

ECONOMICS AND EDUCATION

IMPROVING HUMAN RESOURCE TRAINING POLICY FOR THE BALANCED ECONOMIC AND DEMOGRAPHIC DEVELOPMENT OF THE KALININGRAD REGION

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Balanced economic and demographic development is vital for ensuring the dynamic and proportional development of the regions. However, Russia as a whole and the exclave region of Kaliningrad as its integral part demonstrate significant disproportions between the need for human resources and their availability. This article aims to assess the balance between the components of the regional system of demography, education and economy system. It also explores the possible solutions to the problems revealed. The study relies on a modified concept of regional economic and demographic situation that supplements traditional analysis of the connection between the demographic characteristics of regional population and economy with the 'education' component.

The author identifies disproportions in both quantity (lack/excess) and quality (level of training and occupational structure Vs. the needs of the region) of human resources. The number of specialists in the humanities trained at universities heavily outweighs that in engineering and technology. The number of skilled workers trained in the region is insufficient. Frequent changes in the economic specialisation complicate an accurate forecast of the need for human resources. The rectification of disproportions requires comprehensive interdisciplinary studies within the demography/education/economy system at all territorial and regional levels, which will make it possible to produce a reliable forecast for each element of the system.

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Introduction

The role of education in regional economic development is becoming an increasingly important area of research. This is especially true for interdisciplinary studies emerging within the ‘demography — education — economy’ triad, which unite the efforts of demographers, economists, social scientists, and geographers to ensure a proportional and harmonized development of socioeconomic systems of all levels — national, regional, and municipal. This study aims to propose balanced recommendations for each system component, including the regional level.

Economic and demographic problems were the focus of presentations and discussion at the Social Challenges to Economic Development research symposium (dedicated to the memory of T. I. Zaslavskaya) held in Kaliningrad on May 26-27, 2015. Special attention was paid to territorial differences in the level, rates, and features of social development in the context of economic and other factors. This article analyses the problem of balancing demography, education and economy using the case of the Kaliningrad region. It is an elaboration on the statements made by the author during his presentation at the symposium.

Interdisciplinary research in the ‘demography — education - economy’ triad

Russian researchers have been studying economic and demographic connections since the 1920s, and S. G. Strumilin [14] was the first to address the issue. Then, through the works of N. T. Agafonov, A. Ya. Boyarsky, D. I. Balentei, I. G. Vishnevsky, B. Ts. Uralnis, and others, the field became quite popular in the 1960-80s, only to be virtually abandoned in the 90s. It was not until the 00s that an emerging research area — economic geography — turned its attention to this issue [12]. Nevertheless, the role of education remains insufficiently studied, especially in the regional aspect. Studies carried out under the supervision of M. P. Karpenko are a rare exception: their authors look at the development of (mostly higher) education from a regional and demographic perspective [10]. A comprehensive geographic and demographic typology is now being developed at the IKBFU [19].

This situation is somewhat typical of modern social science research in Russia. In most cases, scholars focus on narrow topics poorly coordinated with research conducted in related fields and sciences. When applied in practice, the findings of such research lead to considerable disparities in regional socioeconomic development. A solution to one problem gives rise to several, often more challenging. It is suggested that poor development of interdisciplinary studies at national and regional level results in disparities in the ‘demography — education — economy’ system. Demographic components are not harmonised with educational ones, meaning that general education is not

adequately coordinated with professional education, whereas professional education is not aligned with the economy's functional and industrial structure and development rate¹.

Discrepancies between the structure of professional education and the needs of national economy are becoming an increasingly important problem in Russia. The solutions are seemingly obvious: first, assess general economic conditions and development prospects; second, conduct a survey of employers' needs in human resources. Neither solution works as expected, though. Economic development strategies and programmes proposed by researchers (even if their key forecast parameters are close to the actual numbers) do not provide sufficiently detailed long-term assessments of employers' professional structure and needs of training. Surveys conducted in the business community only give a certain picture of the current demand but fail to deliver even a short-term forecast.

Even if it were possible to identify qualitative parameters of demand for employees of a certain qualification level, the absence of professional standards would become another obstacle, although relevant educational standards do exist and they are often (if not too often) revised. A lot has been done to develop professional standards yet the process is far from complete. When it is, a radical change bringing the standards closer to the industrial needs may be required.

Russian system of education dates back to the Soviet period and was designed to meet the needs of planned economy. In market economy, however, where workforce is viewed as a commodity, this system becomes ineffective. In the case of Russia, initial vocational education was the first to suffer, since the need for skilled workers radically decreased in the deindustrialised economy of the 1990s. Many large enterprises, which often ran their own vocational schools, closed down. It was then decided that initial vocational training was to be funded from regional budget, which just did not have enough funds. Training in secondary and higher professional education shifted to the humanities, and the number of graduates in economics and law sharply increased at the expense of engineering degrees. Many professional educational establishments still suffer from insufficient financing, are under-equipped and can not offer competitive salaries to their staff, spelling the inability to attract talented young faculty.

The system of higher education: the Kaliningrad region, the Northwestern federal district, and the Russian Federation

The Kaliningrad regional system of professional education offers the same types and forms of training as all the other Russian regions. Similar to the national and NWFD average, the number of applicants is decreasing

¹ Apparently, full harmonisation is unnecessary due to the interregional significance of many professional educational institutions (especially, national and federal universities) and workforce migration. The latter is somewhat limited, however, and the professional educational institutions must meet the needs for qualified personnel in their home regions.

across the board. In 2005-2013, the number of applicants per 1,000 population decreased both in the Kaliningrad region and nationwide at all levels of education. Moreover, in the Kaliningrad region this indicator is below the national average at all levels. Correlation between the initial, secondary, and higher professional education also demonstrates a number specific regional features (see fig.). The region shows a significant lag in the number of applicants for programmes of initial professional education per 1,000 population and a smaller lag in that for secondary professional education programmes (the 2013 level is above that of NWFD but below the national average).

In the exclave Kaliningrad region, the problems of aligning the system of professional education with the needs of economy and creating a balanced 'demography/education/economy' system are more urgent than in most Russian regions. Firstly, this is a result of instability in the Kaliningrad economy and its strong dependence on external factors [2; 8; 16; 20]. Secondly, the educational market is rather narrow, since the population of the region, which is territorially isolated from mainland Russia, is below 1 million people. Thirdly, this is a result of radical changes in the economic structure [1; 3; 13; 18] that have not been reflected in the professional education system, people's expectations from obtaining a certain profession, and attempts to forecast human resources.

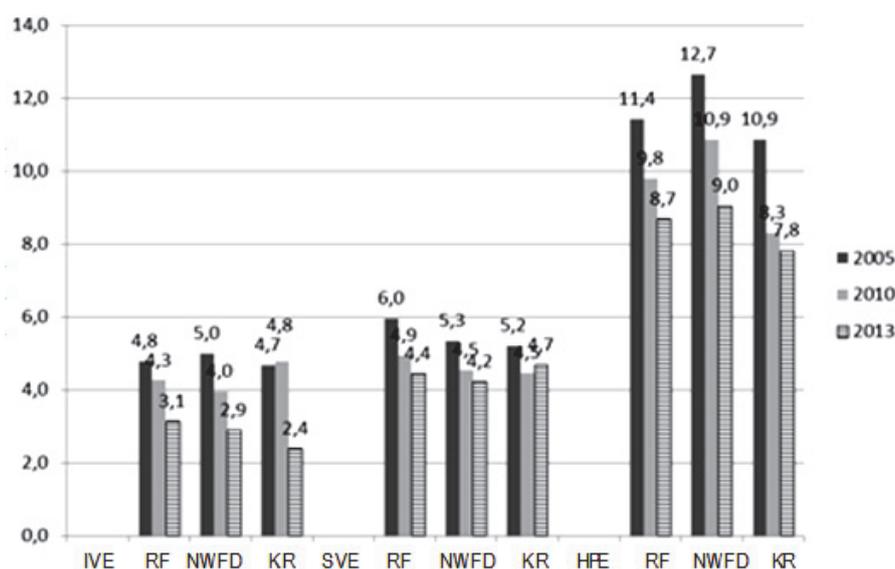


Fig. Changes in the number of applicants admitted to initial vocational education programmes (IVE), secondary vocational education programmes (SVE), and higher professional education — bachelor, specialist, and master programmes (HPE) per 1,000 population, 2005-2013

Abbreviations: RF — Russian Federation, NWFD — Northwestern federal district, KR — Kaliningrad region

Changes in the structure of the regional economy and their effect on the quality of employees and demand for qualified personnel

The 1990s witnessed deindustrialisation and a sharp decline in production. In 1990-1998, the number of people employed in the manufacturing of goods (i. e. industrial production, agriculture, forestry, and construction) almost halved, whereas the tertiary sector saw a 1.5-fold increase in the number of employees (Table 1). The total number of those employed in the economy declined (according to some experts, this can be explained by people finding alternative employment in the informal sector) [8].

Table 1

Number of people employed in selected industries in the Kaliningrad region, 1,000 people

Industry	1990	1998	2013
Total number of people employed	435	400	476
including			
Manufacturing	136	74	101
Agriculture and forestry	58	42	34
Construction	33	27	40
Transport and communications	38	31	44
Other	170	257	257

The industry-specific employment structure also changed. If in 1990 manufacturing accounted for 31.1% of the employed population, in 1999 this number dropped to 17.7% (Table 2).

Table 2

The annual average number of people employed by industry, %

Economic activities (industries)	Kaliningrad region			RF,
	1990	1999	2013	2013
<i>Total</i>	100	100	100	100
Agriculture, hunting, forestry, fishing	14.6	10.2	8.0	9.8
Industrial production (mining, manufacturing, power generation and distribution, gas and water supply)	31.1	17.7	21.2	19.2
Construction	7.5	6.7	8.4	8.4
<i>Total for goods manufacturing</i>	53.2	34.6	37.6	37.4
Trade, hospitality, and restaurants	9.6	21.0	19.2	20.1
Transport and communications	9.8	7.8	9.3	8.0
Finance	0.6	1.3	1.6	1.7
Utilities and maintenance	4.5	6.0		
Real estate services			8.0	8.6
<i>Total for market services</i>	24.5	36.1	38.1	38.4
<i>Total for non-market services</i>	22.3	29.3	24.3	24.2

Two hundred production facilities were operating in the region (as of 2014, 5600 economic entities were registered). If in 1990 the average number of employees per one industrial facility reached 650 people, in 2014 it was 18. Moreover, many enterprises either downsized or closed their operations. In 1998 total industrial output accounted for 29% of that of 1990 (mechanical engineering output for 18%, pulp and paper for 22%, construction materials for 11%, and the light industry for 8%). There was a fivefold decrease in the total fish and seafood catch.

Major industrial specialisations (fishing, mechanical engineering, pulp and paper) lost their leading positions (Table 3).

The Kaliningrad Technical University, which used to train specialist for the fishing industry, faced a dramatic decrease in demand for its graduates. The university started offering programmes in construction and agriculture, but it became rather problematic to attract experts from the other Russian regions. Of course, the level of instruction in these areas could not match that in the field of fishing.

Table 3

**Proportion of those employed in selected industries
(highly developed as of 1989), %**

Industry	1989	1995	2012
Fishing	33.3	14.2	5.8
Other food industries	11.5	21.4	
Mechanical engineering	27.9	10.5	17.3
Pulp and paper	7.1	18.9	0.5
Construction material	2.6	2.3	0.3
Light industry	4.9	1.5	0.5
<i>Other</i>	12.7	31.2	75.6
<i>Total</i>	100	100	100

The decrease in the number of people employed in manufacturing was accompanied by the transformation of the workplaces themselves: public (state owned) companies were falling apart and turning into private enterprises. In agriculture, for instance, 180 *kolkhozes* and *sovkhozes* were replaced by almost 6,000 small farms and 200 larger agricultural companies, which were still much smaller than the collective farms of the past. For financial reasons, these new farms often chose not to employ qualified experts (cultivators, livestock experts, economists, etc.). Similar processes took place in the other fields. As a result, the professional level of workforce plummeted and the demand for highly qualified specialists decreased. At the same time, employment in the industries that did not require a significant number of highly qualified professionals grew. The proportion of people employed in trade and service industry increased from 9.6 to 21%.

Although market economy is expected to be self-regulating, employment in management and administration grew significantly — from 0.9 to 7.6% of

the total jobs taken. Some balance started to appear in the 2000s, but manufacturing was still very much focused around different assembly plants and thus did not require highly skilled workforce.

Legislation regulating special economic zones was passed in the 2000s, and it helped trigger rapid industrial development in the region. Most of new enterprises, however, were the afore-mentioned assembly operations of little added value (10 — 20%). The scheme is simple: use tax-free imported raw materials and semi-finished goods and deliver them after slight processing to the other Russian regions. This way, the region's industry structure does not require a significant number of skilled workers.

In 2014, non-skilled workers accounted for 7% of the national, 4% of the NWFD, and 9% of the Kaliningrad workforce. In the same year, skilled workers accounted for 30% of the national, 31% of the NWFD, and 28% of the Kaliningrad workforce.

In the region's applications for foreign workforce, professions requiring higher or secondary vocational training amounted to 4% in 2012 and 7% in 2015; that is, lower skilled, blue-collar jobs (93% in 2015) dominated the applications. Construction workers (concrete workers, bricklayers, plasterers, house painters, steel fixers) and roadworkers are especially sought after. As a rule, foreign workers only have a minimal qualification, which does not contribute to the quality of works performed.

Making forecasts for the professional structure of employment is all the more difficult thanks to a high proportion of small businesses in the economy; predicting the future of small enterprises is notoriously complicated. In 2013, there were 224 small enterprises per 10,000 population in the region as compared to 144 nationwide (the region has the third largest contingency of SMEs, bested only by Saint Petersburg and the Novosibirsk region) [11]. These businesses employed 90,000 people (excluding external part-timers), or a hefty 19% of the total workforce in the region. A significant number of people were self-employed professionals [11].

Deindustrialisation of the 1990s and the following transition to SEZ-based manufacturing resulted in a steep decline in quality of workforce, since a large number of jobs did not require highly qualified personnel.

Innovation is not a strong influence in the Kaliningrad economy, which also leads to a reduced demand for highly qualified specialists.

In 2004-2014, the region's contribution to the development of hi-tech industry in the Russian Federations decreased from 0.54% to 0.4% (0.7% of the country's population live in the Kaliningrad region). Only eight hi-tech manufacturing solutions are used in the region per 10,000 population as compared to a national average of 14 and an NWFD average of 15. Regional organisations spend 0.04% of the total national spending on technological innovations. In 2013, the region issued only 62 patents for inventions (0.3% of the national total) and 17 patents for utility models (0.14%) [11].

A revision of the regional strategy for socioeconomic development and justification of its inevitable restructuring (due to the abolition of the customs privileges of the 1996 SEZ law as of April 1, 2016) require a more in-

novative economy and innovative industries and companies. That is why IKBFU was granted the status of a federal university. Moreover, there are no other prerequisites for a different avenue of the regional economy's development.

Changes in the qualitative correlation of professional training levels

The region's professional education system has also seen some significant changes (table 4).

In 1990/91, it focused on training skilled workers, who accounted for almost 60% of all graduates of professional educational institutions. The number of graduates with vocational school degrees was 1.5 times as high as that of university graduates.

In 2013/14, the number of secondary vocational institutions was almost the same. However, two thirds of all graduates held a university degree.

Table 4

Number of graduates in the Kaliningrad region, 1,000 people

Professional education levels	1990/1991	1998/1999	2013/14
Higher	1.7	2.0	7.4
Secondary	3.4	2.8	2.2
Initial	7.3	5.0	2.3
<i>Total</i>	12.4	9.8	11.9

Quantitative discrepancy in the training level structure of regional employment

While the region should not and cannot provide itself with specialists of all levels in all fields, it can and should train specialists for other regions (which is one of the federal university's missions; at the moment, approximately 20% of the university's applicants come from the other Russian regions, many of them will return home after graduation). We should now decide what specialists to train in the region, what specialists to attract from outside, and what the correlation between professional training and the needs of the region is.

The regional economy employs 103,000 people without any professional education (21.5% of all employed) (table 5). Mostly, they are blue-collar workers. Such significant proportion of workers without formal training has a negative effect on organisation and productivity of labor, as well as at the level of mechanisation and automation.

Moreover, the proportion of graduates with a university degree is twice as high as the proportion of jobs for university graduates in the employment structure. In this case, disproportionate education level can result in a conflict between high expectations of a potential employee and inadequate number of corresponding jobs. At the same time, the proportion of vocational school graduates is half the available jobs in the employment structure.

Table 5

Correlation between the training level of the employed and the graduates of educational institutions of different levels, 2013

Professional education level	Number of people with the corresponding professional education level		Number of graduates with the corresponding professional education level	
	1,000 people	% of people with professional education	1,000 people	% of people with professional education
Higher	150.5*	31.4	7.4	63
Secondary	157.7	32.9	2.2	18
Initial	68.0	14.2	2.3	19
Without professional education	103.0	21.5	–	–
Total	479.2	100.0	11.9	100.0

* including undergraduate education

An analysis of the number of graduates by generalised field of study demonstrates the prevalence of students in economics, the humanities, and services. A 2011 survey of higher education programmes shows that 42% students study ‘economics and management’ and 18% the humanities. The region suffers from a surplus of specialists in these fields, whereas only 4% of students choose specialities in the fields of ‘transport’ and ‘construction’. These disparities between the fields of study contribute to the imbalance in the regional labour market.

The discrepancy between the structure of professional training and the industry structure of economy is exemplified by the case of construction industry. In 2012/13, only 5.5% of university students were studying construction-related disciplines, whereas those working in the field already accounted for 8.4% of the total employed population [6].

A study conducted in February-March 2015 by IKBFU’s Institute of Nature Management, Spatial Development, and Urban Planning in collaboration with the Ministry of Construction of the Kaliningrad region and the Regional Union of Builders demonstrated that the surveyed companies required 135 engineering specialists with higher education, 24 with secondary education, and 611 skilled workers. Therefore, the number of construction specialists is sufficient only at the level of secondary vocational education, whereas the number of specialists trained within initial and higher education programmes cannot meet the current needs of the industry.

It would be wrong to say that regional universities do not strive to train specialist to meet the needs of the regional economy. They introduce new fields of study, increase the number of non-fee paying places in engineering and technology. An important contribution to this process was made when the IKBFU was granted the federal university status. Additional transfers from the federal budget made it possible to purchase cutting-edge

equipment for laboratories required in the training process within a number of new fields of study, to organise necessary training for the faculty members, and to invite specialists from leading national universities to teach and conduct research at the IKBFU [9]. However, the absence of a forecast for regional demand for specialties of certain professions and education levels complicates identification of perspective fields of study and admission standards.

Although the structure of training of qualified workers roughly corresponds to the industrial structure of economy, initial professional education institutions train a very small number of specialists, and their admission levels are decreasing (table 6). Other forms of training and retraining cannot give qualifications comparable to those obtained at the initial professional education institutions.

Table 6

**Number of graduates of initial professional education institutions
in the Kaliningrad region, 1,000 people**

Parameter	2010	2013
Graduation numbers of IPE institutions	4.3	2.3
including:		
Manufacturing	0.9	0.9
including:		
metal processing	0.5	0.4
light industry	0.1	0.1
Agriculture	0.3	0.1
Construction and maintenance	0.5	0.3
Transport	0.9	0.2
Communications	0.1	0.1
catering, trade, and food industry	0.5	0.3
Services	0.3	0
all economic activities	0.5	0.2
Other	0.3	0.1

Largely due to the lack of balance between the professional structure of training and insufficient number of graduates in a number of profiles, the industry structure of the economy faces a deficiency of human resources, which will be a result of miscommunication between the industry and profile training rather than a lack of human resources in general. Suffering from a surplus of graduates with certain qualifications, the region lacks specialists with others. According to the regional Ministry of Social Policy, the need of local organisations for human resources is assessed at 9556 people based on the vacancies published by employment offices in January 2015. Blue-collar jobs account for 7714 of all openings. At the same time, there is both general and recorded unemployment.

As of May 1, 2015, the number of openings reduced to 6,000 due to the economic crisis, therefore this number can hardly be considered as a reference for either long- or mid-term perspective.



Conclusion

The complexity of economic and demographic problems in the Kaliningrad region is explained by the region's exclave position, frequent changes in the economy's industry structure, and a discrepancy between the economy's needs for certain qualifications and the field of study structure at the local educational institutions. An imbalance between the training levels and specialisations leads to degradation of professional structure of regional human resources and employers' efforts to solve the personnel-related problems by attracting migrants from the other Russian regions and neighbouring countries. Labour migration dominated by workers of low qualification does not contribute to an increase in labour productivity, nor does it improve the quality of goods and services.

One of the key factors behind regional economic and demographic discrepancies is the passive stance of local business community, which is avoiding collaboration with professional education institutions and is thus incapable of forecasting future demand for human resources. However, one should admit that — even in collaboration with researchers — it is rather difficult for both businesses and regional and municipal administrations to provide even short-term forecasts in the Kaliningrad exclave Kaliningrad, because it is so strongly affected by external factors.

Meanwhile, there are hardly any other means of assessing perspective regional demand for human resources of a certain level and profession than the combination of a forecast of economic development paths and a survey of employees. It is important to combine the methods of scenario planning, economic and demographic analysis, surveys, and expert evaluations, as well to pay attention to the qualifications of experts examining the results obtained.

At the time of writing this, a long-term forecast of regional socio-economic development is being prepared. Most experts agree that there is a need for radical restructuring of the economy, which is now largely based on privileges under the 1996 law on the Special Economic Zone in the Kaliningrad region. 2016 will see the abolition of the mechanism in the framework of which local companies process imported raw materials and deliver the resulting products duty-free to the Russian market. Therefore, many manufacturing companies will either close down or change their specialisation. It is important to support companies capable of creating a stable and innovative regional economy resting on internal regional resources and ensuring regional economic security.

Another important factor is the flexibility of professional education system and its capacity to train specialists ready to upgrade their qualifications and re-train in line with the changing needs of the economy. It is crucial to eliminate current disparities in professional training, which does not take into account the needs of the Kaliningrad economy, and to plan improvements to the system of professional education in line with the most probable scenarios of regional economic development.

Not only does higher education have to increase the number of graduates in engineering and technology, but it also must introduce new fields of study and increase the number of graduates capable of contributing to highly efficient innovative operations in line with the objectives of national and regional economic development. A promising area of higher education development is to introduce applied bachelor programmes giving the graduate not only a bachelor degree but a number of vocational skills as well. Such skills are already developed in the framework of secondary professional education. This will partially meet the demand for qualified workers and employees. At the same time, there is a need to train a greater number of qualified workers at the initial professional education institutions admitting students after both the 11th and 9th grades of secondary school.

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