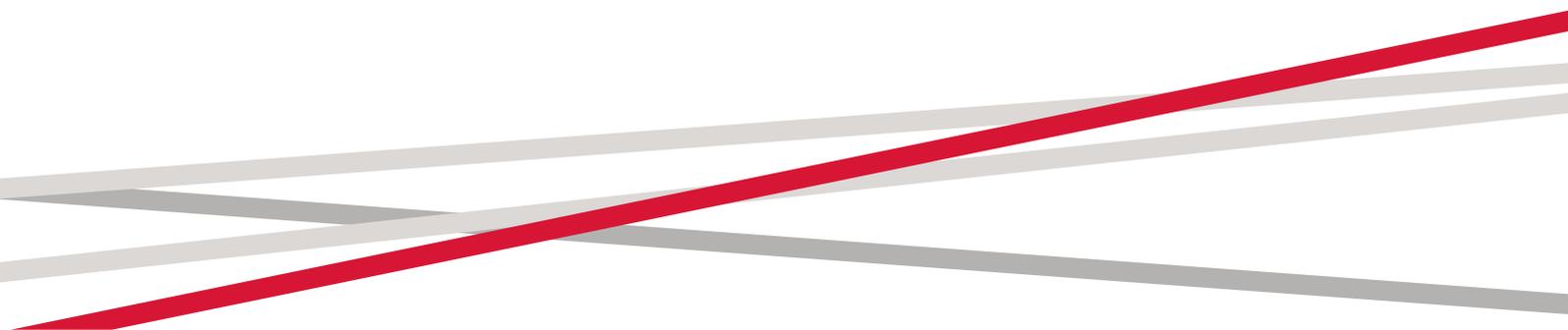




Victor Arshavskiy, BEROCC
Arevik Gnuzhmann-Mkrtchyan, Leibniz University of Hanover and BEROCC
Aleh Mazol, BEROCC
June 2019

Institutions and Comparative Advantage in Services Trade

Recent studies have highlighted the role of human capital and good economic institutions in establishing a comparative advantage in trade in complex institutions-intensive goods. We show that the effect of institutions on comparative advantage in services trade is quite different: in fact, countries with bad institutions rely significantly more on services exports. More specifically, as quality of institutions deteriorates, information technology sector (ICT) services exports as a share of total ICT exports increase significantly and countries with worse institutions get a substantial comparative advantage in the provision of ICT services. This is especially applicable to transitional economies characterized by high, arguably exogenous, human capital at the level of most advanced countries.



Introduction

Recent research in international trade has demonstrated that institutions influence the determination of comparative advantage in the trade of goods. Countries with strong domestic institutions have a significant comparative advantage in producing complex, institutions-intensive goods while countries with weak institutions tend to specialize in less complex goods. Through this channel, weak institutions can hinder growth and development (Nunn and Trefler, 2014).

We argue that the role of institutions in services trade can differ significantly from the one in trade in goods. The intuition behind it is that services provision often relies less on institution-driven factors, such as public infrastructure, availability of large number of inputs, property rights and capital investments than production of complex goods.

We show, in the case of the information technology sector (ICT), that countries with bad institutions rely significantly more on services exports even after controlling for human capital input requirements and availability. We focus on the ICT sector to isolate the differences in the role of institutions in determining comparative advantage in goods and services. Both ICT goods and services provision are equally intensive in human capital and thus present a good opportunity to study differences between goods and services provision.

Our study is motivated by high ICT services exports (e.g. software development) and low ICT goods exports (e.g. computers, phones, etc.) of transition countries which are known to have high human capital and low institutional indicators.

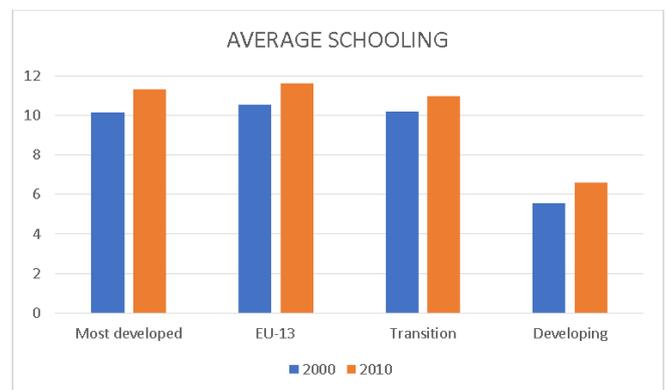
Institutions and ICT Services Exports

Figure illustrates the high human capital availability of transitions economies and weak

domestic institutions relative to other countries. Specifically, we categorize countries into four groups: 23 most developed economies (e.g. USA, Canada, Japan and Western European economies); new members of the European Union (a group of 13 countries including Poland, Slovakia, and Baltic countries); transition economies group consists of 17 mostly post-Soviet countries including Russia, Ukraine, Belarus; the most numerous fourth group includes more than hundred other developing countries.

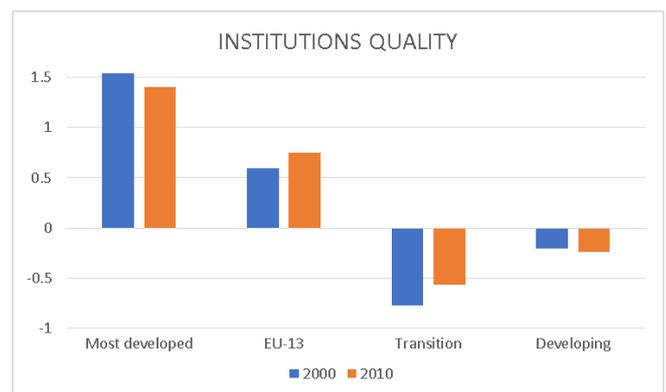
Figure 1. Institutions quality and schooling by country groups

1a



Source: Authors' calculations, schooling data from Barro and Lee (2013)

1b



Source: Authors' calculations, institutional indicators data from the World Bank World Governance Indicators

Figure 1a presents average number of years of schooling, our measure of human capital, for each country group in 2000 and 2010 (the years are chosen based on data availability). The human capital is at a similar level in the most developed



economies, EU-13 and transition economies, but significantly lower in other developing countries. Figure 1b illustrates average institutional quality for each group in 2000 and 2010. Institutional quality for each country is calculated as an average of six indicators, distributed approximately from -2.5 to 2.5: control of corruption, government effectiveness, political stability, rule of law, regulatory quality, voice and accountability, with lower value corresponding to worse institutional quality. In contrast to education, the average institutional quality of transition economies, although improving from 2000, remains on average lower than the institutional quality of other developing countries.

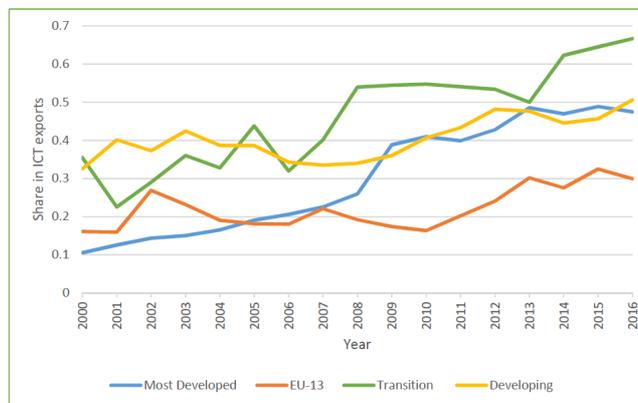
Consistent with the literature on institutions and comparative advantage in relationship- and investment-intensive goods production, ICT goods export from transition economies is significantly lower than in other countries. In contrast, ICT services exports is at a higher level and faster growth in transition economies than in other countries.

Belarus presents a good motivating example. On the one hand, fundamental education in Belarus is at a level of the most advanced countries, which allows 21 universities in the country to educate about 7,000 graduates in IT industry in a year. On the other hand, ICT services exports in Belarus is thriving: over the last 10 years, the growth of ICT services is an eightfold increase (it was 150M USD in 2008 and 1.2B USD in 2017). Nowadays, Belarus is one of the world leaders in ICT services exports per capita. At the same time, ICT goods export is not growing even close to the level of ICT services exports. Over the same time period it has grown only by about 30 percent: in 2008 ICT goods export was 105M USD, in 2016 – 140M USD (BELARUS.BY, 2019).

The importance of ICT services exports in transition economies is seen in Figure 2. The figure presents ICT services exports as a share of total exports of ICT goods and services. To obtain values for each country group, we average ICT

services shares across countries within each group.

Figure 2. ICT services exports as share of total ICT exports



Source: Authors' calculations, ICT services export data from Trademap, ICT goods export data from WDI

As Figure 2 shows, the average share of ICT services exports in transition economies is higher than the share of ICT services exports in all other groups of countries. Transition economies, characterized by high human capital and weak institutional quality, specialize in exports of services over goods in their ICT exports. This descriptive evidence suggests that abundant human capital, inherited from the USSR and arguably exogenous, shifts to services within the human capital intensive ICT sector when facing weak institutions.

Empirical panel analysis confirms the descriptive evidence. To test our hypothesis, we use the share of ICT services in total ICT exports as a dependent variable and we show that quality of institutions is a significant determinant. Our regressions show that the higher the quality of institutions is, the lower will the share of ICT services in total ICT exports be. Moreover, regression analysis allows us to quantify this dependence: as the quality of institutions increases by 1, which is approximately the difference between Belarus and Georgia (as can be seen in figure 3 below), the share of ICT goods in total ICT services increases by about 20%.



Institutions as a source of comparative advantage in services

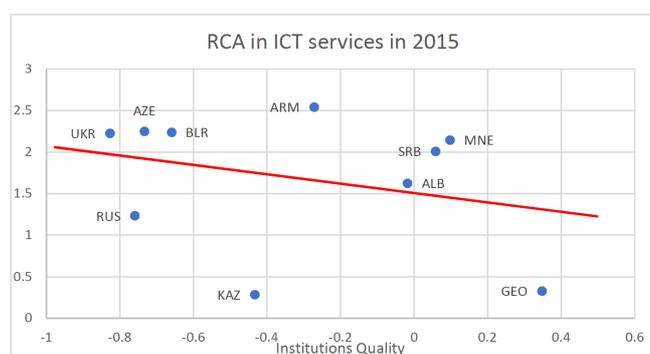
To explore the role of institutions in the relative services provision within a sector further, we look at comparative advantage in exporting ICT services. We incorporate a measure similar to Relative Share measure used in Levchenko (2007) for the analysis of comparative advantage in goods export. The measure effectively compares the share of ICT services export for a given country with the world average. The index of revealed comparative advantage in ICT services over ICT goods is computed for country i in the following way:

$$RCA_{ITserv}^i = \frac{ICTSERV_{sh}^i}{\frac{\sum_i ICT\ serv\ Exp^i}{\sum_i Total\ ICT\ export^i}}$$

where $ICTSERV_{sh}^i$ is share of ICT services exports in total ICT exports for country, $\sum_i ICT\ serv\ Exp^i$ is the export of ICT services for all countries, and $\sum_i Total\ ICT\ export^i$ is the total ICT export (goods plus services) for all countries.

We look at the revealed comparative advantage index across our group of transition economies in figure 3 and see that even within this group, there is a negative correlation between institutions quality and revealed comparative advantage in ICT services.

Figure 3. Revealed Comparative Advantage and Institutions Quality



Source: Authors' calculations



Countries with high institutional quality, like Georgia, export relatively more goods compared to services. Countries with low institutional quality, like Ukraine and Belarus, have a comparative advantage in ICT services exports.

We hypothesize that the main mechanism responsible for this is as follows. Poor institutional quality, resulting in, for example, corruption and the impossibility to create binding contracts does not allow the countries to produce complex goods in the ICT industry, while the presence of high human capital in these countries allows them to produce ICT services that much less depend on corruption and contracting inefficiencies but are as intensive in human capital as ICT goods.

For a better understanding of the relationship between institutions and comparative advantage determination, we run panel regressions analysing the probability of having a comparative advantage in ICT services in exports of ICT goods and services as a function of institutional quality. Following Balassa (1965), a country has a comparative advantage in ICT services if the share of services in overall ICT exports is higher than the world average, in other words, revealed comparative advantage index is greater than 1. We find that one unit increase in institutional quality reduces the probability of having a comparative advantage in services by about 25%, which means that a country with institutional quality similar to Georgia is about 25% less likely to have comparative advantage than a country with institutional quality similar to Belarus.

Conclusion

In this brief we have discussed the role of institutions in determining comparative advantage in services. Our study argues that, given high human capital, low quality institutions create comparative advantage in services provision. Since low quality institutions act as an implicit tax on the production of complex goods, rational agents reallocate most resources to the production of services that are less sensitive to the

institutional quality, while still requiring high level of human capital. We showed that transition economies are characterized by low institutions quality and high human capital. At the same time, transition economies have the highest share of ICT services export in total ICT export. We also showed that institutions negatively affect comparative advantage in ICT services export. Our results suggest that services exports can be a novel development channel for countries with weak institutional, capital investments and infrastructure. Specialization in high-value added services exports provides opportunity for fostering high human capital.

References

Arshavskiy, Victor, Arevik Gnutzmann-Mkrtchyan and Aleh Mazol, 2019. "Institutions and Comparative Advantage in Service Trade", Working paper

Balassa, B. (1965). Trade liberalisation and "revealed" comparative advantage 1. *The Manchester School of Economics and Social Studies*, 33(2), 99-123.

Barro, Robert J. and Jong Wha Lee, 2013. "A new data set of educational attainment in the world, 1950–2010", *Journal of Development Economics*, vol. 104, pp 184-198

Levchenko, Andrei A., 2007. "Institutional Quality and International Trade", *Review of Economic Studies*, vol. 74, pp 791-819.

Nunn, Nathan and Daniel Trefler, 2014. "Domestic Institutions as a Source of Comparative Advantage", *Handbook of International Economics, Volume 4, Chapter 5*, pp 263-315.

BELARUS.BY, 2019. "ИТ в Беларусі", *it-belarus*, accessed on May 19, 2019





Victor Arshavskiy

Belarusian Economic Research and Outreach Center

arshavskiy@beroc.by

<https://sites.google.com/site/archavski/>

Victor Arshavskiy has PhD in Economics from New York University in 2011. After graduation worked in Graduate School of Management in Saint Petersburg University, Saint Petersburg, Russia. From September 2013 to August 2017 Victor worked as a Research Scientist at CTED, NYU Abu Dhabi, UAE. Since September 2017 Victor works as a Research Fellow at Belarus Economic and Outreach Center. Victor's fields of interest are Development Economics, International Trade and Financial Economics.



Arevik Gnuzmann-Mkrtchyan

Leibniz University of Hanover

mkrtychyan@mak.uni-hannover.de

www.mkrtychyan.info

Arevik Gnuzmann-Mkrtchyan is a Post-doctoral Researcher at the University of Hanover. She

obtained a Ph.D. in Economics from the European University Institute (EUI) in Florence, Italy in October 2014. She is also an off-site Research Associate at the Belarusian Economic Research and Outreach Center (BEROC). Her research interests lie primarily in the field of International Economics.



Aleh Mazol

Belarusian Economic Research and Outreach Center

mazol@beroc.by

www.beroc.by

Aleh Mazol received his Bachelor's degree in Economics from the Belarusian State Economic University (2003) and obtained his Master's degree in Economics from Kyiv School of Economics (KSE) in 2013.

Since January 2015, Aleh works at the Belarusian Research and Outreach Center (BEROC) and currently holds the position of researcher. His working and research interests are spatial economics, monetary economics, corporate governance, poverty and inequality.

freepolicybriefs.com

The Forum for Research on Eastern Europe and Emerging Economies is a network of academic experts on economic issues in Eastern Europe and the former Soviet Union at BEROC (Minsk), BICEPS (Riga), CEFIR (Moscow), CenEA (Szczecin), KEI (Kiev) and SITE (Stockholm). The weekly FREE Network Policy Brief Series provides research-based analyses of economic policy issues relevant to Eastern Europe and emerging markets. Opinions expressed in policy briefs and other publications are those of the authors; they do not necessarily reflect those of the FREE Network and its research institutes.