

The Future of European Higher Education in an Age of Demographic Headwinds



The Impact of Demographic Decline on Higher Education System Structures Funding in Romania Poland Russia

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Central and Eastern Europe is currently undergoing a rapid transformation due to the decline in birth-rates that occurred after the collapse of communist regimes across the region. The demographic transformation is increasingly affecting higher education systems, and the process was particularly acute in the years following 2008. The present paper aims to discuss the challenges faced by higher education in the context of population ageing and decline. Demographic trends across the European Higher Education Area are likely to make population contraction a key contextual factor in shaping higher education in the decades to come.

Currently, there is somewhat limited research aimed at assessing the impact of population decline brought about by sub-replacement fertility rates¹ on higher education systems. This can be linked to the fact that low fertility rates are a fairly new demographic occurrence. While low fertility rates cause rapid and often abrupt declines in birth rate and demographic cohort sizes, they take at least 18 years before they start having an impact on higher education, due to the age structure of the student body. Furthermore, countries with hitherto low higher education participation rates (e.g. Germany) often compensate for cohort size reduction via rapid growth in university access rates per cohort. As such, there is as of yet still a limited number of countries in which low TFR (total fertility rate, see below) has started having a significant impact on higher education systems, and even here the literature tends to discuss low TFR as a background rather than a transformative factor. However, the situation is likely to change dramatically over the next two decades, with steep population ageing and long-term contraction of education systems,

¹The average number of children per woman is insufficient to maintain long-term population stability. A fertility of around 2.05–2.1 is needed for long-term population stability in a 0 migration, stable life expectancy scenario.

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including at tertiary level, becoming more permanent realities. For those countries unable to establish selective immigration programmes, further negative consequences are likely also to affect the economy, social relations and possibly the role and functions of the state. These can include pension system deficits, loss of public services and even complete collapse of entire communities (see Matanle 2013 for an insight into the comparable Japanese case).

The present paper will discuss the situation in Central and Eastern Europe, one of the regions most affected by population decline brought about by low fertility rates. Specifically, it will cover Romania, Poland and Russia, three countries that represent three distinct types of population decline. Romania has seen rapid fertility adjustment with high outward migration. Poland has seen slow fertility adjustment (cohorts shrink gradually) with relatively high outward migration. Russia has seen sharp fertility adjustment with positive immigration rates and is the case country that has had the most significant rebound (registering positive population growth in the past few years).

Typically, the paper will focus on how demographic decline has shaped the structure of the higher education systems in the three countries, as well as funding approaches and realities. The paper is exploratory in nature and relies on literature, data and interviews with several types of stakeholders in the analysis it employs. It is important to note that all three countries started seeing their student populations contract around 2007, so the window in which higher education policy can be analysed against the backdrop of demographic decline is still rather small. The focus period will be 2008–2015, the years in which the steep fertility decline that occurred at the end of communism most strongly echoed in declining enrolment numbers (Tables 1 and 2).

The Demographic Backdrop

The main factor behind the demographic decline and population contraction in Central and Eastern Europe is low fertility. As fertility fluctuates year by year based on a variety of factors, long-term fertility rates are usually measured in terms of TFR. TFR is a synthetic rate used to measure the fertility of an imaginary woman

Table 1 TFR evolution in Russia, Poland and Romania

Country	TFR 1990	TFR 1995	TFR 2000	TFR 2005	TFR 2010	TFR 2015
Russia	1.89	1.34	1.20	1.29	1.57	1.78
Poland	2.04	1.65	1.35	1.24	1.38	1.29
Romania	1.83	1.33	1.31	1.32	1.30	1.58

TFR below 2/3 of replacement level highlighted in red

Lowest-low TFR highlighted in bolded red

Sources Eurostat, Rosstat, INS

Table 2 Average cohort size evolution in Russia, Poland and Romania (*sources* Rosstat, GUS, Eurostat and INS)

Share of 1980's mean annual birth cohort size, of post-communist mean annual cohort sizes grouped into 5-year clusters (last period is a 4-year cluster)						
Country	1981–1990	1991–1995	1996–2000	2001–2005	2006–2010	2011–2015
Russia	2,331,154	1,506,644	1,265,872	1,429,145	1,670,868	1,895,560
Poland	641,475	496,327	399,361	358,711	401,501	378,065
Romania	358,093	253,808	234,931	216,127	218,141	191,556
Russia %X	100.0%	64.6%	54.3%	61.3%	71.7%	81.3%
Poland %X	100.0%	77.4%	62.3%	55.9%	62.6%	58.9%
Romania %X	100.0%	70.9%	65.6%	60.4%	60.9%	53.5%

which would theoretically be subject in a single year to all the age-specific fertility rates of women aged 15–49 recorded in a sample population (United Nations n.d.). This indicator is particularly useful for the present cases as it does not lose accuracy because of migration (as emigrant females are no longer factored in) or age distribution in the population (e.g. World War II echo effects). Birth rate, by contrast, is distorted by both fertile-age emigration (and immigration) and by echo booms or busts resulting from outstanding events (such as previous baby booms or wars). The only weakness errant to TFR is the fluctuation emerging from postponed fertility, especially if the mean age of motherhood rises rapidly.

When using TFR, a clear indicator of its impact in the long run is the relationship it has with the replacement level TFR, which is widely considered to be 2.1 in countries with low infant mortality rates. This indicates the average TFR needed for a generation to be roughly equal in size with the previous one, thus ensuring a balanced population in the long term. Kohler et al. (2002) arbitrarily define lowest-low fertility as 1.3, with populations halving in less than half a century. In the three cases covered in this paper, TFR collapsed rapidly and strongly after the collapse of communism and lowest-low fertility was still observable in Poland recently².

Within the population, this collapse of TFR has caused a rapid decline in the size of annual cohorts (the number of people born in each year). If measured against the 1980's mean cohort size, all three countries experience a drastic decline.

In the long run, a stable TFR of 1.3 means that a population halves every 45 years (Goldstein et al. 2009). Even a small variation in TFR can have a dramatic effect on population dynamics, with a stable TFR of 1.6 leading to population halving time doubling to 90 years.

The TFR declined most steeply in Poland, but Romania had a larger decrease in cohort size due to higher emigration rates reducing the number of fertile-age women. Also, it is important to note that starting in 2007, Russia experienced a

²TFR in Poland might be deflated by its double-counting of emigrants living in other European countries.

significant revival in birth and fertility rates due to a mix of economic revival and pro-natalist policies initiated by the Putin government (Chirkova 2013).

The above numbers have a significant impact on the number of upper secondary school graduates entering higher education. A decrease of 40% in mean cohort size (at birth) implies the need to raise participation rates by over 65% in order to prevent a net loss in new admissions from the respective age cohort. The scale of TFR collapse in the three cases reflects such a rapid decline in cohort size that it becomes increasingly difficult for enrolment rates to rise faster than the recruitment pool can decline unless older learners rapidly increase their share in the student population.

It is also important to note that migration distorts the demographic realities of the three countries to some extent. Russia has tended to have an overall positive migration balance despite significant emigration while Romania and, to some extent, Poland have tended to have negative migratory outflows (Izyumov 2010). In fact, Romania's emigration rate was so high that an average of just 75.6% of the average 1980's birth cohort was still living in the country on January 1, 2014³. Given fairly low mortality rates, this is symptomatic of a very high emigration rate. But even in Romania's case, most emigration takes place among people older than the average age of front-loaded higher education participation (participation by recent upper secondary graduates). For example, 86.5% of the 1991–1995 cohort still resides in the country, as does 92.6% of the 1996–2000 cohort.

Demographic variation seems to be a fairly disregarded factor when it comes to advanced policy and systemic planning by governments and institutional actors (Kwiek 2013), though in the case of Russia, demographics have been a focal point for public policy as of 2007 (Chirkova 2013). Furthermore, some demographers tend to consider lowest-low fertility as a transitional manifestation of postponed childbirth (Goldstein et al. 2009), but in the light of World Bank⁴ data indicating that there are over a dozen countries with ongoing, long-term fertility rates at 2/3 of the replacement level or below, such demographic realities could easily become permanent.

The Influence of Declining TFR and Birth-Rates on Student Populations

Before discussing the impact of demographic change on higher education systems, it is important to distinguish between birth-rate decline and other factors that have influenced the behaviour of higher education systems. While all three cases have

³As per INS Tempo data accessible online via an INS account at www.inssse.ro accessed on October 1, 2017.

⁴World Bank data bank for fertility, available online at <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN>, retrieved on March 3rd 2018.

seen student numbers fall in 2005 (for Poland) and 2007–2009 (Romania and Russia), there are other major societal and economic trends which could be considered significant factors in determining variations in the size of student populations. For example, many Romanian interviewees pointed out the role of falling numbers of school students passing their baccalaureate examination as a key factor in falling student populations (interviews 01, 05, 06, 07). Importantly, the moment in which smaller demographic cohorts started reaching the traditional admission age of 18/19 coincided with the global economic or with rising emigration rates (in Romania in particular).

Sadly, there is a lack of sufficiently reliable statistical data or survey information to clearly estimate the impact of most of the above-mentioned factors individually. However, it is possible to calculate correlations between the size of birth cohorts and variations in the student population in each of the three countries using linear regression (Tables 3 and 4).

Application of a linear formula indicates high levels of association between average at-birth cohort sizes and student populations in each of the three countries. The value of correlation coefficient r is 0.973 for Poland, 0.956 for Romania and 0.975 for Russia. Due to the high value of r , the null (zero) hypothesis is rejected for all levels of significance despite the relatively small n (number of cases). As such, it can be determined that there is a very strong positive correlation between declining birth cohort sizes and declines in student numbers.

Table 3 Typical university-age population cohort size and student populations

Year	Poland		Romania		Russia	
	X	Y	X	Y	X	Y
2007	613	1923	370	1030	2374	7461
2008	587	1912	374	1035	2297	7513
2009	570	1880	365	939	2158	7419
2010	552	1818	345	816	1976	7050
2011	533	1737	320	661	1782	6490
2012	517	1676	294	572	1632	6074
2013	496	1549	269	541	1507	5647
2014	472	1469	244	512	1409	5209
n	$n = 8$		$n = 8$		$n = 8$	

Unit thousands pers

Source multiple. X indicates average 18–23-year-old cohort size for the respective year and Y student populations

Table 4 Coefficient of determination

	Correlation coefficient	Coefficient of determination r^2
Poland	0.973	0.947
Romania	0.956	0.914
Russia	0.975	0.951

This, of course, is not an absolute causal inference. The impact of other contextual factors on student population decline cannot be disproved. Nevertheless, the high level of the coefficient of determination implies that over 80% of the variation in the dependent variable (student populations) can be explained by variations in the independent variable (birth cohort size, 5-year average) for each of the three cases.

In any research on the topic of this article, establishing a link between declines in cohort sizes and decreases in student enrolment is important in that it indicates the fact that the compensatory mechanisms that contribute to increased enrolment outside of demographic factors (growing participation, international students, etc.) are no longer strong enough to counteract demographic headwinds.

Changes in the Structure of the Higher Education System

One of the key areas in which a measurable impact can be seen concerning the consequences of demographic decline on universities is the structure and organisation of the higher education system itself. The precipitous decline in the number of students after 2008 transformed the structure of the higher education systems of Poland and Romania and also saw significant changes in the structure of the Russian higher education system. The decline in the student population coincided with a “perfect storm” of circumstances that hurt private institutional educations (in Romania and Poland) and part-time programmes (in all three countries) particularly hard.

Elements of this “perfect storm” include the demographic crunch itself, but other factors were involved in shifting the patterns of demand across higher education systems. First of all, the legacy of Romania and Poland’s extreme communist-era *numerus clausus* had included a large number of mature learners taking advantage of flexible part-time programmes offered on a fee-paying basis. The boom tapered off gradually and continued to do so at the same time as demographic factors started bringing down front-loaded student admissions (interviews 03, 05).

Private education was only legalized in the early 1990’s and remains, in all three cases, dominated by non-traditional forms of study, including part-time and distance education. To some degree, and especially in formerly restrictive Poland and Romania, private institutions enabled older adults to receive the degrees that were inaccessible under communist-era *numerus clausus* and ended up ballooning to over a third of the entire higher education system (interviews 03, 05) (Table 5).

The 2008–2015 decline in student numbers has spurred faster declines in private education enrolment than in the public system in all three countries, but especially in Poland and Romania. The reasons for this are complex, but have to be understood in the context of declines in the demand for non-traditional forms of education (the generations previously deprived of higher education access were now ageing and even retiring, among other factors) and especially as a side-effect of the

Table 5 Sectorial evolution—student numbers

Edu sector	Peak enrolment			2013 enrolment			Decline (%)
	Number	Year	Share (%)	Number	Year	Share (%)	
RU—public	6,215,000	2008	86.7	4,762,000	2013	84.3	23.4
RU—private	1,298,000	2008	17.3	885,000	2013	15.7	31.8
PL—public	1,330,717	2004	69.6	1,150,859	2013	74.3	13.5
PL—private	660,467	2007	34.4	397,889	2013	25.7	39.8
RO—public	650,247	2007	63.1	461,314	2013	85.3	29.1
RO—private	410,859	2008	39.7	79,246	2013	14.7	80.7

Data sources national statistics institutes' databases

dual funding system specific to all three countries. There are, however, notable differences in the scale of system transformation between them.

Russia stands out with regard to the comparatively modest scale of its private higher education sector. While it started developing as early as the private education sectors in Romania and Poland, non-public institutions in Russia never attracted the same share of students as their Polish and Romanian counterparts. At its numerical peak, in 2008, the private education system still accounted for little over 1/6 of the entire student body. Like in Romania and Poland, part-time and distance learning were overrepresented in the system. In 2008, slightly fewer than 25% of all students in private institutions were enrolled in full-time programmes. When the smaller cohorts of the 1990's baby bust started bringing down admission totals, the Russian private sector contracted at a much slower rate than its Polish and Romanian counterparts, but faster than the public sector. Furthermore, the dominance of non-traditional education forms increased, with full-time education having a share of just 13% of the private education student body by 2013/14. By contrast, it remained steady in the public sector at around 50%.

Even though the private HE sector has downsized faster than the public one, many indicators point to a resilience not seen in either Poland or Romania. First of all, the trend of relative decline in private education was not consistent throughout the period of rapid decline in student numbers: in 2014, while the number of public institutions declined by a further 30 (from 578 to 548), that of private HE institutions rose by 11, from 391 to 402 (Rosstat 2015). And while the number of students in private institutions continued to fall faster year-on-year than in the public sector, the number of new admissions rose in terms of relative share as compared to the public system (*ibid.*). Furthermore, a long-term look at the Russian system indicates that as of the academic year 2014/2015, the public HE sector had shrunk to just a few percentage points above 2000/2001 levels in terms of gross enrolment while the private sector was still enrolling 70% more students than at the beginning of the century.⁵

⁵As per Rosstat numbers (orig Russian), retrieved on October 14, 2017 from: http://www.gks.ru/free_doc/new_site/population/obraz/vp-obr1.htm.

The public HE sector, despite losing proportionally fewer students than private universities, registered a similar level of decline in terms of number of institutions. 114 universities from the public sector (17.2% of the total) were merged or dissolved between 2009 and 2014 (Rosstat 2015). Many of these developments have been incremental and not part of a systematic strategy of system optimisation. While Russia's education demographic crisis was anticipated at its very onset,⁶ there had been relatively few efforts to systematically downsize the public sector in order to adapt to new realities. Several declarations by Russian ministers and a new 2016–2020 strategy for HE seem to indicate that a full-scale restructuring of the public university sector is forthcoming, including the closure of two out of every five major public institutions.⁷ Whether this is implemented and its potential effect on competing private institutions remains to be seen.

Of the three countries covered in this article, **Poland** has experienced the most moderate decline in student numbers. This is due to the fact that the abrupt collapse in birth-rates witnessed by Romania and Russia between 1989 and 1991 was more protracted. This has provided for a gentler decline in mean cohort size, starting as early as 1984 and accelerating from 1992 onwards. While Russian birth-rates bottomed as early as the 1997–2000 period, Poland only did so in 2002–2004. These smallest cohorts are not yet enrolled in higher education, hence the decline in student numbers in Poland was probably not yet complete as of 2015.

It is important to note that, much like Romania, Poland placed serious caps on the number of students admitted into higher education during the years of the communist regime (Kwiek 2013). This created considerable demand which exploded in the 1990's and early 2000's under the form of part-time courses that were organized either in a fee-paying system by public universities or in the booming private education sector. Often, these courses had non-traditional students such as older adults forming a big part of their enrolment, and the demand for them tapered off at the same time as the size of traditional student cohorts declined (interviews 02, 03). Unlike Russia, where the ratio for full-time programmes changed only moderately, almost the whole contraction in the Polish higher education system consisted of part-time forms of education (Fig. 1).

This is further encouraged by the fact that full-time studies are entirely subsidized by the state, with the exception of limited administrative fees. This applies to the entirety of the student population enrolled in state universities, unlike Romania and Russia where the dual funding policies also apply to some full-time programmes in public universities.

A further look at GUS (Polish Statistics) data indicates that full-time studies have seen their share rise in both public and private education. In private education, the share rose from 17.4 to 21.8% in the five years to 2015. The public sector saw a

⁶E.g. Russian ministry “warned” fall to 4.000.000 students likely: <http://www.universityworldnews.com/article.php?story=20100305111840656>.

⁷News appeared in the “University World News”, retrieved 14.10.2017 from: <http://www.universityworldnews.com/article.php?story=20150417043945585>.

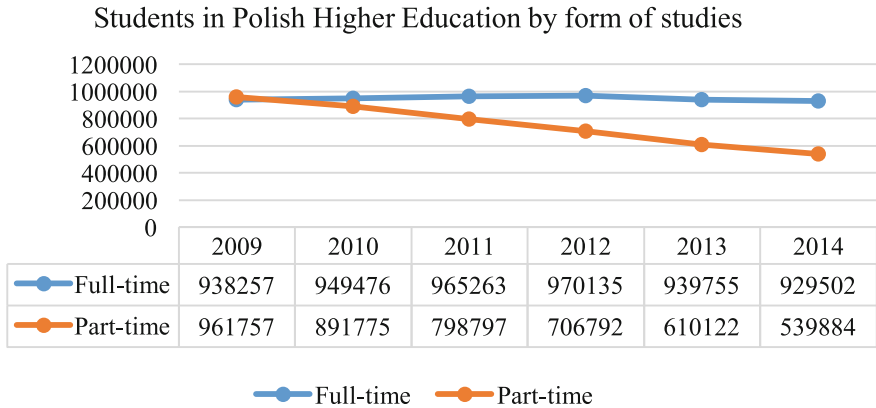


Fig. 1 Evolution of the student population in Poland by type of studies 2009–14. *Source* GUS (2015) (http://swaid.stat.gov.pl/en/Edukacja_dashboards/Raporty_predefiniowane/RAP_DBD_EDU_12.aspx, accessed October 17, 2017)

similar rise from 65.4 to 76.7%. Public institutions even saw a slight rise in the absolute number of full-time places available, though the closing down of fee-paying distance learning programmes represented a blow to revenues (interview 03).

Romania represents an outlier among the three cases in that the contraction of the education system has been both very rapid and more transformative. The most significant variation occurred in the Romanian private education system which has seen a contraction of over 80% between its peak in 2008 and the 2013/2014 academic year. The decline was so extensive that the system is now less than half the size of the single largest private university (the scandal-ridden “Spiru Haret” University)⁸ less than a decade ago.

Part of the explanation probably lies in Romania’s static dual funding system and the scale of overall contraction within the student population. In essence, the number of state-funded places has remained constant on a backdrop of falling demand (CNFIS 2013, 2014). The result was that an ever-larger share of applicants was able to enrol in programmes in which they did not incur any costs. For traditional-age students, advantages associated with these programmes include heavily subsidized dormitory and canteen services, thus creating an appealing alternative to private institutions’ distance and part-time programmes. The number of state-funded places was constant at between 284,000 and 290,000 (CNFIS 2014). With the implosion in student numbers, these places have gone from covering under 30% of the student population to covering nearly 60%.

⁸A scandal had erupted in 2009 after “Spiru Haret” had allegedly recruited as many as 300,000 students in precarious study conditions. Newspaper article (retrieved October 10, 2017) available here: <http://www.zf.ro/politica/cum-a-ajuns-spiru-haret-sa-aiba-300-000-de-studenti-sub-ochii-autoritatilor-statului-video-4667002/>.

Another key factor determining the contraction of private education seems to be represented by the numerous scandals in which Romanian private education has been involved, including non-recognition of diplomas and non-authorisation of programmes (interviews 01, 05, 07). These have been prominent over most of the past 10 years, commencing even before the demographic crunch started to hit. A simple use of Google's search function for the Romanian term "Universitatea Spiru Haret"⁹ in 2015 yielded the following results: two official university web-pages, their Wikipedia entry, two entries for judicial counselling for issues of diploma non-recognition, three press articles related to various institutional scandals, the university forum, two benign press articles on various "Spiru Haret" programmes and a mock-news article declaring that the university now offers admission to horses. In essence, half the content has a negative connotation towards the university. By contrast, a Google search for "Universitatea Babeş-Bolyai", the largest public institution, provided no information with a negative connotation in the first two pages. Furthermore, two of the search results were press articles with a positive appreciation of the university's programmes and research activities.

While the private higher education sector contracted in a rapid fashion, attempts to rationalize the structure of the public sector have largely failed. Pressure to reduce the number of universities has been growing for some time, and many institutions are now keen to undergo ranking exercises that place them in positions likely to increase attractivity among student graduates (interview 06). The need to compare institutions and reduce the number of universities had already been established as a focal point of public policy by the reports of a Presidential Commission set up to investigate higher education (Presidential Commission 2008).

An attempt was made in 2011 to create a hierarchy of institutions. The idea behind the exercise was to coordinate funding policy and to determine the privileges of various universities (for example the right to award Ph.D. titles) based on their position in the classification. The exercise also aimed to introduce incentives for institutions to merge and to establish a higher education system with fewer but more consolidated universities (interview 07). The effort failed, however, amid accusations of lack of transparency, a lawsuit by a small regional university and a lack of follow-up. While several other legal reforms have been discussed since, none has yet tackled the issue of mergers or of regional university closures.

Even as the classification scheme failed, the problem of funding for smaller public universities (which have lost a larger share of their students since 2009) has reached the point to which they are often propped up by the Ministry of Education using emergency funding. There seems to be a lack of political will to initiate closures, especially as public universities in small county capitals have an important social function, being both leading local employers and a source of prestige for

⁹Search run on October 10, 2017 on the Romanian language version of the Google search engine. By late 2017, the results were considerably more positive.

economically marginalized communities (interview 01). And while the current government has maintained a commitment to the classification exercise, ongoing policies in higher education do not factor it in.

Changes to Funding in an Age of Demographic Decline

Institutional funding patterns in all three case countries are closely linked to student numbers, with research and other complementary activities having a smaller weight in funding when compared to many Western universities. As briefly mentioned earlier, all three case countries have developed a dual funding system for public universities after the collapse of the communist regime. All three had moved from offering exclusively state-funded places (with significant subsidies for accommodation, food and transport on top of that) during the communist era to having at least 50% of their students paying some form of tuition fee at the peak of their student population growth. New and (until recently) dynamic private higher education sectors largely funded by fees emerged and have complemented the public higher education systems since the mid-90s.

In the global context, a large share of funding literature puts emphasis on the growing diversification of funds, spurred by dwindling political willingness to fund higher education (Johnstone 2007; Johnstone et al. 2006) and by policies aimed at income diversification (Privot and Estermann 2012). This is to a large extent the case for the three countries studied here up to 2005 (in Poland) and 2008 (in Romania and Russia). However, one of the immediate effects of demographic decline in the three countries is a growing role of the state in overall funding, and this is the case especially in Romania and Poland. The two countries had suppressed demand for higher education to a far greater extent than Russia during the communist era and subsequently developed a comparatively larger private fee-paying sector (during the transition). These trends were abruptly reversed once student cohorts started shrinking. Notably, Romania saw the share of university places funded by the state nearly double (CNFIS 2013, 2014), and Poland managed a slight increase in the number of full-time students despite the ongoing demographic decline. All of these tendencies happened on a background of declining numbers of students enrolled in fee-paying forms of education, as detailed in the previous section.

Russia defies the “normal” theoretical models associated with higher education funding diversification, due to the fact that fee-paying tracks and a private higher education sector were introduced during a time of declining student enrolment. Unlike Poland and Romania, Russia actually experienced a decline in its student population in the early years of the transition to a market economy.

For Russia in particular, discussing changes of funding solely in the context of demographics-fuelled changes in the student population is a limited exercise, in as much as the Russian economy (more so than Poland or Romania) has seen quite severe boom and bust cycles during the post-communist period. Furthermore, the

country experienced far more severe cuts in services, investment and social safety nets over the course of the early transition to capitalism (Izyumov 2010). The succession of the transition recession and the 1998 Russian financial crisis, in particular, contributed to underfunding throughout the 1990's. The share of funding for education fell from 7.0% of GDP in the 1970's to just 4.4% by 1994, amid a significant decline in nominal GDP (Heyneman 2000).

The severe economic problems Russia faced encouraged early income diversification, despite the lack of the massification pressure seen in Poland and Romania. In 1993, constitutional guarantees on access to free higher education were complemented by the creation of a legal framework for fee-paying places in state universities. Outside the legal framework for income diversification, the state sector saw the emergence of an informal academic economy consisting of tutoring fees, ad hoc fees and bribes as well as the development of complementary revenue by offering various services (Gorbunova et al. 2007; Androuschchak et al. 2013).

As the number of students expanded in a belated massification trend, the share of state-funded places within the overall higher education system fell to a minority, even within the public university sector (Carnoy et al. 2012). Nevertheless, Russia initiated a series of funding reforms during the second Putin and Medvedev presidencies. In 2008, it designated a number of elite universities earmarked to receive extra funding in an effort to enhance quality (Carnoy et al. 2012). Other than extraordinary funding issued to elite universities, state financing of public institutions was increasingly linked to student numbers, as opposed to the granting of bulk financing by ministerial authorities.¹⁰ As student numbers fell, the Russian government modified quotas for students to universities, and non-elite state institutions started to take a significant hit to their funding (Forrat 2015).

However, while a debate on consolidating and reducing the number of universities and improving research funding was launched, as of 2017 they have not had a noticeable impact in changing the structure of the public higher education sector.¹¹ Calls for funding and systemic reform were made within the system itself, with "stronger" institutions demanding the closure of their "weaker" competitors (Forrat 2015). This falls in line with the policies that have aimed to gradually strengthen the role of elite universities initiated as early as 2008 (Froumin et al. 2014).

With the onus being on universities to consolidate and manage their financial sustainability, the number of public institutions and their branches has been falling slowly. The sectorial (public/private) and programme (full-time, part-time/distance) breakdown within the system has remained surprisingly stable, however. This contrasts to a large extent with both Romania and Poland and reflects the capacity of Russia's partial market system of funding governance to gradually evolve as the socio-demographic landscape changes.

¹⁰Note that in Russia funding was provided by different ministries, based on the topical orientation of each institution.

¹¹See the regular articles in international media on "massive closures" that seem to be repeated every few years without the closures actually ever happening, e.g. <http://monitor.icef.com/2013/03/russia-begins-to-implement-new-higher-education-strategy/>, retrieved on September 21, 2017.

A distinctive feature of **Polish higher education funding during** the transition period has been the higher share of students in state-funded places as compared to Russia and especially Romania. This has been the case even at the peak of the massification process, as all full-time programmes in public universities continued to benefit from full state financing. While the share of students in fee-paying places rose briefly above 50% during the early 2000's, it has subsequently fallen below 40%.¹² During the peak of the enrolment boom, even state universities tried to maximize the number of students enrolled in fee-paying part-time forms of study as these were proving more "lucrative" than state-supported places paid for from the public budget (Kwiek 2013).

When the number of students within the system started falling, the share of students now able to access the (more or less stable) number of state-paid places grew as a share of the total student population. Furthermore, the once booming number of mature learners who were enrolling in distance and part-time tracks started dwindling as the post-communist participation rebound came to an end (interview 03).

The Polish government responded to declining student numbers (and the subsequent fall in university revenues) via several policies, the key one being replacing the funding formula with a complex system that reduces the weight of sheer student numbers and introduces quality indicators as well as a growing focus on research activities (interviews 02, 03). As of the latest update of the funding formula (taking effect in 2015), student numbers have a reduced weight in the decision to distribute state funding among institutions (interview 03).

The decline in part-time programmes disproportionately affected private universities, as these mainly relied on such programmes, fuelled by what has traditionally been a client seeking marketing policy (Kwiek 2013). The decline in overall student numbers and the better individual odds of accessing state-funded places have meant that many of the smaller private institutions had to completely close down (interview 03). Others have initiated efforts to merge with other institutions in an attempt to generate economies of scale (interview 02).

Much like in Russia, changes in the funding pattern within the Polish higher education system have been gradual and incremental. Unlike Russia (or Romania, to some extent), Poland is likely to experience further contractions in student numbers up to at least 2020. Unless the funding mechanism changes, it is likely that private universities and fee-paying places in the public sector are looking at further downsizing for years to come.

In Romania, the main system of funding for public universities has not changed for the past 25 years. Funding is allotted on a *per-student* basis, with various indicators modifying the *per capita* amount that each institution receives, and funding of *student-equivalents* as opposed to physical students themselves. The theoretical *student-equivalent* favours institutions with higher training costs such as

¹²GUS database accessible from http://swaid.stat.gov.pl/en/Edukacja_dashboards/Raporty_predefiniowane/RAP_DBD_EDU_12.aspx, accessed September 17, 2017.

polytechnic schools and especially arts schools (the largest amounts being awarded to cinematography and music students due to small student-staff ratios). A large number of full-time, part-time and distance courses offered public universities significant, complementary sources of funding during the student population boom that preceded peak enrolment in 2008/2009. According to CNFIS (2013), the Romanian HE funding body, over half of the students in the public sector were paying fees in 2008. System-wide, less than 30% of students were enrolled in state-paid places that year (*ibid*).

Private institutions relied exclusively on fee-based funding, often from part-time and distance learning programmes. They also had an unusual share of non-traditional, mature students. For example, the largest private university (“Spiru Haret”) recruited a disproportionate number of public sector workers aiming to improve their job security by obtaining a tertiary degree (interview 05).

Romania’s funding patterns for higher education changed dramatically once the student population started decreasing. As cohorts shrank and fewer school students passed the baccalaureate, new admissions plummeted and a large share of new students was now able to access the free-of-charge, state-paid places in public universities. Not only did this change of pattern almost destroy the private higher education sector, but a few universities even failed to fill their quota of state-subsidized places (interview 01). Several small public universities are now dependent on emergency funding by the Ministry of Education to continue existing and are unlikely to ever become sustainable due to the rapid population collapse in certain regions, especially the South-West (see CNFIS 2014).

Attempts to change the funding model have existed but have been broadly unsuccessful. The most comprehensive one was linked to a system of rankings/classification devised as part of the 2010 Education law, but as of 2017 this system is not yet functional (interviews 01, 07). Ironically, there has been no change in the legal framework of funding public universities so the court-mandated cessation of ranking activities has transformed the funding of public institutions into a rather *ad hoc* activity (interview 07).

Another key trend in Romanian higher education funding has been a gradual lowering of the total funding in an incremental fashion. Successive Romanian governments lowered per-student-equivalent funding once the crisis started despite explicit legal requirements to allot 6% of GDP to education financing (interviews 01, 05). The result is a Romanian higher education system losing funding across the board, in both absolute and relative terms, from both state sources and the collection of tuition fees.

Conclusion

The structure of the higher education system in the three countries was changed to different degrees by the process of transition-era demographic decline which peaked between 2008 and 2015. In essence, there is some differentiation between Romania

and Poland, which saw considerable transformations, and Russia, which conserved the overall structure of its higher education system despite losing over 2,000,000 students system-wide. In the latter, the fluctuations in the share of the student population between the private and the public system remained fairly moderate, and changes to the share of full-time studies in the structure of the system were fairly moderate as well. Full-time, day-time studies continued to represent just little over half of all public system enrolments in Russia with remarkable resilience, though they experienced a small relative decline in the private sector. By contrast, Romania and Poland saw the private sector education that emerged during the transition era decline. Poland's large part-time sector has decreased, and there has been a renewed dominance of full-time studies, while both Romania and Poland saw a significant rise in the share of study places directly funded by the state.

One major outcome of the demographics-fuelled reduction in student numbers has been the consolidation of the position of an elite group of (mostly public) universities that have managed to weather the storm better than their regional and/or private peers. The non-discriminatory growth of the 90's and 00's was now replaced by a reality increasingly shaped by the preferences of the highest-achieving secondary school graduates and, especially in Russia, that of governmental authorities keen on having world-class universities.

The demographic decline has also influenced public funding of higher education. Even though Izyumov's (2010) framework on the social costs of transition hints at a deeper withdrawal of the state from the public provision of services in Russia than in other Eastern European countries, contextual and demographic factors have seen Romania reach the lowest share of publicly funded places in higher education during peak enrolment (2008). Poland has, for the most part, maintained a relatively high share of public funding for higher education throughout the transition period and the subsequent period of demographic decline.

While all three countries now have a smaller higher education system to fund, there has been no systematic long-term attempt to increase relative funding, despite the possibility to do so with minimum added burdens to the overall budget. In fact, in Romania in particular, the sharp drop in student numbers has been accompanied by an overall reduction in total funding devoted to tertiary education. All three countries, however, have mulled the introduction of policies for the advancement of excellence, often favouring major research universities within the overall higher education system.

In the future, it is likely that countries facing similar demographic conditions will be confronted with a significant need to rationalize their higher education systems, both to adapt to smaller and less traditional student populations and in order to use available funding more effectively. It is likely that there will be resistance to university closures and increasing competition for public budgets for the needs of a rapidly ageing society. However, to better understand and differentiate the exact impact of demographic decline on higher education institutions, there is an urgent need for further research involving both quantitative and qualitative approaches. At least, some of this research needs to be employed in better predicting the mid-term

evolution of student enrolment, thus aiding policymakers in determining system structure, planning funding allocation and investment priorities.

Furthermore, it is important to note that population reduction and ageing will bring about other significant socio-economic changes that might shape the higher education landscape in the longer term. This includes changes in the economy, such as the speed of economic growth or the cost of labour or the structure of wages. It will also change power structures and government priorities, with an older voter base likely to push governments to invest more in areas such as social care as opposed to initial education. How all of these challenges interplay with universities and education policies remains to be seen, though a long-term preservation of the *status quo* seems unlikely.

Annex—List of Interviewees

Nr.	Date	Country	Profile of the interviewee
1	10.05.2015	Romania	Male, central level institution with policy role
2	15.05.2015	Romania	Male, institutional representative with management role
3	18.06.2015	Romania	Female, central level institution with policy role
4	19.06.2015	Poland	Male, central level institution with policy role
5	28.06.2015	Poland	Female, stakeholder representative with policy involvement
6	30.06.2015	Poland	Male, institutional representative with management role
7	09.07.2015	Romania	Female, central level institution with both policy and management role
8	22.07.2015	Romania	Male, stakeholder representative with policy involvement

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