

Artículo de investigación

Regional universities and external migration of the graduates: impact on economics sphere (example of Primorsky region)

Региональные вузы и внешняя миграция выпускников: влияние на сферу экономики (на примере Приморского края)

Universidades regionales y migración externa de los graduados: impacto en la esfera económica (ejemplo de la región de Primorsky)

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Primorsky krai, a region located in the Far East of Russia, is suffering a deficit with qualified graduates to facilitate the economy processes. There is a gap between the offering of specific staff to advance the economy and ability of local universities to satisfy it. External migration of graduates, so-called “brain drain”, is a deterrent to development of the economy. Approximately 78 percent of the migration flow are the young people under 35. Along the asymmetry of supply and demand due a professional qualification, the tendency of reducing the universities’ graduates leads to a structural imbalance in the labor market. As a result, the region will only partially be able to meet the needs of economy in higher degree employees. Thus, for regional universities is vital to develop educational programs fit the prospective economic spheres, taking the forecast for the economy and the labor market, at least for 5-7 years. The strategic goal for a core regional university is reducing the imbalance in the labor market and providing the economy with specific knowledge and skills. An axial university, or a

Аннотация

Приморский край, регион, расположенный на Дальнем Востоке России, испытывает дефицит квалифицированных выпускников для содействия экономическим процессам. Существует разрыв между предложением конкретных сотрудников для развития экономики и способностью местных университетов ее удовлетворить. Внешняя миграция выпускников, так называемая «утечка мозгов», является сдерживающим фактором для развития экономики. Приблизительно 78 процентов миграционного потока составляют молодые люди в возрасте до 35 лет. Наряду с асимметрией спроса и предложения, обусловленной профессиональной квалификацией, тенденция сокращения числа выпускников университетов приводит к структурному дисбалансу на рынке труда. В результате регион сможет лишь частично удовлетворить потребности экономики в работниках высшей степени. Таким образом, для региональных вузов жизненно важно

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core regional university, is becoming a research and project center which able transforming the knowledge into a commercial product. It generates a network of partnerships covering the boundaries of the entire economic system of a region.

Key Words: Regional university, graduates' migration, skilled specialists, brain drain, higher education, educational process.

разработать образовательные программы, подходящие для перспективных сфер экономики, принимая прогноз по экономике и рынку труда, по крайней мере, на 5-7 лет. Стратегической целью основного регионального университета является снижение дисбаланса на рынке труда и обеспечение экономики конкретными знаниями и навыками. Осевой университет, или основной региональный университет, становится исследовательским и проектным центром, способным превращать знания в коммерческий продукт. Он создает сеть партнерских отношений, охватывающих границы всей экономической системы региона.

Ключевые слова: региональный университет, миграция выпускников, квалифицированные специалисты, утечка умов, высшее образование, образовательный процесс.

Resumen

Primorsky krai, una región ubicada en el Lejano Oriente de Rusia, sufre un déficit con graduados calificados para facilitar los procesos económicos. Existe una brecha entre la oferta de personal específico para avanzar en la economía y la capacidad de las universidades locales para satisfacerla. La migración externa de los graduados, llamada "fuga de cerebros", es un elemento disuasorio para el desarrollo de la economía. Aproximadamente el 78 por ciento del flujo migratorio son los jóvenes menores de 35 años. Junto con la asimetría de la oferta y la demanda debido a una calificación profesional, la tendencia a reducir los graduados de las universidades conduce a un desequilibrio estructural en el mercado laboral. Como resultado, la región solo podrá satisfacer parcialmente las necesidades de la economía de los empleados de mayor grado. Por lo tanto, para las universidades regionales es vital desarrollar programas educativos que se ajusten a las esferas económicas prospectivas, tomando el pronóstico para la economía y el mercado laboral, al menos durante 5-7 años. El objetivo estratégico de una universidad regional central es reducir el desequilibrio en el mercado laboral y proporcionar a la economía conocimientos y habilidades específicas. Una universidad axial, o una universidad regional central, se está convirtiendo en un centro de investigación y proyectos que puede transformar el conocimiento en un producto comercial. Genera una red de asociaciones que cubre los límites de todo el sistema económico de una región.

Palabras clave: Universidad regional, migración de graduados, especialistas calificados, fuga de cerebros, educación superior, proceso educativo.

Introduction

Competition in the market claims the universities to develop educational programs matching the specifics of a regional economic system and requirements of employers. Regional universities face the challenge a proper forecasting the economy's needs with horizon at least for 5-7 years. Most national and foreign studies on endowment of the higher education institutions in economic development are limited with quantitative assessment of graduates. However, it

does not give a complete picture. Factors of external and internal migration of qualified specialists should also be considered.

The processes of external migration of qualified specialists' limits supply of trained personnel and shrinks the economic development of regions. However, the processes of external migration of universities' graduates at the macro level contributes to the "transfer of knowledge" from

universities - centers of competence to the core and peripheral zones of the national economy. Consequently, a role of the core regional universities is to act as research and educational centers, which purposefully organizes its activities in the formation, scaling and innovative improvement the national economy.

Problem statement

About 60 percent of demand for the qualified personnel in the economy of Primorsky region is for specialists with the higher education. The region is suffering a deficit of staff in traditional spheres - mining and processing sectors of the economy, and in the third sector of economy - fast growing services market. There is an asymmetry of trends in economy and higher education due to a complexity of prognosis for the skilled employees. A gap is evident between demand for the specific staff required for the economy and ability of higher education institutions to satisfy it. Both, at point of view the quality of graduates, tutorial spheres and skills of personnel.

External migration of graduates, so-called "brain drain", is a deterrent for development of the economy. Approximately 78 percent of the migration flow are the young people under 35. These are specialists with higher professional education required at the labor market. According the Ministry of Education and Science, only 72-75 percent of the universities' graduates employed in Primorsky region, and the number of graduates who are leaving the region annually is sufficiently growing.

A significant problem for the regional economy is migration of universities' graduates abroad. This means a loss for the national economy of funds invested into education of specialists, a decline in quality and accessibility of services in the healthcare and education, as well as deterioration of the business environment, which in turn limits economic growth. Every year, the regional universities educate specialists that taking a challenge of working abroad. These are navigators, mechanics, economists with knowledge of foreign languages and focus at employment in China, the Republic of Korea, the USA, Australia, India and other countries. Practicing abroad, they get a job after graduation, while remaining citizens of Russia.

Aim and method of research

The aim of study is, on example of Primorsky region, revealing the impact of regional

universities and external migration of graduates on the economy development. A prognostic-analytical method used to account the number of trained specialists of higher professional education up to 2024 and match to employers' demand for specialists. Based on data of regional employment portals, an analysis was made of the relationship between supply and demand for specialties in order to identify occupation imbalances in the labor market.

As a part of study, an assumption made about the trend of migratory decline in the region's population of 3.0-4.0 thousand annually. Projected a continuation of the process the universities graduates' migration off the region. The ratio of graduates migrating off the region and remaining in the region assumed as 1/3.

The forecast data based on analysis of statistical data of the Rosstat (The Federal statistics service of the Russian Federation) on quantity of specialists of higher professional education in the Primorsky for the period from 2013 to 2017. Used the data of the Ministry of Education and Science of the Russian Federation on the employment of graduates and the forecast of the labor and social development of the Primorsky Territory on the demand for qualified specialists.

Analysis of recent researches and publications

Results of educational functions - knowledge, technology and commercial products should not remain confined within a geographic region or national borders. Spatial proximity and migration processes of universities' graduates are important factors for transferring the knowledge within the economy. Most of studies on the purpose are limited with description the role of a core regional university as a macro-unit encompassing the economic space - growth poles (Shelomentsev et al, 2018; Lazarev et al., 2017). However, it is important to explore the inter-regional effects of knowledge transfer in order to get a reliable vision on impact of higher education on the economy. Finally, in the context of concept of a human capital endowment and its impact on the economy, the higher and secondary vocational education institutions should be considered together (Crookston and Hooks, 2012).

Recent studies point at six the most important factors determining the influence of universities on economic development (Goldstein et al. 1995):

1. Generating and transferring of knowledge and know-how through external migration of university's graduates;
2. Creation of technological innovations and their commercialization through partnerships with the business environment;
3. Investments into the field of knowledge and tangible and intangible assets of universities;
4. Formation of regional and national leadership through the generating of advanced knowledge and their further commercialization;
5. Contribution to the system of global knowledge through a system of partnerships with foreign universities;
6. Positive impact on the local business environment and the creation of an agglomeration effect that promotes business concentration.

A regional university is formed and survives in competition. The mission of a university is to train personnel for the region. Moreover, in this case, it is not a vertical structure that is considered, but rather a horizontal, even inter-regional structure. The main stakeholders are regional industrial clusters, a client capital, the regional authorities. A model of educational program can be formed based on the following principles:

- Unification of the educational process at first year of undergraduate via online technology;
- Availability of own educational standards with a strong regional component (considering the requirements of employers);
- Professional part of the master's degree programs should be implemented considering cluster (industrial) specifics and variability of programs of additional professional education (Garmonova et al. 2015)

To ensure the competitiveness of educational products, universities in Russia and abroad pursue an active, purposeful policy of interaction with economic and investment subjects. (Pinkovetskaia et al, 2019). The model of a leader university, or a regional core university, differs from the competing models of modern universities. It distances itself from the traditional form a "factory of knowledge". An axial university (a core regional university) becomes a research and project center, able to

transform knowledge into a commercial product and form a network of partnerships covering boundaries of the entire economic system of a region (Uyarra, 2010; Pinkovetskaia, 2019).

A core university, responding the employer's request, in frames of the education process, creates "system prototypes" of business units within local, national and global economic systems. Further, by interacting the business units create sustainable industrial and technological agglomerations. Harsh conditions of competition force regional universities to shape purposefully policies to influence businesses by offering in-demand innovations and economically sound solutions for businesses (Wright et al., 2012)

Goldstein and Drucker point at a statistical quantitative method to assess the impact of universities on a regional economy. Growth of per capita income, wealthiness of budget system of a region and other factors considered. The researchers note that a traditional knowledge and the human capital have a greater impact on the economy than simple technology transfer. Concentration of specialists with higher education is beneficial for the economy due to growth of value added and higher incomes. The conclusion is indisputable, but huge concentration of graduates mismatches the market and reduces demand for specialists, which leads to a shrinking of offering the educational services. The high concentration of graduates implies their external migration, which means transfer of competencies to neighboring regions (Goldstein and Drucker, 2006). Thus, a positive "spatial" externality of educational functions extends.

A core regional university, applying the concept of "growth poles" by Francois Perroux, considered as a growth pole for the knowledge economics in a region, a macro-region, and the national economy. Migration causes agglomeration effect as result of influence of the education activities on neighboring regions. Researchers point at agglomeration effect of knowledge that promotes consolidation of elements of economic activities at level of macro regions. Noted that small and medium agglomerations benefit more from universities than large regions. This confirms that core universities are becoming an environment for formation of economic agglomerations for small and medium-sized regions (Woodward et al., 2006).

Recent studies indicate a "spatial" factor in the context of impact of regional universities on economics systems. Goldstein and Drucker (Goldstein and Druker 2006) and Woodward (Woodward et al. 2006) estimate the impact of universities on the location of firms at a distance of 60 miles (97 km) and up to 145 miles (233 km) for some industrial sectors. The impact becomes more concentrated in areas where research and development activities are concentrated.

Universities' technology transfer loses efficiency while distance increases off the capital's center, although regional and sectoral scale variables can complement the corresponding distance effects (Nagle, 2007). Huggins and Johnston (2009) indicate that universities create an agglomeration effect in the peripheral regions of the UK, although not enough to replace the agglomeration capacity of central regions. The influence of universities on the frequency of patenting in the UK depends on migration and the distribution of human capital between regions (Faggian and McCann, 2009). A study by the German scientists shows that the function of the

university and the field of knowledge determine the degree of agglomeration effect (Audretsch et al. 2005). Some of the links between universities and economic entities, such as direct cooperation in the field of publications and patent applications, depend much more on relational than spatial proximity (Bishop et al., 2011).

Analysis result

Statistics data show that number of specialists of higher professional education in the Primorsky region for five years has decreased by 3.7 thousand, from 15.7 thousand in 2013 to 12.0 thousand in 2017 (by 23.5 percent). The data indicate increase of quantity of the trained specialists of secondary vocational education from 5,8 thousand (2013) to 8,8 thousand (2017), which maintain a relative symmetry of supply and demand in the market for the working professions. In total, in 2017, the number of qualified specialists by state educational institutions amounted to 20, 8 thousand people (Table 1).

Table 1. Number of graduates of higher and secondary vocational education in Primorsky region, 2013-2017 thousand

Graduation level	2013	2014	2015	2016	2017
Higher education	15,7	15,2	13,9	14,9	12,0
Secondary vocational education	5,8	5,6	6,3	5,9	8,8
Total	21,5	20,8	20,2	20,8	20,8

Considering a negative trend of the population's decrease, the output of specialists of higher and secondary vocational education will probably remain within 20.0-21.0 thousand up to 2024, according the most optimistic scenario. For reference, according to a moderate variant of the forecast, the population of Primorsky will decrease by 7.7 thousand people in 2019, and will be 1905.3 thousand people (in 2018 - 1913.0 thousand people). For 2020 and 2021, the population is projected to decrease by 6.1 thousand people and 6.6 thousand people, respectively, which will be 1899.2 thousand people and 1892.6 thousand people respectively.

The data of portal of Department of Labor and Social Development of the Primorsky region testify the demand of employers for qualified specialists, primarily working professions. Against this background, there is a problem with employment of graduates, both secondary and higher professionals. According to the Ministry of Education and Science of the Russian Federation, approximately 71-75 percent of universities' graduates employed in the Primorsky region, and the number of graduates leaving the region is approximately 2.6-3.3 thousand people annually (Table 2). The ratio of universities' graduates who have left the region and who have been employed in the region is about 0.4-0.47 (Table 2).

Table 2. Employment and migration of graduates of higher professional education in Primorsky region

Indexes	2013/2016	2014/2016	2015/2016
Number of graduates	14091	13969	13 068
Number of hired graduates	10277	10424	9538
Share of hired graduates, %	73,0	75,0	71,0
Number of graduates migrated off the region	2943	3336	2674
Ratio migrated to hired graduates	0,4	0,47	0,39

The share of employed graduates who have received secondary vocational education is 63 percent (2016). Number of graduates who have left is 224 (the ratio of those who left to the remained 1.06). Graduates face difficulties with employment in desired profession. In addition, employer is interested in advanced professional competencies and skills, which, often, graduates do not possess. There are difficulties in the process of adaptation of young professionals, especially of working professions. In addition, graduates in the process of professional migration off the region could expect much higher wages. According the Ministry of Education and Science, in 2016 the average wages to graduates who have left was 42 924 rubles, for the stayed graduates the average wages was 33 034 rubles (ratio 1.47).

Migration decline leads to reducing of employment and, accordingly, reduces the supply of qualified specialists for the labor market. According to Department of Labor and Social Development, for the implementation of the announced investment projects the required resources must be 35,267 people until 2024. Viewing the needs for a medium-term period, there may be a deficit of workers in sphere of consumer services, construction and agriculture. The data of the Labor and Social Development Department indicate a steady demand for qualified specialists - 45.0 thousand (2019, 2020), 46.7 thousand in 2021, 44.6 thousand in 2022, 53.2 thousand in 2023, and 60 thousand in 2024 (Table 3).

Table 3. Forecast on qualified specialists' demand in the Primorsky region until 2024

Graduation level	2018	2019	2020	2021	2022	2023	2024
Secondary vocational	16408	18786	19091	20845	18260	21240	23832
Bachelors	17921	18746	19142	18694	19389	22582	26205
Specialists	2937	3218	3071	3487	3138	3826	4329
Master's degrees	3894	4255	4126	3683	3837	4645	5716
Total	41160	45005	45430	46709	44624	52293	60082

The ratio of supply and demand on some occupations indicates a systemic imbalance in the labor market due to professional qualification. According the regional portal of commercial information (www.farpost.ru) for

June 2019, the difference between the number of resumes with higher education (higher specific skills) and the number of vacancies is significant in the services sector (table 4).

Table 4. The ratio of supply and demand for selected occupations

Occupation	Vacant jobs	Resumes	Resumes of higher education applicants'	Resumes of higher education applicants' fit to job requirements	Mismatch of resumes and declared jobs
Logistics – Warehouse-Procurement	1216	26456	4165	834	-382
Sales – Consumers support	3421	47678	6649	1089	-2332
Tourism – Hotels and hospitality - Restaurants	1417	22477	1612	402	-1015
Consumers services	814	8232	1219	271	-543

The findings show, for regional universities is vital to develop educational programs fit the advanced economics spheres, considering forecast for the economy and the labor market, at least for 5-7 years. It should be noted that even if the offering of educational services were adequate to the market, it would take at least 4-5 years to erase the disproportion.

In total, currently there are 18332 vacancies on the labor market, while the number of resumes is 281247, only 20% of them this resume with higher education (50196), and with a higher special education only 16903. Thereby there is an imbalance in availability of resumes with higher education by professional specific and the required number of employees.

Discussion

Thus, the factors caused migration of skilled specialists off the region include a lack of opportunities for self-realization and professional development, a discrepancy between the degree of young professionals and existing vacancies, and low level of social and psychological adaptation of young people to the market economy.

The objective problem of youth's employment in Primorsky region is a glut of the labor market due to inconsistency of the tutorial programs for young professionals to the vacancies declared by employer. The average time for seeking a job among unemployed for young people group has increased (25-29 years). For those who have already had working experience and higher education it's more than 8 months. Often young people having no significant professional skills, impose excessive wage requirements, which also

complicates employment (Petruk, 2019) According to statistics data on Primorsky region, the prevailing motive for migration is a lack of job with decent earnings in 50 percent of young people and in 36 percent of middle-aged people.

The forecast on the region's higher and secondary vocational education indicate at 21.0 thousand graduates annually. Thus, the universities will only provide 40 percent the region's economy need on qualified specialists until 2024. Taking into account the migration losses, quantity of qualified specialists will be 18.0-18.2 thousand annually, assuming that the applicants will actively position themselves on the labor market. That means eager to work and there will be no obstacles to finding and getting the desired job.

In this situation, a "gap" between supply and demand on the labor market will likely occur reflecting a shortage of qualified specialists in the regional economy. The shortage of qualified personnel is expecting to be in the construction, agriculture, and services sectors. An attempt to resolve the issue by attracting foreign labor migrants has rather a negative effect, since it affects a decapitalization of the economy through leakage capital off the financial system.

The result of analysis shows - along with asymmetry of demand and supply due professional qualifications, the tendency to reduce education of qualified specialists leads to a structural imbalance in the labor market. As a result, the region will only partially be able to provide itself with the qualified staff. Migration processes have a negative impact on the age structure of labor resources, considering a fact that the major part of the migration decline, about

70%, is due to the outflow of population in the working age.

According to the territorial office of the Federal State Statistics Service, the population elder the working age as of January 1, 2018 was 472,517 people (467,437 people as of January 1, 2017). This is 24.5 percent of the region's population, and approximately 43 percent of the economically active population. Thus, the factor of migration loss, along with the natural decline (5677 people in 2018, 4488 people in 2017), will determine "a growing older process" of labor resources for the region's economy.

Conclusions

A strategic goal for the regional universities is diminishing the scale of imbalance deploying in the labor market. They should provide the economics sphere with professionals possessing specific knowledge and skills. Consequently, it is necessary to establish a coordinated policy between educational institutions and employers with purpose to forecast required occupations (professions) considering regional labor market's specifics. Coordinated policy will allow educational institutions to forecast correctly the market demand for graduates of higher professional education, and, viewing the offer, to develop educational programs for a long-term period.

It is crucial to coordinate work of educational institutions and employers for working out the curricula considering the qualification requirements established by professional standards. Accordingly, employers should be interested in improvement and implementation of the qualifications requirements within the framework of "National Qualifications System". Coordination will allow educational institutions to plan properly the curricula, taking into account the need for the professional competencies required by employer.

It is strongly recommended coordination between educational institutions and employers to organize advanced courses for specialists based on conception of "professional skills classes". That imply a participation of employer's representatives in the curricula planning of educational programs. Proposed conception of a "flexible educational process" based on combination of basic and additional vocational courses will allow representatives of employer to formulate the specific professional requirements due to a sectoral economic sphere.

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