Radical Institutional Change: Enabling the Transformation of Georgia's Innovation System

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Georgia is a post-Soviet country in the south Caucasus region, strategically located on the crossroads of Eastern Europe and Western Asia. Occupying a territory of 69,700 square kilometres and with a population of 4.5 million people, Georgia belongs to the Global Innovation Index (GII) lower-middle-income economies group.

The 2015 GII report recognizes Georgia as an innovation achiever among other countries in the same income-group and region.[1] In the GII 2014 Georgia ranked 74th out of the 143 countries covered in the report. For the last four years, Georgia has been outperforming its lower-middle-income group peers in terms of Institutions (pillar 1), Human capital and research (pillar 2), Market sophistication (pillar 4), and Knowledge and technological outputs (pillar 6); it also has achieved noticeable improvements in the GII Innovation Efficiency Ratio. Overall, Georgia consistently scored better on the input side than on the output side.

This chapter discusses the key innovation policies and private-sector actions that are enabling Georgia to drive a rapid and positive change in its innovation performance. Since the early 2000s, the country has been labelled a top reformer according to the following indices: the World Bank's Ease of Doing Business, the Heritage Foundation's Index of Economic Freedom, and Transparency International's Corruption Perception Index. Georgia is a very good example of an economy that has successfully transitioned from an emerging innovation system by transforming its institutional framework. This pattern of development has been followed by other countries such as Kenya and Armenia (also highlighted as examples of outperformers in the current GII).

The first section of this chapter looks at the enablers of the radical institutional change in Georgia, stressing the role of the new West-educated elite and the diaspora in driving the processes of change as well as the influence of the accords with the European Union (EU). The following section reveals the existing challenges of the Georgian innovation system. The chapter argues that its future development may require complementing institutional change with efforts in other, less-developed aspects such as human capital and research capabilities, infrastructure, business sophistication, and creative outputs. The chapter concludes with some reflections on the future opportunities and challenges of Georgia.[2]

The chapter is based on primary and secondary data. Interviews were conducted in February 2015 with Georgian policy makers. Topics included identifying the organizations—both newly created and those inherited from the Soviet past—that support Georgia's science, technology, and innovation system; regulatory changes introduced since 2003 and societal perception of these reforms; and the impact of post-Soviet heritage and of international cooperation and linkages. Finally, the interviewers asked about the main challenges faced by Georgian policy makers and what lessons could be learned by other post-Soviet countries from Georgia's experience.

Institutional change: Enabling the transformation of Georgia's innovation system

Georgia's improved innovation performance during 2011–14 may be explained by the institutional changes that have taken place since the Rose Revolution—the first peaceful transfer of power in the Caucasus—in 2003. Institutions—in the context of this chapter defined as the 'rules of the game'[3]—have long been considered a key component of a national innovation system.[4] Institutions may be 'hard' formal ones such as laws and regulations, or they may be 'soft' informal ones, characterized by rules shaping social behaviour. The latter may exist in a society even when legally binding rules are not in place.

Georgia, as part of the former Soviet Union, experienced the first set of radical changes that came with the dissolution of the Soviet regime

Box 1: Reducing corruption in Georgia: The perspective of policy makers

Reducing corruption has become one of the cornerstones of institutional reform in Georgia, and officials are deeply concerned about controlling all aspects of it.

As one of the interviewees noted:

> Points of contact between citizens and government had to be taken to the minimum, in order to get rid of the widely spread corruption in services that the state is obliged to provide to the citizens. That was innovation in itself for us, which had an impact on everybody's life (Interview, 10 February 2015).

As another interviewee pointed out:

> … When the government is corrupt, people only care about getting their share of the 'profit'. When corruption and cumbersome bureaucracy are eradicated, people [in power] care only about the future of the country and decisions are made very fast (Interview, 10 February 2015).

in 1991. The shock of this collapse led the country to undertake major internal transformation and to develop new structures in state-building. As a result, older *formal* institutions were replaced by a set of new laws and Acts. However, the *soft* institutions, represented by social practices, needed longer to evolve. For example, the weak political structure, high rates of organized crime, and widespread corruption in the 1990s positioned Georgia as a failed state.

Following massive protests over the disputed nature of the fairness of the parliamentary elections, the 2003 democratic Rose Revolution in Georgia brought a change of political power and a second wave of changes. Under the new political elite of predominantly younger and West-educated individuals, Georgia adopted what the Organisation for Economic Co-operation and Development (OECD) has characterized as the 'Guillotine approach' to institutional reforms.[5] Instead of a gradual transformation of different institutions (of regulations and regimes), Georgia adopted a much more drastic approach to institutional change (similar to the approach taken by Kenya and Armenia). The new agenda put forward a rigorous anti-corruption campaign, which improved the economic situation. The new regulations (hard institutions) enabled a fundamental transformation of Georgia's institutional environment with simplified tax codes and improved tax administration, battled corruption, and put into place various mechanisms to make the country attractive to foreign direct investment (FDI).[6] Box 1 presents the views of some policy makers concerning the country's fight against corruption.

The role that the young West-educated elite and diaspora played in Georgia's institutional reform processes and in establishing transnational innovation networks is evident. But the changes were not limited to hard institutions alone. The role of the country's youth may also be reflected in the change of the social norms, which diffused into the societal practices by virtue of the country's commitment to reforms. Georgian anti-corruption efforts, introduced by the young West-educated elite, have spread widely in Georgian society and remain the most prominent example of successful changes in the country's soft institutions. For example, as some interviewees noted, the road traffic police (who used to be the most corrupt) were replaced entirely by newly selected and trained officers who are under more stringent control nowadays and do not take bribes. As a consequence, people stopped giving and receiving bribes in order to get any kind of licence or official document as had been customary earlier.

The 2008 military conflict with the Russian Federation, followed by a trade embargo on Georgian export produce, caused strained geopolitical conditions and a complex economic situation in the country. As a consequence, a series of new reforms were implemented with the purpose of diversifying the economy and improving the country's image for attracting foreign investors;[7] ultimately these provided a way to introduce technology in the country and modernize the industrial sector.

The modernization of the research system inherited from the Soviet Union (see Box 3) also began around this time. In 2010 the Shota Rustaveli National Science Foundation, merging the Georgia National Science Foundation and the Rustaveli Foundation for Georgian Studies, Humanities and Social Sciences, was established. The main mandate of the newly created foundation was to reform the humanities and social sciences in Georgia and introduce mechanisms to fund research through open competition and international research programmes. In 2008 the Ministry of Diaspora was created with the aim of providing incentives for the return of migrated Georgians, including around 500 researchers.

Probably one of the most important forces behind the most recent transformations of the socio-economic system in which the innovation system is embedded is Georgia's cooperation agreement with the EU; negotiations for this

Agreement started in 2010. The cooperation frameworks under the European Neighbourhood Policy Instrument, the Eastern Partnership initiative, and (since 2014) the Association Agreement—which includes integration to the Deep and Comprehensive Free Trade Area with the EU—have served simultaneously as motivators and tools for carving Georgia's domestic institutional reforms. Since the start of the negotiations in 2010, the EU requested the introduction of substantial reforms in technical regulations, sanitary and phytosanitary measures for agricultural products, strict intellectual property rights (IPR) regulations, and rigorous competition rules (Table 1).

The year 2012 brought yet another change of political elite in Georgia: The opposition party came to power. As their predecessors did, the new elite put continuous economic development on the agenda,[8] along with some clear steps in the direction of boosting innovation. Georgia's Innovation and Technology Agency (GITA) was established under the auspices of the Ministry of Economy and Sustainable Development in April 2014, with the aim of coordinating innovation and technology development at the national level. Additionally, the Research and Innovation Council, chaired by Georgia's prime minister, was established in January 2015. The Council's responsibility is the strategic development of coordination of the science, technology, and innovation policy; GITA acts as a secretariat for it.

This most recent effort in institution building in support of innovation activity may be seen as a positive development, but it is too early to predict its impact on the overall functioning of Georgia's innovation system. The next section discusses some of the challenges ahead in its continuous transformation.

Table 1: Political changes and changes in innovation system of Georgia

Year	Political change	Change in the innovation system
1991	• Dissolution of the Soviet regime	• Fragmentation of the innovation system • Brain drain
2003	• Rose revolution: New elite of West-educated individuals comes to power	• Guillotine approach to institutional reform • Strong focus on reducing corruption, simplifying tax regulations, and generally improving governance
2008	• Military conflict with the Russian Federation	• Diversification of the economy (economic reform) • Focus on attracting foreign direct investment to the country • The Ministry of Diaspora is established
2010	• Start of negotiations with the European Union (EU) for the EU-Georgia Association Agreement	• Georgia is required to introduce substantial reforms in: » Technical regulations » Sanitary and phytosanitary measures » Intellectual property rights legislation » Competition rules • The Shota Rustaveli National Science Foundation is established
2012	• Opposition party wins the elections – change of political elite; focus on economic development	
2013		• GITA (Georgia Innovation and Technology Agency) is created
2014	• Association Agreement with the EU is signed	• Access to the EU market
2015		• Research and Innovation Council is created

Georgia's innovation system: Strengths and challenges for the future

Georgia's strengths can be traced back to the aforementioned deep institutional transformation of the country, which aimed to increase transparency, eliminate corruption, attract FDI, and facilitate business.[9] As a consequence of the profound reforms that occurred in its hard institutions (laws, rules, and regulations), Georgia excels in labour market flexibility, captured by its ranking in the following indicators of the GII 2014: the cost of redundancy dismissal (ranked 1st), ease of starting a business (4th) and paying taxes (20th), ease of getting credit (3rd), and ease of protecting investors (16th), among others (Table 2).

On the other side of the coin, Georgia's major future challenges are mostly related to how the aforementioned laws, rules, and regulations are accepted by society (soft institutions), the immaturity of its business capabilities, and bottlenecks in its national education and research systems. These will be described in detail in the next section.

Transforming soft institutions

Although formal institutions may be established quickly, their effect on the soft institutions—on socially accepted norms and principles—may take a lot longer to diffuse. As pointed out by some Georgian policy makers, both the country's higher education system and its IPR system now substantially approximate the standards of the EU. Nevertheless, the soft institutions inherent in the Georgian environment are yet to come closer to EU values and norms. Two clear

Table 2: Georgia's GII 2014 strengths and weaknesses

Strength		
GII indicator	Indicator or sub-pillar title	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	1st
1.3.1	Ease of starting a business*	4th
1.3.3	Ease of paying taxes*	20th
2.1.5	Pupil-teacher ratio, secondary	2nd
4.1.1	Ease of getting credit*	3rd
1.2.3	Cost of redundancy dismissal, salary weeks	1st
1.3.1	Ease of starting a business*	4th
1.3.3	Ease of paying taxes*	20th
2.1.5	Pupil-teacher ratio, secondary	2nd
4.1.1	Ease of getting credit*	3rd
4.1.3	Microfinance gross loans, % GDP	11th
4.2.1	Ease of protecting investors*	16th
4.3.1	Applied tariff rate, weighted mean, %	6th
6.2.1	Growth rate of PPP$ GDP/worker, %	3rd
7.2.4	Printing & publishing manufactures, %	13th

Weakness		
GII indicator	Indicator or sub-pillar title	Rank
2.1.1	Current expenditure on education, % GDP	129th
2.3.3	Average score top 3 universities*	70th
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	117th
4.2.2	Market capitalization, % GDP	99th
4.2.3	Total value of stocks traded, % GDP	105th
4.3.3	Intensity of local competition†	116th
5.1.2	Firms offering formal training, % firms	98th
5.2.1	University/industry research collaboration	126th
5.3.1	Royalty & license fees payments, % total trade	106th
7.1	Intangible assets	122nd
7.1.4	ICTs & organizational model creation†	114th

Source: GII, 2014.
Note: * indicates an index; † a survey question.

examples of the current challenges with soft institutions influencing research and innovation are the societal perception of the role of education and the importance of IPR (Box 2).

Bottlenecks in education and research systems

In 2014, Georgia outperformed its income group peers in terms of Human capital and research (pillar 2), but this is mainly the result of a very good performance in the pupil-teacher ratio in secondary education indicator, where it ranks 2nd. Georgia still scored low on government expenditure in education (129th) and R&D funds per researcher are 10 times less than the same indicator for the Russian Federation, Ukraine, the Baltic States, and Belarus,[10] and its score in the excellence of universities is also low (Georgia ranked 70th in the average score of the top 3 universities).

Weaknesses in the current system are deeply rooted in the research system inherited from the former Soviet Union as well as the large-scale brain drain that followed its collapse (Box 3).

Some of these weaknesses have been addressed in recent years. In 2015 the government increased the salaries for researchers up to 250% (which may seem to be a huge amount, but earlier remuneration was minimal). The Diaspora Ministry, established in 2008, has identified approximately 500 Georgian researchers worldwide and aims to provide incentives that will help reverse the brain drain that occurred after the collapse of the Soviet Union. The Ministry of Education and Science is currently undergoing extensive reforms to boost standards to the European level.

A positive sign that the research system is gaining momentum can be seen in changes to scientific output. Georgia is quickly catching up in terms of scientific publications with co-authors from the Western world, particularly from the United States of America and Germany,[11] in a context where international scientific collaboration outside the former Soviet Union was nonexistent.

Immature business capabilities

Georgia ranked low in the 2014 GII's Market sophistication and Business sophistication pillars in the following indicators: firms offering formal training (98th), royalty and license fees payments as a percentage of the total trade (106th), market capitalization (99th), intensity of local competition (116th), and total value of stocks traded (105th). Together these poor showings signal that the business sector still suffers from low capitalization, a lack of training, low levels of patenting activity, and low levels of knowledge-intensive industries, as reflected in the country's low levels of intangible assets and its use of information and communication technologies (ICTs) for new business models.

Related to and probably the consequence of the low level of capabilities in both the public research system and businesses, the linkages between university and industry are also weak (ranked 126th). As a result, the capacity of the public research system and the business sector to generate, absorb, and diffuse knowledge is still low.[12]

Increasing the innovative capabilities of the public and private sectors will take time, as we know from the leapfrogging experience of the Asian tigers (the Republic of Korea and Singapore are two such examples of small economies). Sustained and large investments in education, research, and innovative capabilities

Box 2: Challenges with soft institutions: Perception of education and intellectual property rights

Despite having all legislation in place, the enforcement of intellectual property rights (IPR) remains a challenge in Georgia as in many other countries. According to one policy maker interviewed for this chapter:

> Partially this relates to the post-Soviet heritage, where private property did not exist and intellectual property was not given quite the same attention. Apart from that, Georgian society at large is not even aware why illegal content should not be downloaded (Interview, 10 February 2015).

Raising awareness throughout society about the need for robust national IPR has thus been a priority assignment of Sakpatenti, the National Intellectual Property Centre of Georgia. Another challenge is partially posed by the:

> lack of interest from multinational corporations (MNCs) to enforce the IPR on the Georgian market and, generally, developing countries' markets. ... This could have been done by arguing the infringements in courts and lowering the licensing prices for developing markets, rather than following their general foreign market policy. If an MNC reduces the price, I can then persuade my society to purchase the legal content from them. Paying less would be better than not paying anything at all (Interview, 10 February 2015).

Even though the post-Soviet heritage left Georgia with the cultural understanding of the importance of possessing higher education and corruption in education is no longer present, there is:

> not too much quality, either. ... The notion of having a 'piece of paper'—a diploma—rather than knowledge is still essential for many people (Interview, 9 February 2015).

in firms are needed, although this is a major challenge for countries with very limited resources.

Steps ahead

The Association Agreement with the EU signed in 2014 may be a way to address some of the weaknesses of the business sector and the research system outlined above. The agreement is expected to have a positive impact on the competitiveness of the Georgian firms by providing them with access to the large European market. The agreement also mentions explicit support in the effort to align Georgia's legislation to EU norms and assistance in trade-related reforms.[13] The agreement covers a large array of sectors and policy areas, including education, research, and technological development.[14] A key sector of interest mentioned in the agreement is the development of ICTs, which may have an impact on the performance of Georgia in terms of outputs in the coming years.

For Georgia, as well as for other countries in the lower-middle-income group, some of the challenges ahead rest on their capacity to *continue strengthening their education and research systems*. Continued incremental steps that increase funding and raise the quality of education and research, as well as steps that build capability, are expected to build up the foundation upon which a sound innovation system may be constructed.

A cornerstone for the future development of Georgia's innovation system is to *continue utilizing the mechanisms of cooperation with the EU* throughout the next stage

Box 3. The Georgian research system: An inherited past

In the former Soviet Union, the Academy of Sciences was organized centrally. The academies of the republics—including Georgia's—specialized in specific lines of research that were set by the All-Union Academy of Sciences. This resulted in a severe fragmentation of the innovation system after the collapse of the Soviet Union, with dramatic differences between the new independent countries in terms of capacity and specialization.[1] Georgia was left with a strong cybernetic institute and a biotechnology centre that had been devoted to the development of biological weapons for military use as well as a number of other research areas. The nearly 100 R&D organizations (mostly belonging to the Georgian Academy of Sciences) became independent entities with limited basic funding, which implied the need to compete for grants.[2] As a consequence, many institutions merged together, integrated with universities, or closed down entirely. The result is that approximately 50 research centres are operating today, with highly heterogeneous performance.[3] The severe lack of funds for education and research that occurred during the first years after the collapse of the Soviet Union forced many researchers to leave the country, further weakening Georgia's research system.

Notes

1 According to Gzoyan et al., almost '58% of R&D institutions, 66.7% of scientific personnel and over 72% of the total R&D expenditure in the USSR were concentrated in Soviet Russia'. Gzoyan et al., 2015, p. 198.

2 Gzoyan et al., 2015.

3 Interviews with policy makers, 9 February 2015.

of the Deep and Comprehensive Free Trade Area (DCFTA) implementation process. Particularly important will be approximating the functioning of SMEs in Georgia to EU standards, both in terms of regulative measures and in practice. These higher standards may lead to boosting the intensity of local competition, which is one of Georgia's current weaknesses.

The reform of institutions has been a crucial component of Georgia's current achievements in terms of innovation. It is important to *focus on the well-functioning aspects of reformed institutions and use these as a basis from which to tackle current challenges*. Eradication of petty corruption and effectiveness of state bureaucracy have been the highlights of Georgia's reform pursuits. Incorporation of the methods that worked in the past is expected to prove effective for tackling the current shortcomings in areas such as IPR enforcement.

Georgia's agriculture has been one of the country's competitive advantages. Continued attraction of FDI in agriculture, along with the simultaneous development of agricultural sciences and strengthening its absorptive capacity, are expected to facilitate innovation outcomes. Links to multinational corporations (MNCs), when strong, are usually very valuable, but these links need time and the absorptive capacity of indigenous firms to develop. Intermediate organizations such as non-governmental organizations or measuring and testing centres can play a crucial role in translating the knowledge of MNCs to local actors, as the experience in other innovation systems in transition has shown.[15]

The diaspora plays a significant role in Georgia's development, and the established Diaspora Ministry has identified more than 500 scholars with a Georgian background. If successful in bringing them back to the country, these individuals may be able to facilitate the future development of public and private research in Georgia, as well as strengthen the country's ties with scientific collaboration worldwide, as previous diaspora experiences in other economies have done.

Finally, the current unstable situation in Eastern Europe and other external factors may shift the priorities of Georgian policy makers when it comes to decision making on particular issues. However, it is essential for Georgia's continued development that the country stay on course on the innovation policy front. Utilizing the well-functioning aspects of reformed institutions may serve as a solid basis on which Georgia can stand on in these turbulent times when dealing with the contemporary challenges of its innovation system.

Conclusions and lessons to learn

Georgia has demonstrated its commitment to the steps of transition from an emerging innovation system through a deep transformation of its institutional framework. Georgia's experience may serve as a good example to follow for other developing economies that struggle with the quality of their core institutions. Other former post-Soviet countries, by following Georgia's steps in drastic institutional transformations, may also find that the successful outcomes of reforms in one area may easily spill over into other policy areas. For example, a simplified bureaucracy and rigorous tax reforms have improved the existing business climate in Georgia. Moreover, a battle against petty corruption in Georgia's public sector increased the trust of foreign investors, resulting in a significant increase of FDI inflows.

Appreciation of the role of diaspora and empowerment of West-educated elite as a means for radical institutional transformation is another lesson that might be useful for other countries. Georgia has demonstrated that its younger generation is capable of making bold decisions when it comes to drastic institutional changes. It has also signalled its appreciation of Georgians living abroad by establishing ties and cooperation with the diaspora.

Together, the institutional reforms already implemented have put Georgia solidly on a path towards greater innovation and a more robust economy. Although a lot of work remains to be done, such steps lay a foundation upon which a solid innovation system may gradually be built.

Notes

1 An 'innovation achiever' is an economy that has a GII score relative to its GDP that is significantly higher than that of other economies in its category for four or more recent years, including 2013 and 2014.

2 This chapter is based on the analysis of secondary information as well as face-to-face in-depth interviews with key informants in Georgia conducted between 9 and 10 February 2015.

3 North, 1991.

4 Johnson, 1992.

5 World Bank, 2010.

6 Çelikpala, 2004.

7 Moskovko, 2012.

8 Government of Georgia, 2014.

9 'Strengths' in the GII 2014 are defined as those GII indicators scored with percent ranks greater than the 10th largest percent rank among the 81 indicators of that economy.

10 Gogodze and Uridia, 2010.

11 Gzoyan et al., 2015.

12 Gogodze, 2013.

13 European Commission, 2013.

14 Fields covered in the Agreement include economic dialogue; management of public finances and financial control; taxation; statistics; transport; energy cooperation; environment; climate action; industrial and enterprise policy and mining; company law, accounting and auditing and corporate governance; financial services; cooperation in the field of information society; tourism; agriculture and rural development; fisheries and maritime governance; cooperation in research, technological development and demonstration; consumer policy; employment, social policy and equal opportunities; public health; education, training and youth; cooperation in the cultural field; cooperation in the audiovisual and media fields; cooperation in the field of sport and physical activity; civil society cooperation; regional development, cross-border and regional level cooperation; civil protection based on gradual approximation with the EU acquis, and also—where relevant—with international norms and standards.

15 Lall and Pietrobelli, 2005; Lundvall et al., 2009.

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