

Warsaw School of Economics
Enterprise Institute

**Labour market in selected sectors of economy in
Opolskie voivodship in 2008
and its changes in the years 2005-2007**

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Introduction

The aim of the report is to present basic parameters of labour market in selected sectors in Opolskie voivodship in 2008 as well as its changes in years 2005–2008. The analysed sectors cover engineering, electronics and automotive industries, the medical biotechnology sector and the sector business services.

The change in employment in the sector of enterprises in 2005-2007 (a 3.6% increase) along with the migration outflow of work resources shaped basic parameters of labour market in Opolskie region such as: the number of the employed, the employment rate, the number of the unemployed, the registered unemployment rate, the rate of unemployed persons per 1 work offer.

Table 1. Basic parameters of labour market in Opolskie voivodship in 2005–2007

No.	Basic parameters of labour market	2005	2006	2007
1	2	3	4	5
1	Employed persons (in thousands)	351	356	365
2	Employment rate (in %)	44.7	45.8	46.4
3	Employment rate of persons at working age (in %)	57.1	60.1	60.9
4	Unemployed persons (in thousands)	69.4	60.0	43.3
5	Registered unemployment rate (in %)	18.7	16.2	12.0
6	Unemployment rate according to BAEL * (in %)	17.0	13.2	9.3
7	Number of unemployed persons per 1 work offer	224	51	36

Source: own work on the basis of Regional Database of the Central Statistical Office.

In 2007 in Opolskie voivodship the total number of persons at working age constituted 70%, whereas the Polish average was 69%. The indicator of the total number of persons at working age enables to define potential capacities of the regional labour market. The employment rate of persons at working age indicates actual use of regional work resources. In the analysed period it increased from 3.8 percentage points to almost 61% which denotes a 6.7 percentage points increase from the year 2005. In comparison to the country employment indicator, Opolskie voivodship reached a level which was lower by 1.4 percentage points in the group of persons at working age. Therefore in the analysed period, this indicator was decreasing faster in Opolskie region than the country average. The unemployment level indicators, that is, the number of unemployed persons and the unemployment rate decreased in the period of 2005-2007. The fall amounted to 37.5% and 9.8 percentage points, respectively. It is worth mentioning, that in the recent statistics on the

* BAEL: Badania Aktywności Ekonomicznej Ludności, (Labour Force Survey, LFS) [translator's annotation].

labour market ¹ this trend continues to go downwards. In September 2008 the registered unemployment rate in Opolskie region reached 8.9% and was equal to the country average unemployment rate. As far as the number of the unemployed is concerned, by the end of September 2008 it amounted to 31905 persons and was by 54% lower than the value of the year 2005. Additionally, the number of the unemployed in Opolskie voivodship constitutes 2.3% of the registered unemployed persons in Poland. It can be assumed that, both the employment rate in the sector of enterprises of much higher decrease in Opolskie voivodship and migration movements of work resources played an important role in the changes in the labour market. In Opolskie region, the increase in work offers also influenced the unemployment rate which in turn contributed to the drop in the unemployed persons per 1 work offer from 224 persons in 2005, to 36 in 2007, and then, to 9 persons in the 2nd quarter of 2008.

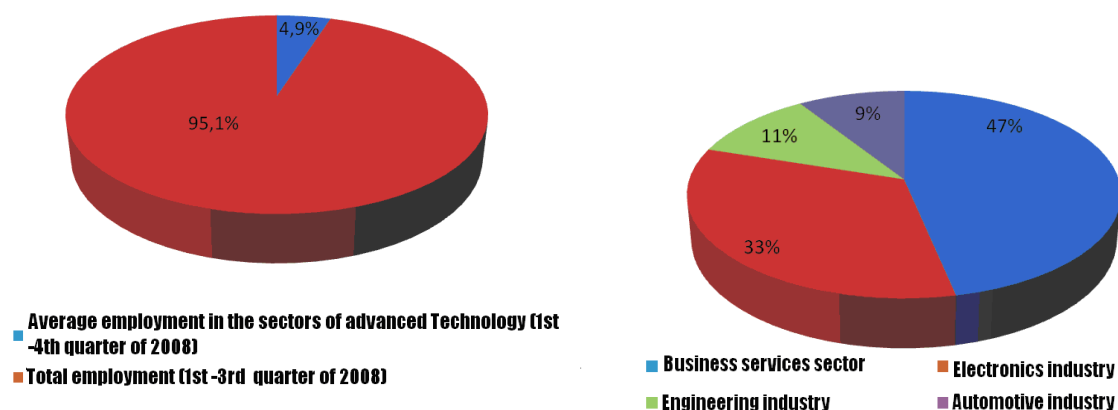
1. Employment in selected sectors of economy in 2005 - 2008

Positive changes in the regional labour market which are reflected in the increase in persons employed in the sector of enterprises were reported not in general terms, but also with respect to the sectors under analysis. Total employment in enterprises of the analysed sectors in Opolskie voivodship in the 2nd quarter of 2008 reached 18911 persons. In comparison to the base-year (2005), it indicates an increase by almost 13%. It should be taken into consideration that the total employment in the analysed sectors makes up 19% of the total of persons employed in the enterprises sector which constitutes almost 5% of the total employment in Opolskie region ². As a result of the changes in 2005–2008 (2nd quarter) the percentage of persons employed in the analysed sectors in Opolskie voivodship fell from 1.9% to 1.3% with respect to the total number of persons employed in the sectors under study in the country.

¹*Information on the unemployment in 2008*, MPiPS, Warsaw October 2008, <http://psz.praca.gov.pl> (30.10.2008 r.).

² In comparison to the 1st quarter of 2008 of the analysis, economic activity of persons of 15 years of age and above according to BAEL.

Graph 1. Employment in the sectors of advanced technology in Opolskie voivodship in 2008



Source: own work on the basis of *Statistical bulletin of Opolskie voivodship*, Opole Statistical Office, Opole May 2006, August 2008.

The pace of change in the employment varied in different sectors in Opolskie voivodship in 2005-2008 (2nd quarter). The highest increase, by 39.6% and 21.2%, concerned the automotive sector and the business services sector, respectively. A moderate, 3.1% increase in employment took place in the business services sector. The employment in the electronics industry grew by 6.1% in 2005-2007 whereas in 2008 it fell by 3.1% from the previous year as well as the year 2005.

The level of employment in specific sectors in Opolskie voivodship in the period under analysis remained at similar level as the total number of the employed in the sector of enterprises. In the 2nd quarter of 2008 it reached the following level:

- 8.8% - business services sector – an increase by 1 percentage point from 2005;
- 6.3% - engineering industry - a decrease by 0.3 percentage point from 2005;
- 2% - electronics industry - a decrease by 0.5 percentage point from 2005;
- 1.7% - automotive industry - an increase by 0.4 percentage point from 2005.

In 2005 the lowest average employment in the sectors under analysis concerned automotive and electronics sectors. Despite a high increase in employment in 2008, the employment in the sectors mentioned above was the lowest of all the sectors under analysis.

Table 2. The employment dynamics in the analysed sectors in 2005 – 2008 in Opolskie voivodship

Sector	2005	2006	2007	2 nd Q. 2008	<u>2005</u> <u>2006</u>	<u>2006</u> <u>2007</u>	<u>2005</u> <u>2007</u>	<u>2005</u> <u>2nd Q.</u> <u>2008</u>
Total employment in enterprises sector	93205	94945	96578	100515	1.9%	1.7%	3.6%	7.8%
Aviation industry*	-	-	-	-	-	-	-	-
Medical biotechnology	-	-	-	-	-	-	-	-

sector*								
Business services	7283	7712	8010	8827	5.9%	3.9%	10.0%	21.2%
Engineering industry	6104	6554	6177	6294	7.4%	-5.8%	1.2%	3.1%
Electronics industry	2123	2210	2253	2058	4.1%	1.9%	6.1%	-3.1%
Automotive industry	1241	1368	1302	1732	10.2%	-4.8%	4.9%	39.6%

* the statistics of Opolskie voivodship do not take account of this sector.

Source: own work on the basis of *Statistical bulletin of Opolskie voivodship*, Opole Statistical Office, Opole May 2006, August 2008.

The changes in the average employment in the analysed sectors in Opolskie voivodship were taking place in the conditions of the increase in the number of enterprises operating in the sectors of high technology. The number of entities in the analysed sectors in the region increased by over 12%, that is, from 138 in 2005 to 155 in 2007.

2. Students and graduates of post-gymnasium schools: numbers and fields of study *

Sectors of advanced technology have a demand for high quality human resources, that is, persons of higher as well as secondary technical, often specialised level of education.

* Structure of Polish Educational System:

- *Primary*: Primary School (Szkoła Podstawowa)
- *Basic Vocational*: Basic Vocational School (Zasadnicza Szkoła Zawodowa)
- *Lower Secondary*: Gymnasium (Gimnazjum)
- *Technical Secondary*: Technical Secondary School (Technikum)
- *Upper Secondary*: General Lyceum (Liceum Ogólnokształcące)
- *Vocational Secondary*: Vocational Secondary School (Liceum Zawodowe) /Specialized Lyceum (Liceum Profilowane)
- *Post- secondary*: Post- secondary Vocational School (Szkoła Policealna)
- *Higher education*:
 - o first level courses (studia pierwszego stopnia); title of Bachelor or Engineer (licencjat/ inżynier);
 - o second level courses (studia drugiego stopnia); title of Master (magister)
 - o uniform 5-year magister level courses (jednolite studia magisterskie)

[translator's annotation on the basis of *The European Education Directory*
<http://www.euroeducation.net/prof/polaco.htm>.(accessed: 15th December 2008).]

The system of education created in the region, in particular specialisations at post-gymnasium and higher levels contribute to meeting this demand.

Graduates of Opolskie voivodship in 2007 made up 3% of the total number of post-gymnasium graduates (except special schools) in Poland, of which the graduates of vocational schools and postsecondary schools made up 14% of post-gymnasium school graduates in Opolskie region. Graduates of general lyceums amounted to 39% which was the largest group. In comparison to the country average of the structure of graduates in 2007, it can be noticed that in Opolskie region, there was a relatively high number of vocational schools graduates (15%, the country average: 12%) and specialised lyceums graduates (16%, the country average: 11%). A lower number of persons graduated post-secondary schools (16%, the country average: 17%), technical secondary schools (14%, the country average: 16%) and general lyceums (39%, the country average: 44%).

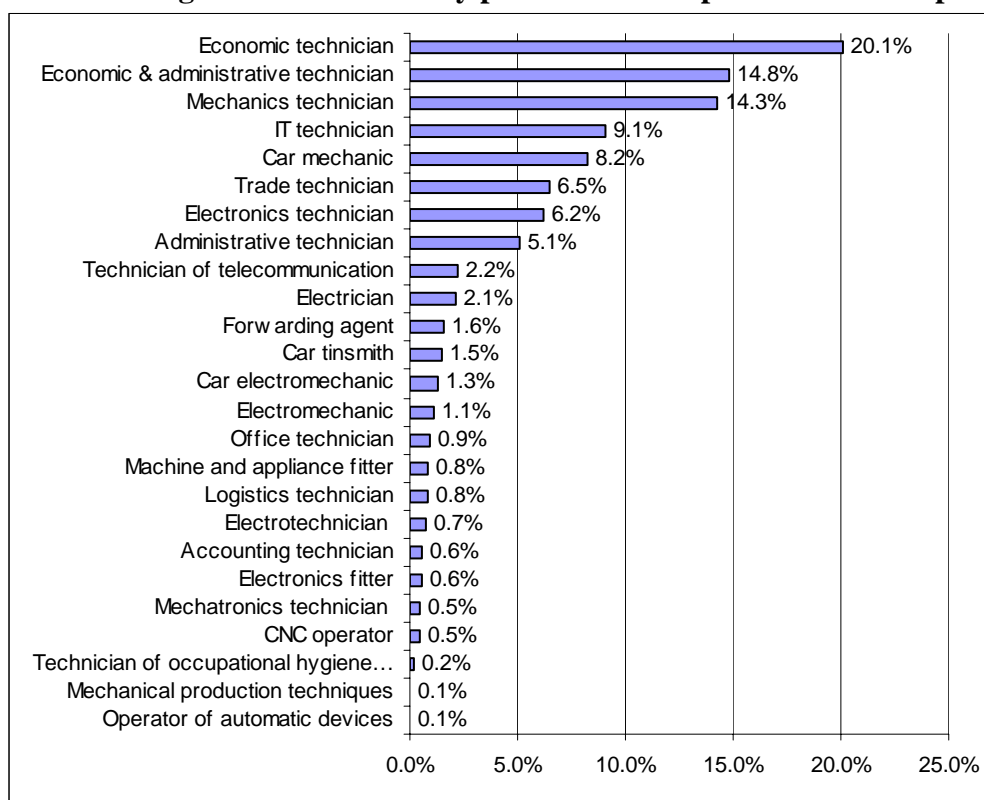
Fields of training in occupation-oriented schools (specialised lyceums, technical schools, vocational schools) are in a different degree adjusted to the needs of high technology sectors. In order to assess their usefulness, professions were divided into three groups:

- economic and administrative (this group covers economic and administrative professions offered by specialised lyceums, such as: administrative clerk, technician of occupational hygiene and workplace safety, technician of economy, trade technician, office technician, accounting technician),
- general technical (this group covers technical professions, such as: IT technician, mechanic, car mechanic),
- specialist and technical (this group covers specialist and technical professions, such as: car tinsmith, electronics engineer, electrotechnician, electromechanic, electrician, car electromechanic, mechanic production technicians, machine and appliance fitter, mechanic of industrial automatic devices and precision appliances, precision mechanic, mechatronics worker, electronics fitter, mechatronics fitter, CNC operator, operator of chemical industry devices, electronics technician, technician for electrodiology, technician of logistics, mechanic technician for aviation, mechatronics technician, forwarding agent, technician of teleinformation, technician of telecommunication).

In Opolskie voivodship the total of 14335 persons study the above-mentioned specialisations which is 3.8% of the total number of learners in Poland. From the point of view of enterprises operating in high technology sectors, the most desirable persons are those of specialist and technical professions. In Opolskie voivodship the percentage of persons

studying specialist and technical specialisations equals 21.6% of the total of learners of all the vocational specialisations which is by 0.4 percentage point below the country average. In Opolskie voivodship most of the learners, 42.4% gain economic and administrative professions which is by 1.5% percentage points more than the country average. The number of persons preparing for general technical occupations in Opolskie voivodship is by 1.8 percentage points lower than the country average. As far as teaching of specific professions is concerned, in Opolskie voivodship a great deal of persons study the occupations of: economic technician, IT technician, mechanics technician and car technician.

Graph 2. Estimated graduates number by professions in Opolskie voivodship in 2008



Source: own work on the basis the SIO databases – as of date of 31st March 2008

In the conditions of the opening of the national economy and strict relations of the sectors of high technology with the global economy, the command of foreign languages is an important element of education. In 2007 in Opolskie region, English was the most frequently chosen foreign language by the graduates at the school leaving exam. It taken by 71.2% of students. The second most popular language in 2007 was German which was taken by 26.3% of the school-leavers. It is important to mention that 1.8% of the youth of Opolskie region took Russian and 0.6% French exams. The structure of persons who chose a foreign language at the school-leaving exam in 2007 in Opolskie voivodship in comparison to the country

average, indicates that less learners took English exams at the standard level in Opolskie region than in other regions, whereas relatively more persons chose English at the extended level. As for German language exams, they were more frequently taken in Opolskie voivodship than in other regions of the county.

The majority of learners of vocational secondary schools of Opolskie region learnt German. Nearly a half of them (49.7%) was learning this language in the schoolyear 2006/2007 which was by 9.8 percentage points higher than the country average. Over 47% of learners of vocational secondary schools in Lubuskie voivodship was learning English language which was by 1.2 percentage points less than the Polish average.

Table 3. Learners number learning a foreign language at vocational schools in the schoolyear 2006/2007 - by voivodships

Language	Opolskie voivodship	Poland	Opolskie voivodship	Poland
	Total		In %	
English	20342	718595	47.8%	46.6%
French	493	47548	1.2%	3.1%
German	21135	614579	49.7%	39.9%
Russian	544	158112	1.3%	10.3%
Other	0	2014	0.0%	0.1%
Total	42514	1540848	100.0%	100.0%

Source: Own work based on *Oświata i wychowanie w roku szkolnym 2006/2007 (Education and training in the school year 2006/2007)*, GUS Warszawa 2007.

3. Students and graduates of higher schools: numbers and fields of study

In Poland the number of university students and graduates is gradually increasing. In Opolskie voivodship 36 thousand students attend 8 universities (including 4 private ones). In terms of the number of students, 15 thousand persons attend Uniwersytet Opolski (Opole University). Another large academic centres of the region cover: Politechnika Opolska (Opole University of Technology) (over 11 thousand students), Państwowa Wyższa Szkoła Zawodowa w Nysie (Higher Vocational State School in Nysa) (about 4.5 thousand students) and Wyższa Szkoła Zarządzania i Administracji (Academy of Management and Administration) (about 4.2 thousand students). The largest university of Opolskie region offers the following specialisations: English and German, studies, law, administration, business language, pedagogy - specialisations: rehabilitation, international relationships, history, social sciences. In turn, the most popular specialisations at the Technical University are as follows: construction science, technical and computer science education, electrical

engineering, automatics and robotics, mechanics, physical education and physiotherapy, management and production engineering, tourism and recreation, European studies. At other universities of the region prevail the humanities and economic specialisations. The other universities of the region generally offer specialisations in the humanities and economics, due to the fact that in Poland technical education system requires more capital intensity the absence of which hinders its development.

In most of the cases specialisations suitable for the demands of high technology sectors, due to high capital intensity, are offered by public universities. In 2007 about 9 thousand persons studied in the public sector of higher education in five study subgroups selected for the analysis that is, economic and administrative, computer science, engineering and technical, production and processing and social services specialisations, which constituted about 2% of this type of students in Poland. The most numerous population in this group were students of economic and administrative specialisations: 2440 persons (27%) and computer science specialisations studied by 2211 (24.4%) persons. They were followed by engineering and technical (20.9%), production and processing (14.5%) specialisations as well as the public services (13.2%). With respect to the entire country, the percentage of students at computer science, public services and production and processing specialisations, in 2007 was higher than the country average by 13%, 8% and 2.4%, respectively. The number of persons studying engineering and technical and economic and administrative specialisations was below the country average (by 17.3% and 6.5%, respectively).

Specialisations reflect the structure of university graduates. In 2007 in Opolskie voivodship the number of university graduates equalled 7347 persons which was 2% of all the graduates in Poland that year. The number of university graduates per 10 thousand inhabitants above 25 years of age is higher was Opolskie region than the country average.

Table 4. University graduates in Opolskie voivodship in 2007 compared to the country

Specification	Number of university graduates		Number of university graduates 10 thousand inhabitants over 25 years of age
	Total	In percent	
Poland	408 066	100%	157
Opolskie voivodship	7 347	2%	102

Source: own work on the basis of *Universities and their finances in 2007*, CSO. Warsaw 2008.

The number of university graduates in Opolskie voivodship fell by 8% in the academic year 2006/2007 in comparison to the previous year. The most significant, 23.5% drop was among graduates of 2nd level courses (Master's degree), graduates of uniform 5-

year magister level courses (Master's degree) (a drop by 18.5%). 1st level courses (Engineer's degree) faced a drop by 5.2%. A 17.6 % increase in turn, was reported in the number of persons graduating 1st level vocational courses (at Bachelor's degree level).

In 2005-2007 various changes in the structure of graduates in terms of studies level took place. In the academic year 2006/2007, about a half of the students graduated 1st level vocational courses (48.8%). Their part in the study structure increased by 8.4 percentage points in comparison to the previous year. The reason for this growth was a higher number of persons graduating 1st level courses (an increase by 8 percentage points). The number of persons graduating Engineer's degree vocational courses decreased by 0.3 percentage point. The number of graduates of both 2nd level and uniform 5-year magister level courses in Opolskie region decreased by 4.7 and 3.7 percentage points, respectively.

4. Research fellows

An indirect measure of the development level of high technology sector in the region is the number of persons employed in the area of research and development. The presence of employees working in the field of research and development in Opolskie voivodship reflects the employment indicator of this group per 1000 economically active persons. In Opolskie region it is significantly lower than the country average and equals 2.4 and 4.3, respectively. In the employment structure of the research and development activity in Opolskie voivodship, scientific and research workers prevail. It is over 83% of all the employed. Another two groups specified in the statistics on the research and development activity, namely technicians and equivalent workers and other personnel make up the total of 16.4%. At the national economy level it is 20.5%.

Table 5. The employment status and structure in the research and development activity in 2006

Specification	per 1000 economically active persons	scientific and research workers	technicians and equivalent workers	other personnel
Poland	4.3	79.5%	11.2%	9.4%
Opolskie voivodship	2.4	83.6%	9.8%	6.6%

Source: own work on the basis of *Science and Technique in 2006*. Statistical information and reports. CSO, Warsaw 2007.

The analysis of the changing employment rate in the groups of research and development activity in Opolskie voivodship, indicates that in 2006 from 2005:

- The employment insignificantly grew by 0.1%;
- Employment of scientific and research workers decreased by 1.1%;
- The number technicians and equivalent workers fell by over 2%;
- Employment in the group of other personnel grew by 22%.

Research and development institutions located in the area of Opolskie voivodship play a supportive role for the analysed high technology sectors. The following centres operating in Opolskie region can be particularly helpful for the sectors of high technology under analysis ³:

- Instytut Szkła, Ceramiki, Materiałów Ogniotrwałych i Budowlanych w Warszawie- Oddział Inżynierii Materiałowej, Procesowej i Środowiska w Opolu (Institute of Glass, Ceramics, Refractory and Construction Materials in Warsaw, Material, Process and Environmental Engineering Branch in Opole);
- Instytut Ciężkiej Syntezy Organicznej „Blachownia” (Institute of Heavy Organic Synthesis ‘Blachownia’);
- Małopolskie Centrum Biotechniki Sp. z o. o. w Krasnem - gospodarstwo w Karczowie (Małopolskie Biotechnical Centre in Krasne – breeding centre in Karczowo);
- Stacja Doświadczalna Centralnego Ośrodka Badania Odmian Roślin Uprawnych (COBORU) (Research Centre for Cultivar Testing);
- Przedsiębiorstwo Wdrożeń i Zastosowań Biotechnologii i Inżynierii Genetycznej "Bio-Gen" Sp. z o.o. (Implementation and Application of Biotechnology and Genetic Engineering "Bio-Gen" Company) ;
- Technical University of Opole (research cooperation with Siemens, the Technical University of Beijing and Explomet), Instytut Konfucjusza (Confucius Institute);
- Uniwersytet Opolski Wydział Przyrodniczo-Techniczny. Katedra Biotechnologii i Biologii Molekularnej (Opole University, Division of Natural Sciences and Technique. Department of Biotechnology and Molecular Biology);
- Państwowy Instytut Naukowy, Instytut Śląski w Opolu (Governmental Research Institute, Silesian Institute in Opole).

Scientific workers of the university located in Opolskie voivodship lend also support to the analysed sectors present in this region. In 2007 in Opolskie voivodship the number of university scientific workers amounted to 1642 persons, of which 26% were of independent

³ Survey data of the Polish Information and Foreign Investment Agency, Department of Regional Cooperation, July 2008.

status. Lecturers and assistants made up altogether about 54% of scientific workers in the voivodship and other personnel constituted 20% of the universities staff. Scientific workers in Opolskie Voivodship, however, constitute a small part of the total number of scientific workers in the country which equals 1.7 %.

Table 6. Employment in higher education by independent and dependent groups in 2007

Specification	Total	Independent (professors and senior lecturers)	Dependent (lecturers and assistants)
Poland	99 221	24%	76%
Opolskie voivodship	1 642	26%	54%

Source: own work on the basis of Regional Database of 22nd of October 2008.

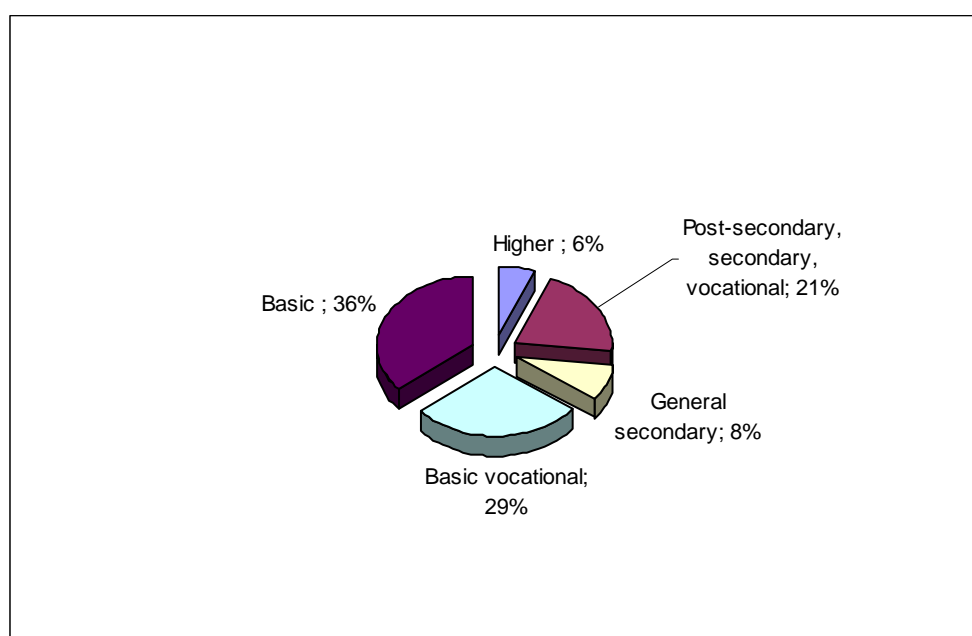
The conditions in which the sectors of high technology in Opolskie voivodship operate, incline enterprises from these sectors to use human resources employed in research and development centres and universities. Therefore the development of the sectors of high technology is determined by interrelations between universities, research and development centres and the area of economic activity, also with enterprises operating in advanced technology sectors. In the aspect of the need for technology transfer to the sectors of high technology the institutions located in Opolskie voivodship mentioned above can be of particular assistance.

5. Unemployment – deficit/surplus professions

The development of high technology sectors also determines the unemployment level present in the region. It can also be a sign of insufficient adoption of specialisations offered by the educational sector in the region to the demands expressed by enterprises. On the other hand, the level of unemployment reflects the unused potential of work resources from which also the enterprises operating in the field of advanced technology can benefit. In the context of high technology sectors, changes which took place in the rate and structure of unemployment in Świętokrzyskie voivodship in the period under analysis are worth considering. Firstly, from the point of view of advanced technology sectors, the unemployment structure in the aspect of the level of education is important. In 2005–2008 persons with basic vocational or at most with gymnasium education constituted the most numerous group of the unemployed, that is 65% of the total of the unemployed in 2007. Persons representing these two groups, without an adequate training do not constitute attractive resources of potential workers for the needs of the sectors of advanced technology.

In the aspect of balancing inequalities between the supply and demand for work resources in the sectors of high technology, the unemployed with higher or secondary technical education seem to be potentially more useful. With respect to the total of the unemployed, the number of persons with higher or secondary technical education in Opolskie voivodship in 2005-2007 stayed at the same level, that is, the persons of higher education made up 5% - 6% and the persons of vocational secondary education constituted 20% - 21% of this group. In comparison to the country average, the number of unemployed persons in Opolskie region in 2007 was lower by 2 percentage points.

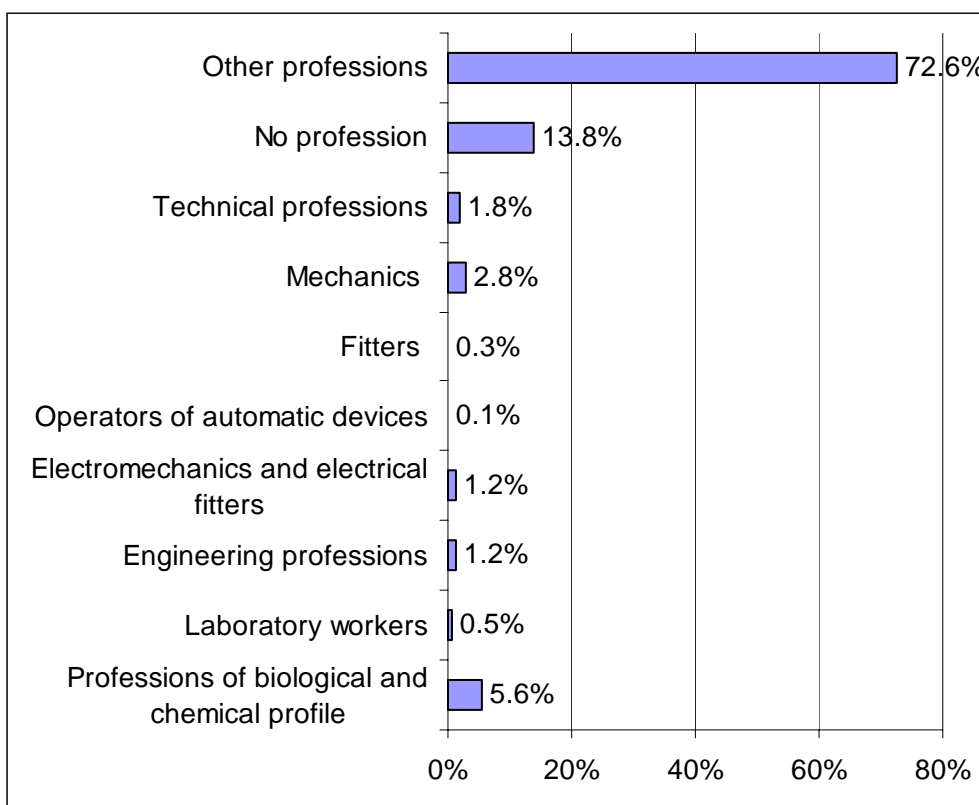
Graph 3. Education structure of the unemployed in Opolskie voivodship in 2007



Source: own work on the basis of Regional Database CSO as of date of 11th of October 2008.

Secondly, information of the unemployment structure by profession groups is also important for the sectors of advanced technology. In 2007 in Opolskie voivodship persons of technical professions (5.6%), mechanics (2.8%), fitters (1.8%), operators of automatic devices (1.2%), electromechanics and electrical fitters (1.2%) constituted a numerous group of the unemployed. Persons of engineering professions constituted about 0.5% of the unemployed. In the other profession groups useful for the sectors of advanced technology, the unemployment rate was very low.

Graph 4. The unemployment structure in Opolskie voivodship by profession groups by end of 2007.



Source: own work on the basis of the data of the Labour Office.

What is more, the enterprises of advanced technology can use information provided by the monitoring of deficit and surplus professions⁴. The application of this tool potentially enables to tailor the training offer to the needs of the labour market. As for the monitoring of professions related only to the sectors of advanced technology, it can be noticed that in 2005-2007 in Opolskie voivodship a surplus rather than a deficit was observed. It is important to mention that, in 2007 the deficit concerned three profession groups: intermediate office personnel, assessors, customs officers and equivalent workers, money flow clerks and

⁴ Shortage (surplus) is a difference between the number of registered unemployed persons and the number of reported work offers in a given profession. In the monitoring of shortage and surplus professions an indicator of shortage (surplus) intensity of a profession which is calculated as a quotient of the number reported work offers and the number of registered unemployed persons in a given profession. More information: *Shortage and surplus professions in 2007 (diagnostic part)*, MPIPS, Warsaw 2008.

customer service clerks. The highest reported demand was for intermediate office personnel. Public employment services do not indicate all free vacancies through the monitoring of deficit and surplus professions. The reason for it is that the employers do not report on free vacancies to labour offices on the assumption that such offices are not adequate places for the search of specialists who are recruited outside public employment services. On the other hand, persons representing professions demanded by the enterprises operating in the field of advanced technology, do not register at labour offices and search work without the assistance of public employment services.

The results of analyses conducted by the Enterprise Institute, the demand for staff of enterprises operating in high technology sectors is not satisfied (Table 6). The comparison of the workforce demand in the analysed sectors with the structure of unemployed persons, it can be stated, that there is a potential possibility of balancing the differences between work supply and demand in the analysed sectors. Labour offices organise trainings which are partially useful for enterprises operating in high technology sectors. However, the most useful work resources in the aspect of the analysed sectors are the least numerous groups of unemployed persons in the demanded profession groups. It applies, among others, to the following occupations: mechanics, fitters, electromechanics and electrical fitters.

Table 4. Vacant posts in the analysed sectors (in 2008)

Sector	Vacancy problem - due to qualifications	Sector	Vacancy problem - due to qualifications
Medical	Customer acquisition		Consultant
Biotechnological sector	Production manager		Technical expert
	Offer specialist		Technical inspector
Electronics industry	Programmer		Constructor
	Electrical fitter		Control systems specialist
	Electomechanic		IT specialist in a tribology facility
	Production manager		Analyst
Aviation industry	Production manager	Services for business (including R&D)	IT specialist - programmer
	Locksmith		Foil appliers
	Project account manager		Lawyer
	Physical worker		Foreman
Automotive industry	Welder		Translator
	Bookkeeper		Welder
	Locksmith		Information systems implementation specialist
	Diagnostic laboratory manager		Trade teaching methodology specialist
Automotive industry including the production of parts	Project account manager		ERP projects implementation specialist
	CNC operator		
	Mechanic		

Lorry driver

Bookkeeper

Mechanic

Source: Analysis by the Enterprise Institute 'Labour market in Polish regions in 2008'.

6. Economic availability - remunerations

Generally speaking, the analysed sectors in Opolskie voivodship in years 2005-2007 marked the growth. The potential increased both in terms of the number of economic entities operating in this field and the number of persons employed in these sectors. In the discussed period, the employment in the analysed sectors increased by over 21%, whereas the number of enterprises increased by over 12%.

The access to work resources for high technology sectors in a certain mode sets the level of remuneration. The pay level in the enterprises representing the sectors under analysis in Opolskie voivodship was diverse. In 2005-2008 in Opolskie region the average monthly remuneration increased by over 20%.

Table 5. Gross remuneration levels and their change in high technology sectors in Opolskie voivodship in 2005 – 2008

Sector		2005	2006	2007	Jan-June 2008	<u>2005</u> <u>2006</u>	<u>2006</u> <u>2007</u>	<u>2007</u> <u>2008</u>	<u>2008</u> <u>2005</u>
Aviation industry*		-	-	-	-	-	-	-	-
Medical biotechnology sector*		-	-	-	-	-	-	-	-
Engineering industry		2912.97	2424.02	2640.09	2789.42	-16.8%	8.9%	5.7%	-4.2%
Electronics industry	Manufacture of machinery and electrical equipments	2217.04	1818.1	2079.1	2196.02	-18.0%	14.4%	5.6%	-0.9%
	Manufacture of medical, precision and optical instruments, watches and clocks	1716.75	2718.51	3249.01	3463.33	58.4%	19.5%	6.6%	101.7%
Automotive industry		2395.77	2675.8	2636.48	2941.69	11.7%	-1.5%	11.6%	22.8%
Services	Publishing; printing and reproduction of recorded media	2206.17	3203.06	3464.79	3454.17	45.2%	8.2%	-0.3%	56.6%
	Real estate activities	2687.33	1740.32	1812.4	1947.63	-35.2%	4.1%	7.5%	-27.5%
In enterprises sector		2300.95	2340.1	2595.94	2779.12	1.7%	10.9%	7.1%	20.8%

* sector not covered by the statistics of Opolskie voivodship.

Source: own work on the basis of *Statistical bulletin of Opolskie voivodship*, Opole Statistical Office, Opole May 2006, August 2008.

In 2005-2008 in the industries under analysis, the highest, 100% increase in wages was in the sector of 'Manufacture of medical, precision and optical instruments, watches and clocks' which is an element of electrical industry. A high rise in remuneration was also

present in the field of *'Publishing; printing and reproduction of recorded media'* (business services sector) which reached over 56%. In the automotive industry the average gross remuneration grew by 22%. In the period under analysis, the average gross remuneration dropped, among others, in the sector of *'Real estate activities'* (business services sector) by 27.5%, in the engineering industry by 4.2%. An insignificant decrease in the average gross remuneration, by 0.9% was reported in a part of the electronics industry that is, in the sector *'Manufacture of machinery and electrical equipments'*.

The results of an analysis carried out in the selected sectors by the Enterprise Institute, indicate that the expected gross remuneration varies across the sectors and also among profession groups in specific sectors. In the aspect of the average remuneration in the analysed sectors in Opolskie voivodship, it can be stated that they meet the level of expected remuneration in the profession group of the executive staff in the sectors under study. However in the business services sector (*Publishing, printing and reproduction of recorded media*) and in the electronics industry (*Manufacture of machinery and electrical equipments*) the average gross remuneration is higher than the level declared by the respondents.

Table 6. Gross monthly remuneration in high technology sectors according to the opinion of respondents in Poland

Sector	Profession group	Pay scale
Medical biotechnology	Managerial staff	3001 – 4000 PLN
	Executive staff	2001 – 3000 PLN
Engineering sector	Managerial staff	5001 – 6000 PLN
	Executive staff	2001 – 3000 PLN
Electronics sector	Managerial staff	3001 – 4000 PLN
	Executive staff	2001-3000 PLN
Automotive sector	Managerial staff	5001- 6000 PLN
	Executive staff	2001- 3000 PLN
Aviation sector	Managerial staff	5001 – 6000 PLN
	Executive staff	2001- 3000 PLN
Services for business	Managerial staff	2001 – 3000 PLN
	Executive staff	under 2000 PLN

Source: Analysis by the Enterprise Institute 'Labour market in Polish regions in 2008'

Conclusions

In 2005–2007 in Opolskie voivodship the number of employed persons grew by 4% and this increase in the analysed sectors was by 9 percentage points higher than the total increase in the employment. The employment of persons at working age reached 63.9%,

however, it was by 1.9 percentage points lower than the country average. The number of unemployed persons in Opolskie voivodship in the period 2005-2008 decreased by 54%. In September 2008 the unemployment rate of 8.9% was equal to the country unemployment rate. In 2005-2008 particularly positive changes were reported in the sectors of automotive and business services where the employment increased by 39.6% and 21.2%.

As a result of changes in the labour market in Opolskie voivodship in 2007, persons working in the analysed sectors made up 4.9% of the employed which is among others, a consequence of the structure of education in the region, in particular at post-gymnasium level. Students of technical specialisations in Opolskie voivodship constitute 21.6% of all the persons studying vocational specialisations which is by 0.4 percentage points more than the country average. Most of the students that is 42.4% are trained in economic and administrative occupations. These persons can also potentially find employment in advanced technology sector, above all, in the business services sector. The demand for this type of employees in other high technology sectors is much lower than for technical specialised professions. It is worth emphasising that in Opolskie voivodship, in 2007 graduates of technical specialisations in professions such as mechanics, fitters, electromechanics and electrical fitters also formed the group of unemployed persons.

Enterprises representing the analysed sectors can count on a lower number of university graduates of full-time studies at Master's degree level and vocational courses of Engineer's degree level in Opolskie region. There was a fall in the number of graduates of vocational courses (Bachelor's degree). In the aspect of the demand for specialists expressed by the enterprises of high technology sectors, the fact that there are 24.4 % of students of computer sciences, which are useful for the analysed sectors, should be considered positive. The structure of higher education is more adequate to the demand structure than at post-gymnasium level which is reflected by a low unemployment rate (only 6%) in the group of persons with higher education in Opolskie region.

In comparison to the country average, the number of persons employed in research and development activity in Opolskie voivodship is low. It is over 1.8 times less than the country average per 1 thousand economically active persons. In this group, scientific and research workers prevail in the employment structure of research and development activity whose representation in the regional structure is 4.1 percentage points higher than the country average. Another two groups that is technicians and equivalent workers and other personnel are relatively smaller in Opolskie voivodship (16.4%) than the country average (20.6%).

The potential of enterprises representing the sectors under study in Opolskie voivodship shows a growing trend. The number of entities operating in the analysed sectors as well as the number of the employed in these entities is increasing.