

Innovation in Ukraine — Policy Options for Action



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Annotation

The purpose of this article is to highlight the fundamental difficulties, faced by Ukraine in the process of its integration in the global market economy. More specifically, a system of measures is proposed for review, with the aid of which Ukrainian universities can contribute to the increased competitive capacity of the national economy, the development of entrepreneurship and the effective implementation of the scientific and technical potential of Ukraine. The material was prepared in order to initiate an interactive discussion regarding different scenarios for actions and innovative strategy, as well as the legislative support of necessary reforms on the course of Ukraine's establishment of a competitive knowledge-based economy. The article generalizes the results of the author's research during work on the EU project «Enhance Innovation Strategies, Policies and Regulation in Ukraine», within the framework of which, options have also been developed for the strategy for reforming the national university administration system.

Key words: innovative development, scientific and technical potential, research university, the financial autonomy of universities, the university's broker functions.

Untapping Ukraine's scientific capacity for strengthening its economy

Ukraine has come a long way in the difficult and still ongoing transition process from state to market economy.

However it still seems Ukrainians do not trust its infrastructure is conducive to exploit its talents. When Apple co-founder Steve Jobs died on 5.10.2011 he deprived the world of one of its greatest innovators. Ukrainians (almost) unanimously stated that if he had been born in Ukraine, he most likely would have left it.

I had the pleasure of working with Kyiv National Economic University named after Vadym Hetman at various occasions. The university is full of smart and dedicated people. However far too few of them start up a new business in Ukraine. This is also true for other top Ukrainian universities.

Upon suddenly and unexpectedly acquiring its independence in 1991, Ukraine's technological, scientific and educational communities found themselves in a curious position. They had been a major and formidable player in the technological-scientific enterprises of the former Soviet Union. As such, they had at their command a wealth of developed scientific knowledge, a powerful scientific community, an extensive high technology industry, an advanced educational system, and a highly educated literate population thoroughly grounded in the sciences and technology.

With such substantial attributes, one might expect that after a certain period of adaptation, Ukraine would be ready to forge ahead and be able to compete effectively in the global marketplace of applicable ideas and technology, as well as in the areas of research and innovation. However, that is not what happened. Although in its study of global sustainability, «Geoinformatics and sustainable development» (<http://www.wdc.org.ua>), the World Data Center assessed that Ukraine at the end of the 1980's had one of the best starting conditions among the countries of the former Soviet Union and its sphere of influence, it also noted that Ukraine had not managed to benefit from its advantage. During the last four years, the rating table of the index

of global competitiveness shows a decline from 72nd to 82nd place out of 139 countries ranked (<http://www.weforum.org>). And so, now after 20 years of independence, Ukraine is still struggling and unable to fully capitalize on its significant educational, scientific, and industrial strengths.

Considering the various positive developments that could arise from having a strong Ukraine, the major question at this stage is: «Can Ukraine's economic decline be turned around and, if so, how?» An understanding of why such a technologically advanced country did not thrive would begin to give us insight both into what was lacking and what is needed now.

The obstacles to economic and commercial success for Ukraine were numerous ranging from the shock of the breakup of the Soviet Union to the realization that Ukraine was not fully prepared for independence and was not prepared to fit into a market driven consumer economy, let alone to reap any benefits from it. A market economy requires a lot of initiative and capital. Initiative, while often available, was not always promoted. There were no precedents for business development on a large scale. There were no ready ways to know who owned what especially when it came to intellectual property. There were no laws to protect inventors, investors, businessmen, and their businesses. Both among potential innovators and among lawmakers, there was a lack of knowledge and experience in how Western style market economies work. As for capital, Ukraine was hard pressed to maintain itself and had no capital for innovation and commercialization investment. Foreign capital, given the legal uncertainties and the risks, shied away from investing in Ukraine.

Evidence shows it is difficult for Ukraine and other countries of the former Soviet Union to change. The world is witnessing the struggles that arise when a country and its population must consciously choose another approach to living and conducting their affairs. In the former Soviet system scientific research and innovation were basically state owned and as such had to be strictly guarded and controlled. Since independence, Ukraine and the other CIS countries have tried to develop legal systems to help manage their scientific activities. The Western models for business creation and operations were, and are still regarded with suspicion by some. Changing a country's old habits and beliefs takes education, re-training, re-interpretation and time.

The old centrally planned economy had failed. The old system had determined the value and worth of the various scientific and technological endeavors according to how they furthered the priorities of the state. Foremost among these priorities was the

military complex. Generally, rewards were not linked with economics or the consumer; consumer innovation and commercialization could not be a central priority of the state run economy.

Changing to a consumer market driven system meant that the state's priorities had to change - a difficult process under any circumstances with Ukraine being no exception. In turn, a change in priorities would also mean changes in the established systems of rewards, honors and privileges. Such changes cause major disruptions that test and fray the existing social fabric of a country. Today, Ukraine is still struggling with these disruptions. Some segments of society have been willing to cast aside many of its former values; other segments have not. The formation of a viable, unifying and dynamic Ukrainian identity is ongoing, and the struggle to bring about useful and workable changes goes on. In such a climate the help to Ukraine's economy is especially critical in the areas of science, innovation, technology, commercialization, and international collaboration through knowledge management and exchange.

In terms of growth, the economies of the West are knowledge-based. Technology is the major driving force, and through patenting and licensing and the formation of new start-up companies high technology jobs are created. Success leads to profits and more jobs which then lead to national well-being, national stability and further investment and success. These are all sorely lacking in Ukraine at present; the world of commerce is still relatively new and the world of consumer product commercialization still holds many mysteries. And yet, each year approximately 100,000 students graduate from Ukrainian universities only to discover that Ukraine's economy still has to create enough suitable jobs in order to absorb this annual flow of newly educated professionals. The development of high-tech ideas and products that can compete in the marketplace is a necessity, but so far it has not gained momentum.

There are many obstacles to the commercialization of scientific research in Ukraine: scientists lack adequate knowledge, experience, and preparedness for commercialization; management lacks effective managerial skills as regards research activities; financing for innovation is markedly insufficient; commercialization of research activity is hampered by the shortcomings of the legal structure; and overall there is the absence of an effective infrastructure for innovation. In contrast, market economies are empowered by their utilization of trained business and commercialization experts ranging from MBAs to patent and corporate lawyers, from knowledge and innovation managers to business development experts. Such experts are scarce in Ukraine.

Formerly there had been no perceived need for them or their services. Now, however, it is becoming clear they are needed.

Statistics in Ukraine show that only 14,2% of enterprises are involved in innovative activity and only 6,7% of sales volume is realized through innovative production. All of these factors highlight the need for training, experience, and exposure to effective practices. In order to compete globally, various Ukrainian professional and social institutions need to understand how technology makes money and affects the economy, and then to coordinate their efforts toward rewarding goals.

Certainly there are obstacles that Ukraine has to overcome; however, the foundation and potential for innovation do exist. Ukraine, today, has more than 100,000 industrial enterprises, about 300 scientific institutes and universities, and an active scientific community of approximately 100,000 scientists. In terms of the total volume of natural resources, Ukraine occupies one of the leading positions in the world for coal, metals, uranium ores, and minerals. Although Ukraine's exports consist largely of metallurgy products (up to 35%), every year the share of machine-building, high precision equipment construction, and information technologies is growing. Even more indicative of technological potential is the fact that today's Ukrainian university graduates and scientists are welcomed in all parts of the world, and Ukraine remains a world leader in the areas, among others, of space and aviation technology, cardiovascular surgery, high-tech specialized metal welding, and in the preparation of certified computer programmers. On the political scene, in 2007 the Parliament of Ukraine adopted a law enabling the formation of the country's first scientific park at the Kyiv Polytechnic Institute (KPI), the largest university in the country, thereby providing an environment in which innovative activity can thrive. According to the resolution of Cabinet of Ministers of Ukraine #163 (17.02.2010) «Statement on research universities» 31 criteria on the activity of a «research university» were defined. These criteria confirm the research status of the university which entails inter alia both the duty and the right of running a science park. It seems the efforts brought some fruits. In 2011 for the first time two Ukrainian universities have made it into a respected international ranking (QS World university rankings of top 700 universities).

Furthermore it is important to recognize that, even at such a time of economic difficulties, collaboration between investors and scientist-innovators can be mutually rewarding, and that the commercial potential of scientific discoveries and technology developments can be great if one takes the time to uncover them and to work

collaboratively with them. Ukrainians scientists are eager to see their developments and inventions in use by consumers in the global arena, and they are seeking collaborative opportunities with Western investors and the formation of joint ventures. The more training, experience, and exposure to the West that they can get, and the more trained business and managerial professionals (that) they can work with, the more smoothly will it be for them to participate in the global market economy. It is clear that training business/managerial professionals is central for Ukraine's transitioning to a market economy.

Policy recommendations

Our effort was concentrated on identifying some main barriers and drivers of innovation in order to propose sets of actions that could be useful for the policy makers to consider. University governance was analysed in the EU and in Ukraine. Main comparisons between Ukraine and some EU countries were drawn. Strategic policy issues and challenges for action were drawn.

Ukrainian universities are a major pillar of the national innovation system. This article proposes how an enhanced role of Ukrainian universities can contribute to leading Ukraine to a knowledge-based competitive economy. Some Ukrainian universities are leaders in technology and science. They have survived the various storms of regime changes and continue to strive. Kyiv National Economic University named after Vadym Hetman is one of them. It actively pursues scientific and economic interactions and partnerships with numerous countries around the world. In the area of knowledge and innovation management they can be highly effective. They can develop in Ukraine a critical mass of experts that would make a significant difference to Ukraine's economic outlook. They would become instrumental in developing an innovative enterprising climate for Ukraine's industry and business thereby leading Ukraine out of the present unproductive economic path.

As a result four major recommendations can be given:

1. **Grant Ukrainian universities with some financial autonomy** to be able to carry out some financial transactions without engaging into often lengthy and tedious application procedures with the Ukrainian Treasury. Allow Ukrainian universities to use funds provided as assistance, grants, gifts, sponsorship and other contributions without observing the public procurement procedure stipulated by the Ukrainian legislature. In a pilot phase Ukrainian universities holding a «research status» may participate. Enable universities to enter

income stemming from grants, sponsors, contract research, or IP licensing and commercialization on the credit side. Allow universities to self govern the income from different funds for setting up university Technology Transfer Offices, for sharing with their professors and inventors who license their technologies, for international projects, for R&D support, organisation of international conferences, uptading university equipment and laboratories, publication of articles and journals, promotion of the university and its research programmes, travelling of Ukrainian and foreign professors, provision of stipends to selected high scholarship students, and similar activities.

2. Incentivize research institutes and universities to engage in commercial activities. Consider increase of public budget share to stimulate research institutes and universities to seek collaboration with industry (contract research, business training, etc). Special programmes of such collaboration have to be introduced through a dedicated agency or a special fund to be created. Experience from the EU suggests an average university might raise up between 10% and one third of its expenditures from collaboration with the industry. Qualitative impact stems from more focused research enhanced by industry exposure of university staff.

3. Simplify the procedures for start-ups from research institutions and universities; define the sources of statutory funds formation by institutions and universities, the procedure of inclusion of valuable intellectual property rights into statutory funds, and the procedure of transfer of dividends to the institutions. Incentivise universities and research institute by allowing all revenues received from licensing and spin-offs to be not taxable and remain in the university to modernize their laboratories and equipment. Universities and institutes are to share the revenues raised among technology transfer office, university/ institute department where research is performed, and researcher(s). Auditors for this function need to be appointed within each institution. Universities and research institutes must report licensing revenues; investments from external investors into R&D and into spin-offs, number of spin-offs, revenues from spin-offs; number of jobs created in the community; and number of medical and societal products developed.

4. Expand effective brokerage functions (e.g. liaison offices) in the main research institutions based on real market oriented models. It is recommended that institute management and administration staff be trained with skills in subjects such as accounting, evaluation of technologies, licensing, technology marketing, and creating spin-off companies based on the institute's

technologies. To embrace the experiences gained by Science and Technology Centre of Ukraine (STCU), and of pilot Technology Liaison Offices (hosted by Institute of Physics NASU, Institute of Material Sciences NASU, both in Kyiv, Institute of Radio Physics and Electronics NASU in Kharkov, and Institute of Technical Mechanics NSAU in Dnepropetrovsk), and to provide services to professionally present selected technologies at international exhibitions and online. The relations between the universities and institutes and these offices have to be regulated by special legal acts, which will protect the inventors and which will not allow university and institute administration to obtain one-sided benefits from R&D results of the university and institute staff. Evidence from major university and liaison offices in the EU (e.g. Max Planck Innovation, or Patent exploitation agency Saarland) indicate the need for approximately five dedicated full time staff of experienced people in these offices. Evidence furthermore indicates the break even of investment reached on average after 10 years of operation. It is often observed that the majority of revenues stem from licenses of only a few internationally protected «block busters».

Outlook

The purpose of this article has been to shed some light on Ukraine's major difficulties in transitioning to a global market economy. In the areas of scientific innovation and commercialization the serious need for business development and managerial professionals has been identified, and we can return to the major question stated earlier above: Can Ukraine's economic decline be turned around and, if so, how? The how part of the question has been discussed as regards our major concerns, the scientific and business communities, and we now turn to the issue of reversing Ukraine's economic decline: «Can it be done?» The answer is a resounding, «Yes.» Ukraine has much to offer and certainly the effort must be made.

Disclaimer

The analysis at hand was carried out during the work on the EU Project «Enhance Innovation Strategies, Policies and Regulation in Ukraine». The project published inter alia «Innovation in Ukraine: Policy Options for Action»¹. Therein policy options inter alia on university governance are given.

¹ Rumpf G., Stroglyopoulos G., Kyiv 2011. Innovation Policy: European Benchmarking for Ukraine Volume 3. «Innovation in Ukraine- Policy Options for Action» http://innopolity.com.ua/wp-content/uploads/GR_Monograph_volume_3_EN.pdf