines in productivity. In some cases, academicians have joint appointments in universities—but often such positions do not imply much collaboration. For the most part, the separation of the two key parts of the Russian "knowledge system" remains.

Currently, the universities are much more effective in securing additional funding on a competitive basis than the Academy of Science institutes. For example, while most academy funding comes directly from the government, only 37 percent of university research expenditures come from government sources—the rest coming from industry, foundations, and others.

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MEDICAL EDUCATION AND RESEARCH

Medical education and research in Russia is traditionally a responsibility of the Ministry of Health, and there are 46 medical schools that are free standing specialized institutions with few, if any, links to either universities or to the Russian Academy of Science—the Russian Academy of Medical Science was a separate entity before the reform of the academies in 2013. Historically, medical universities retained the same separation of teaching and research, with the medical academy serving as the main provider of research in the health sciences. In other words, medical universities are primarily teaching institutions, although a few of the top schools have a significant research profile.

At the same time, some universities and academies have developed expertise in research that relates to health sciences, in such growing fields as biomedicine, physics, and other areas—indeed, this is a growing trend. There seems to be little coordination or cooperation between the medical universities and the rest of the higher education or research systems in Russia. Science and higher education, dating back to Soviet times, have been organized in silos, with small and highly specialized institutions attached to specific ministries. The medical field is a prime example of such a legacy. The current arrangement hampers interdisciplinary medical research in fields such as biotechnology, pharmaceutics, and others that would benefit from the work going on in relevant faculties in the universities and academies. This slows the innovation process in Russia. Many of Russia's 46 medical universities and schools could be merged, or at least cooperate with universities, in ways that could encourage cutting-edge research and interdisciplinary work. Indeed, research, especially focusing on new developments in biotechnology and related fields, is needed in much of medical education.

CONCLUSION

The damage to Russia's scientific system continues to be significant. Current arrangements deprive the universities of funds for research, inhibit interdisciplinary work, and separate the two key dimensions of advanced knowledge creation and transmission—teaching and research. An additional concern is that the aging academy has cut itself off from the younger generation of scientists by their distance from universities. Of special importance is interdisciplinarity. The future of scientific R&D in many fields depends on an interdisciplinary approach. The academies, for structural and human reasons, tend to remain in their specialized areas, while at least some of the top universities allow for more flexible boundaries between areas of study.

However, merely merging existing institutions with quite different traditions and organizational patterns will not work well. New and creative thinking concerning how to link different kinds of institutions and varying approaches to science and research are needed. Russia's ambition to join the top of the global rankings on higher education will not be fulfilled without solving these key organizational and related challenges.

Private Higher Education in Vietnam: Issues of Governance and Policy

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Contemporary private higher education (PHE) in Vietnam has experienced almost three decades of development featured by an impressively rapid expansion in the number of institutions, from only one in 1988 to 22 in 2000; 77 in 2010; and 83 in 2013. The most striking increase of over 50 percent was seen in the period between 2005 and 2009 as a response to economic demand for highly educated workforce. Currently, the number of private institutions accounts for 20 percent of higher education institutions and their enrollment is around 15 percent of the total number of students. Their role is getting bigger in sharing with the public sector the provision of higher education in Vietnam, thus decreasing the state budget for higher education.

Private universities in Vietnam are generally demand absorbing. They are inferior to their public counterparts in campus size, numbers of students and faculty, and quality. They are challenged by social and institutional problems. The issues of governance and policy currently seem more pressing and put them on the edge of existence. In order to find reliable and viable solutions to deal with these problems, a qualitative multisite case study was conducted in 2015 to get insights into governance and policy issues faced by PHE in Vietnam. It was instrumented by document analysis and in-depth interviews with board members and administrators from seven private universities of various location, history, size, reputation, and programs. This sampling was typically stratified and purposive.

INTERNAL GOVERNANCE TENSION

As in private universities around the world, the top-tier organizational structure of private universities in Vietnam consists of two key constituents-the board and the president. But the authority and perspective of each constituent are different from country to country. In Vietnam, the board is legally called "Board of Directors" (BOD) (Hoi dong quan tri), sounding and functioning exactly like BODs in business. Members play roles as investors, owners, and influential shareholders of universities. They are legitimated to have a number of votes and dividends according to their financial investment. The president, appointed by the board, functions as the top manager or top administrator of the university. He or she is widely thought to represent academics, with little or no money to contribute to the university. In some cases, he or she is also a board member with votes in proportion to his or her financial contribution.

Interviews with selected board members and administrators reveal tension between the board and the president in the management of the institutions. Most board members prefer their universities to be driven by profit, to attract more investment and increase their investment returns, while the president and a few board members advocate the public good or not-for-profit purposes of their institutions.

An analysis of legal documents—Decision No. 58 of 2010, Decision No. 61 of 2009 and No. 63 of 2011 on uni-