

Warsaw School of Economics
Enterprise Institute

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

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Introduction

This report describes the labour market in Małopolskie voivodship in selected economy sectors, i.e.: engineering, automotive, aviation, biotechnology, electronics and business services. Apart from information about sectors' demand for employees with specific qualifications, this report contains a detailed analysis of the local labour market's supply, i.e. the availability of human resources in terms of quantity, quality and costs.

Małopolskie voivodship with its labour resources occupies fourth place in Poland behind Mazowieckie, Śląskie, and Wielkopolskie. People working in this voivodship constitute ca. 9% of all employees in the country's economy. Taking into the account data for enterprises sector, the workers of Małopolskie voivodship constitute a slightly smaller share of the total number of employees in Poland equal to ca. 7.5%.

During the analysed period the labour market in Małopolskie underwent a positive change combining a few phenomena. Firstly, there was a 8.6% increase in the number of employees in the enterprises sector. Taking into the account the slow pace of changes in the total number of enterprises, and the number of new enterprises registered in the region, comparing to the national average, one may conclude that the increase resulted from creation of jobs in existing, rather than new companies. Secondly, in the years 2005 - 2007 the employment rate was changing every year, and in 2008 it reached a level higher than the national average.

Table 1. Basic parameters of the labour market in Małopolskie voivodship 2005 - 2008

Details	31.XII.2005	31.XII.2006	31.XII.2007	30.VI.2008
employed in the enterprises sector (persons)	372358	393415	404579	417253
Employment rate* (in %)	48.3%	49.0%	49.9%	50.5%
Unemployed persons (individuals)	178067	145261	112602	94178
Registered unemployment rate (in %)	13.8	11.3	8.8	7.4
Job offers	2135	3775	4216	6772
Number of unemployed persons per 1 work offer (individuals)	83	38	27	14
Average gross salary in the enterprises sector (PLN)	2411.31	2636.43	2834.43	2951.88
<i>* in the case of the employment rate in 2005 - 2007, the quoted data concern the months X-XII, and in 2008 - I-III.</i>				

Source: data from the Voivodship Statistical Office in Kraków.

There were also changes in basic parameters describing the supply of labour (Table 1). In 2007 the number of the unemployed in Małopolskie voivodship was 36.7% lower than in 2005. In the analysed period there was also a significant decline of the unemployment rate -

from 13.8% to 8.8%. At the end of the second quarter of 2008 it reached 7.4% and - like in the previous years - placed Małopolskie among regions with the lowest unemployment. The growing number of job offers (remarkable 197.5% in the years 2005 - 2007) undoubtedly contributed to the positive changes of the unemployment rate. It caused the decrease of unemployment intensity, because the number of the unemployed per one job offer fell from 83 persons in 2005 to 22 in 2007 (i.e. by ca. 67,5%). At the end of June 2008 the value of this indicator was 63% lower than at the end of the previous year and reached 14 persons.

Due to the moderate negative foreign migration balance, relatively to other regions, emigration did not have a significant influence on the basic labour market parameters in the voivodship. Neither did the relatively high immigration of people from other parts of the country influence the number of unemployed people, and the unemployment rate. This may be explained by the fact that the majority of newcomers are economically inactive, therefore they do not enter the labour market. This statement about Małopolska is true, because the region's capital - Kraków - is a renowned academic centre attracting young people from all over Poland, and also from abroad.

In the analysed period, i.e. years 2005 - 2007 the decrease rate of the number of the unemployed was much faster than the increase rate of the number of employees. One may assume that it was caused, on the one hand, by the declining number of the unemployed entering the labour market, and on the other, by the increasing outflow from the market of the unemployed over 50 years of age.

The abovementioned phenomena in the years 2005 - 2007 were accompanied by a 17.5% increase of the average monthly gross wage; wages during this period were lower than the national average. It should be underlined however, that at the end of June 2008 wages went slightly over (i.e. by 0.5 PLN) the national average.

1. Employment in selected economy sectors

Enterprise Institute WSE studied the number of enterprises in each of the selected sectors (see Table 2). The most numerous was the business services sector with 380 enterprises. The second place was taken by the engineering industry (132 units). In the years 2005 - 2007 number of enterprises in each group increased. The fastest changes occurred in automotive and medical biotechnology sectors, which is certainly related with authorities' efforts to attract this type of investments into the region.

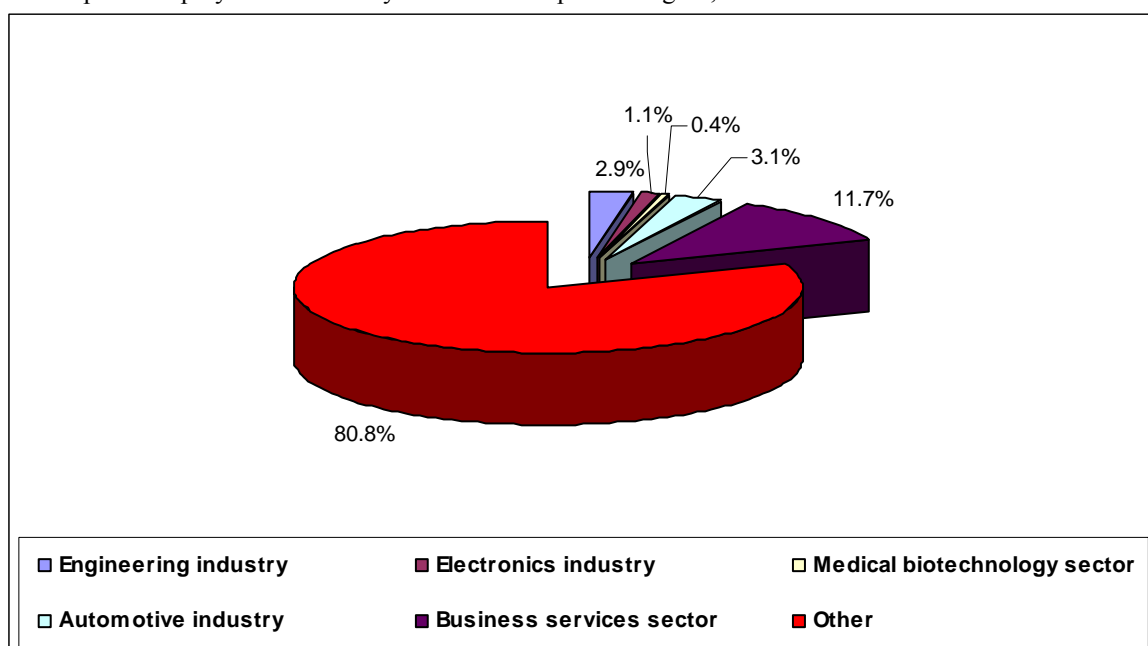
Table 2. Number of enterprises employing more than 9 persons in selected sectors in Małopolskie voivodship in the years 2005 - 2007

Number of enterprises	Business services sector	Engineering sector	Electronics sector	Automotive sector	Medical biotechnology sector	Aviation sector	Abovementioned sectors in the region - total
2005	380	132	45	15	8	.	580
2007	395	140	49	17	9	.	610
Change (2007/2005)	103.9	106.1	108.9	113.3	112.5	x	105.2

Source: WSE Enterprise Institute survey.

In the period 2005 - 2007 an increase of the number of employees occurred both in the entire sector of enterprises (8.6%), and in the group comprising the six selected sectors: engineering, electronics, automotive, biotechnology, aviation and business services (14.3%). This significant increase was caused by changes in automotive industry, where 23% employment growth was observed, as well as in the services sector (ca. 15%) and engineering industry (ca. 10%). The growth rate of employment in the abovementioned sectors was faster than the dynamics of positive changes in the region's entire enterprises sector.

Graph 1. Employees structure by sector in Małopolskie region, as of the end of June 2008.



Source: own calculations based on data from Voivodship Statistical Office in Kraków.

As it is illustrated by data in Graph 1., the sectors concerned still do not play a significant role in the region, however their importance is growing systematically¹. In 2008 employees of these sectors constituted almost 20% of all people working in the region; the

¹ During three years the sectors' share in the region's employment increased by 2 percentage points.

largest share worked in the business services sector (11.7%), and the smallest in the medical biotechnology sector (0.4%). In 2005 the number of people working in the selected sectors in the voivodship was 67 457, and in 2007 – 80 218, i.e. it increased by 18.9%.

Data presented in Table 2. indicate that in the current year in Małopolskie voivodship the lowest average employment occurred in the medical biotechnology sector (much less than 2000 people). The second place was taken by the electronics sector (4330 people). On the other hand, the highest number of employees worked in the group of enterprises providing services to business (46 967 persons). Observing changes in average employment one may say that in the period concerned the influence of the selected sectors on the Małopolskie's labour market was significant, because the overall employment growth rate in these sectors was much higher from the region's enterprises sector average and reached ca. 15%.

Table 2. Average employment in selected economy sectors in Małopolskie voivodship in the years 2005 - 2008

Average employment in the enterprises sector	Business services sector	Engineering sector	Electronics sector	Automotive sector	Medical biotechnology sector	Aviation sector	Enterprises in the region - total
I-XII 2005	39998	12056	4123	9929	1644	.	354036
I-XII 2006	40436	11547	4271	10349	1673	.	367736
I-XII 2007	44639	11993	4196	11194	1690	.	383956
I-VI 2008	46967	12209	4330	12594	1757	.	400003
Change (2005 - 2007)	111.6	99.5	101.8	112.7	106.9	X	108.5

Source: own calculations based on data from Voivodship Statistical Office in Kraków.

In the period concerned the fastest changes of employment occurred in the automotive sector (a 12.7% increase) and the business services sector (a 11.6% increase). The smallest growth of employment occurred in the group of enterprises in automotive sector (only 1.8%), and in the case of the medical biotechnology sector the increase was lower not only from the analysed sectors' average, but also from the average in the region's enterprises sector. In the case of the engineering sector, employment in 2007, compared with 2005, decreased by 0.5%, however in 2008 the trend was reversed, and the number of employees at the end of the second quarter was higher than in 2005.

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

There are five types of post-gymnasium schools: basic vocational schools, technical schools, specialised lyceums, general education lyceums and post-secondary vocational schools. From the point of view of selected industries, the secondary vocational training is the most interesting educational sector, therefore this part of the paper will focus on the first three types of schools mentioned above. In Poland there are ca. 7015 educational establishments belonging to this group; they constitute 68% of the total number of post-gymnasium schools; in Małopolskie region there are 563 such facilities, i.e. 8% of the country's total number.

In the school year 2007/2008 in Małopolskie voivodship there were 86 specialised lyceums for young people and 2 such establishments for adults, 215 technical schools for young people and 93 technical schools for adults (including supplementary training schools), and 167 basic vocational schools (including 7 for adults). Out of 6913 students of all specialised lyceums, almost 2% were adults. 62 238 persons attended technical schools, including ca. 9% of adults (5690 persons). 23 344 people attended vocational schools (including 277 adults). In comparison with the previous year, i.e. 2006/2007, only in specialised lyceums the number of students decreased. At the same time, the number of pupils

* Structure of Polish Educational System:

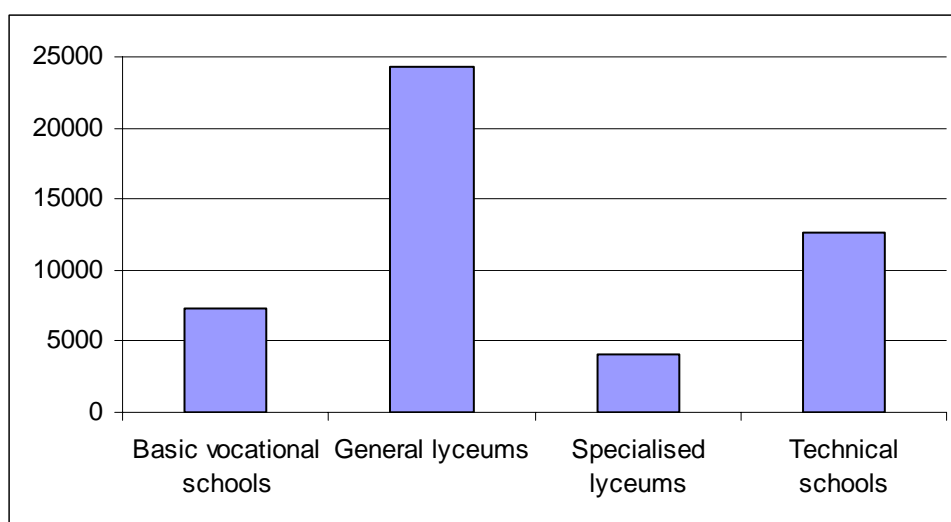
- *Primary*: Primary School (Szkoła Podstawowa)
- *Basic Vocational*: Basic Vocational School (Zasadnicza Szkoła Zawodowa)
- *Lower Secondary*: Gymnasium (Gimnazjum)
- *Technical Secondary*: Technical Secondary School (Technikum)
- *Upper Secondary*: General Lyceum (Liceum Ogólnokształcące)
- *Vocational 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).]

in technical and vocational schools increased, in spite of the lower number of such schools in the region.

As it is illustrated in Graph 2., the largest group among all post-gymnasium school graduates was the group of general lyceum graduates - they constituted 50.2% of the population. (Graph 2.).

Graph 2. Graduates of secondary level schools (school year 2007/2008)



Source: *Education in Małopolskie voivodship in the school year 2007/2008*, Indicative information no. 17, Statistical Office in Kraków, Kraków August 2008.

The following places were taken by graduates of: technical schools (26.2% share), basic vocational schools (15.2%), specialised lyceums (8.4%).

Post-secondary vocational schools are post-gymnasium schools providing education on a level higher than secondary. In the school year 2007/2008 there were 259 such educational establishments in Małopolskie voivodship (including 35 for young people). 24 291 people attended these schools. The decreasing popularity of such schools among people continuing their education is exemplified by the drop of the number of students - 10% in one year.

Entrepreneurs representing the selected sectors are attentive not only of numbers of students and graduates of individual school types, but also of their interest in specific occupation-related subjects. In accordance with data of SIO as of the end of March 2008, in Małopolskie region there were 46 770 people learning the three most desired occupation types; the number constituted 9% of the total number of people studying these occupations in Poland. There were 18 872 students of economic-administrative subjects, 18 881 students of general technical subjects, and 9017 students of specialised technical subjects. Małopolskie occupies the 4th place in the ranking of voivodships in terms of the number of people

categorised in the abovementioned groups.

Małopolskie region was standing out in terms of the number students learning to work in general technical, and specialised technical occupations (3rd position in the ranking of voivodships). It is worth pointing out, that these occupational groups' share in the regions educational structure was higher than the national average (by 32 - 55%). Małopolskie voivodship won the very high position in terms of the number of students learning the following professions: economic technician, IT technician, mechanics technician, car mechanic, electronics technician, trade technician, administration technician.

The voivodship occupies high positions in rankings because it has quite a lot of secondary-level schools teaching occupations suitable for the analysed sectors. It is also important that pupils are strongly interested in fields of training allowing them to learn such occupations. The average number of pupils who chose occupations useful to the selected sectors per 1 secondary-level, occupation-oriented school was 83; with this score Małopolskie region was ranked third in Poland (the following voivodships achieved a better result: Podkarpackie and Śląskie).

Currently, employers pay a lot of attention to knowledge of languages, therefore schools' educational offer has to be looked at from this point of view. The largest number of students in occupation-oriented schools in Łódzkie voivodship (data for 2006/2007) were learning English (47.5% of all pupils). The next most popular language was German with 39% of students². In comparison with other regions, Małopolskie had a lot of secondary-level, occupation-oriented schools teaching French and other, less popular languages (including Italian and Spanish); in terms of English teaching, the region was ranked fourth among other voivodships (Table 3).

An important indication of students' knowledge of languages is the choice of the languages as subjects for the secondary school final exam. Numbers of students taking foreign languages exams by voivodship were presented in Annex 2. In Poland in 2008 the following languages were the most popular among students: English, German and Russian. The same were preferences of students in Małopolskie.

Table 3. Number of students learning foreign languages in vocational schools in the school year 2006/2007 – by voivodship

Voivodship	English	French	German	Russian	Other	Total
Dolnośląskie	45 043	3 197	50 395	3 877	44	102 556

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

Kujawsko - Pomorskie	39 194	1 539	31 267	14 552	0	86 552
Lubelskie	42 569	1 753	25 626	19 932	217	90 097
Lubuskie	19 310	2 219	22 276	1 659	0	45 464
Łódzkie	38 503	2 213	34 375	9 839	21	84 951
Małopolskie	67 648	7 821	56 742	9 905	264	142 380
Mazowieckie	76 090	2 989	47 116	32 650	532	159 377
Opolskie	20 342	493	21 135	544	0	42 514
Podkarpackie	52 785	2 872	44 738	8 218	0	108 613
Podlaskie	27 091	670	19 578	10 114	0	57 453
Pomorskie	40 722	1 944	38 001	6 117	430	87 214
Śląskie	94 321	12 295	72 503	12 879	270	192 268
Świętokrzyskie	28 453	803	21 514	7 094	179	58 043
Warmińsko - Mazurskie	30 015	598	25 834	8 151	0	64 598
Wielkopolskie	68 092	4 641	72 300	9 834	57	154 924
Zachodniopomorskie	28 417	1 501	31 179	2 747	0	63 844
Poland	718 595	47 548	614 579	158 112	2 014	1 540 848

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

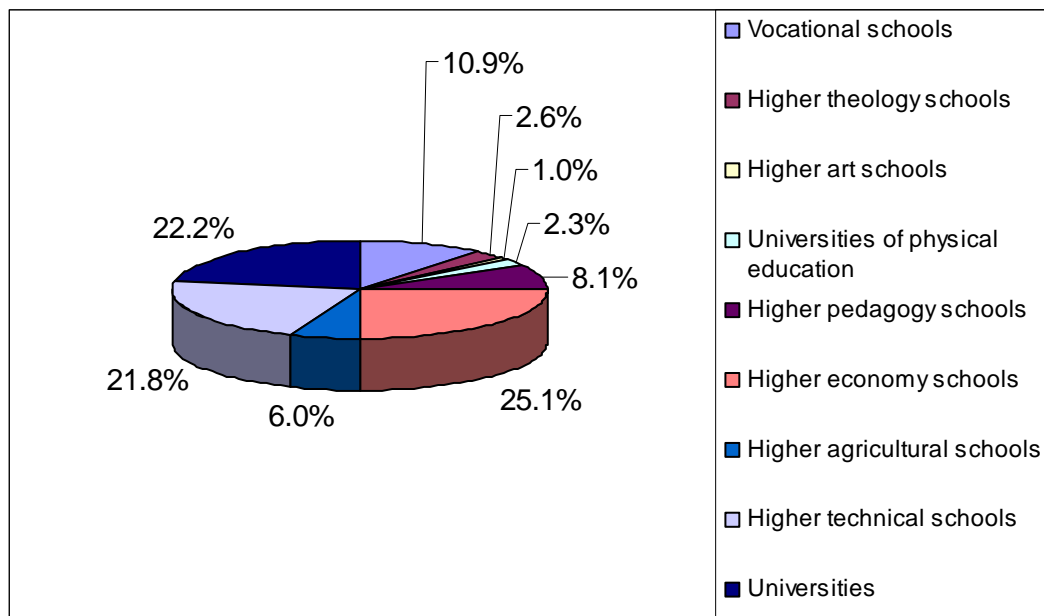
3. Students and graduates of higher schools: numbers and fields of study

In accordance with data for the school year 2007/2008 there were 32 higher schools in Małopolskie voivodship, including 21 in Kraków. In relation to the school year 2005/2006, there were 2 schools less. Apart from the capital of the region, higher schools operated in, inter alia, Bochnia, Brzesko, Chrzanów, Nowy Sącz, Nowy Targ, Oświęcim, Sucha Beskidzka and Tarnów. Moreover, educational establishments like Uniwersytet Jagielloński (Jagiellonian University), Akademia Górniczo-Hutnicza (AGH University of Science and Technology), Akademia Pedagogiczna (Pedagogical University), Uniwersytet Rolniczy (University of Agriculture), Uniwersytet Ekonomiczny (University of Economics), or Wyższa Szkoła Biznesu (Higher School of Business in Nowy Sącz) had their branches in smaller towns. There were 207 208 students attending these universities, including 22% at the Jagiellonian University³. The number of students in the region is increasing every year; in the academic year 2007/2008 it was 3% higher than in 2005/2006. In the same year 24 104 persons graduated higher schools in Małopolskie, i.e. 12.7% more than in the previous years.

³ *Education in Małopolskie voivodship in the school year 2007/2008*, Indicative information no. 17, Statistical Office in Kraków, Kraków August 2008.

The following two groups of students are the most numerous: economic schools students with 25%, and technical higher schools students with almost 22% share of the overall number of students (Graph 3).

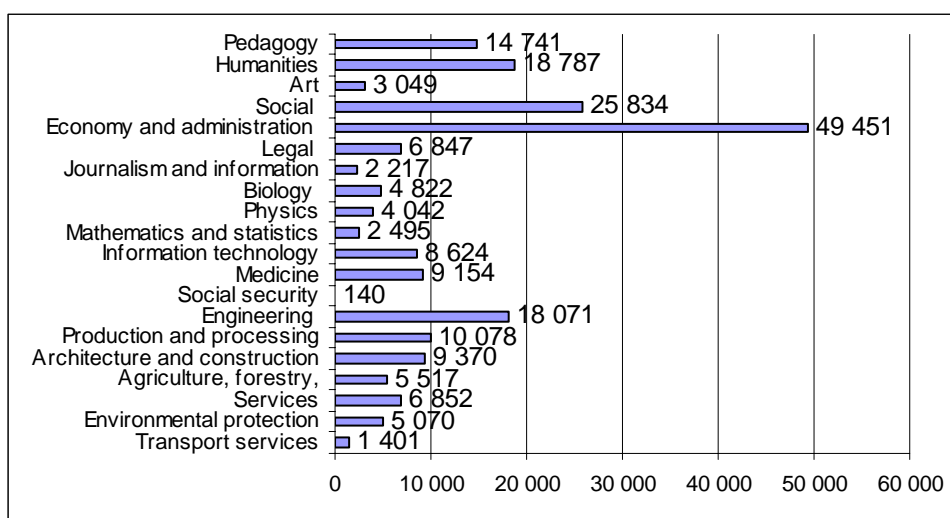
Graph 3. Structure of students in 2007/2008 by school type



Source: *Education in Małopolskie voivodship in the school year 2007/2008*, Indicative information no. 17, Statistical Office in Kraków, Kraków August 2008.

Popularity of certain school types indicates students' interest in obtaining specific education profile. Economy and administration has been for the last few years the region's most popular field of study (Graph 4). In 2007 the share of students of this faculty in the overall number of the region's students reached almost 26%. Other large groups were students of social sciences (12% share), and engineering (10.5%). It is worth underlining that universities in Małopolskie attracted a lot of foreigners - in 2007 there were 1614 international students; the largest group among them were people from countries neighbouring Poland.

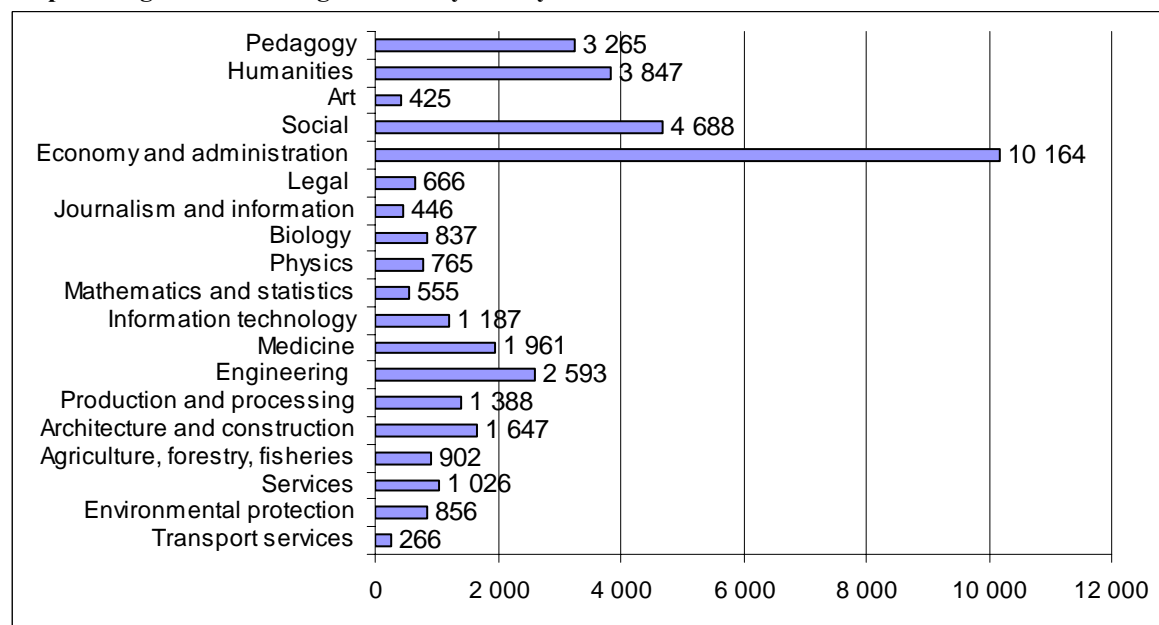
Graph 4. Structure of students in 2007/2008 by school type



Source: own document based on Regional Data Bank.

The following fields of study are particularly important for the selected sectors: economy and administration, information technology, engineering, production and processing, biology and services. In 2007 there were 108 398 people studying these subjects. In the same year, 17 195 persons graduated from these faculties. The most numerous were graduates of the following faculties: economy and administration (10 164 persons, i.e. 59% of graduates of the abovementioned subjects), and engineering (2 593 persons, i.e. 15%). The following positions, in terms of number of graduates, were taken by: production and processing, information technology, services and biology (Graph 5).

Graph 5. Higher education graduates by faculty



Source: own document based on Regional Data Bank.

Among 16 voivodships, Małopolskie region had the highest overall number of students.

The region was on the second place, behind Mazowieckie voivodship, in terms of the number of higher education students of the selected faculties. Moreover, the number of students in engineering, production and processing, and services faculties in Małopolskie was over two times higher than the national average.

A positive development, from the point of view of the analysed sectors, is that higher schools improved their educational offer by adding such faculties as: mechatronics (combination of electronics, mechanics and robotics), biomedical engineering, acoustic engineering, biotechnology, biophysics and molecular biology⁴.

4. Research fellows (in higher schools and research and development units)

The research and development environment is very important for companies in the analysed sectors. The following factors may be considered a measure of a voivodships potential in this respect:

- number of public and private research and development units;
- number of research fellows in higher schools and R&D units.

In accordance with data of 2007, in Małopolskie voivodship there were 10 state-owned scientific facilities (institutes, research centres), 2 branch offices of national research units, 3 facilities of the Polish Academy of Sciences, whose work has an influence on the analysed sectors. Moreover, in the region's capital - Kraków - there were 6 private research and development units owned by international companies:

- Centrum Badawcze ABB (ABB research centre),
- Centrum oprogramowania Motoroli (Motorola software centre),
- Centrum Techniczne Delphi (Delphi technical centre),
- Laboratorium oprogramowania IBM (IBM software laboratory),
- Centrum badawczo-rozwojowe Pliva (Pliva research and development centre),
- CAR Technology Production Sp. z o.o. (CAR Technology Production Sp. z o.o.)

13 401 persons were employed in the research and development field in 2007, including 5991, i.e. 1.8% of all employees in this field in Poland. With this result Małopolskie region

⁴ Poll data from Polish Information and Foreign Investment Agency, Regional Cooperation Department, July 2008.

occupies the second position among 16 voivodships⁵. In the same year the number of university teachers reached 12 220. In this group, 26.9% were employed in (higher) technical schools, and 11.3% in (higher) schools of economy. The number of academic teachers in 2007 (in comparison with 2005) was 3.6% higher.

5. Unemployment - shortage / surplus occupations

The number of the unemployed in the analysed period in Małopolskie region was decreasing, and the unemployment rate was lower from the national average.

Table 3. Information about unemployment in the region in the years 2005 - 2008

Details	XII 2005	XII 2006	XII 2007	VII 2008
Number of unemployed people in Poland	2 773 000	2 309 410	1 746 573	1422900
Registered unemployment rate in Poland	17.6	14.8	11.4	9.4
The overall number of unemployed people in Małopolskie	178 067	145 261	112 602	91434
Registered unemployment rate in Małopolskie region	13.8	11.3	8.8	7.2

Source: *Information about unemployment in Małopolskie in the years 2005 - 2007, and individual months of 2008*. VLO in Kraków, <http://www.wup-krakow.pl/index.php?node=1&doc=1000831&load=6>

The region's unemployed people constituted 15.5% of all unemployed in Poland. The 25-34 age group constituted the largest share of the unemployed (28%). Other age groups made up a similar share: people below 25 years (23%), and people aged 45 - 54 (22%). The share of the unemployed aged 35-44 was 20%, and the unemployed people aged 55 and more constituted 7%⁶.

In 2007 the largest group among the unemployed were people with basic vocational training (31.2%). Next in the ranking were the people with: post-secondary vocational and secondary vocational training (25.7%), and post-gymnasium school and lower level education (24.7%). Persons with higher education constituted 8% of the unemployed in the region. The share of unemployed people with higher education, post-secondary vocational and secondary vocational training was higher than the national average.

In terms of occupations, the largest unemployed group were industrial workers and

⁵ *Regiony Polski (Poland's Regions)*, GUS Warszawa 2008, p. 26.

Source: *Portal of the National Employment Services* <http://www.psz.praca.gov.pl/>

craftsmen (22%), personal services workers and sales clerks (16%), persons without an occupation (16%), and technicians and intermediate technical personnel (15%). In comparison with 2006, unemployment decreased in all occupational groups; the most positive change occurred in the group of industrial workers (30% unemployment decrease). There was also a considerable drop in the unemployment among personal services workers and sales clerks (27%), office workers (23%), technicians and intermediate personnel (23%), and machine and device fitters and operators (23%).

In accordance with the data from the National Employment Services, in Małopolskie region the following occupations were redundant: specialists, including engineers and biological sciences specialists, technicians - including biological sciences technicians, trade and financial workers, metal processing workers, machines and devices operators, machines and devices fitters, precision workers, printers and related occupations. On the other hand, there was a shortage of the following professions: middle office personnel, office management staff, money flow and customer service staff.

6. Wages vs. expected wages

In the years 2005 - 2008 average monthly wages increased both in the entire enterprises sector and in the analysed sectors (Table 4). Wages in the business services sector grew considerably more than the average (23.1%). A lower growth, below the average, was observed in the automotive industry. In companies categorised into the analysed sectors the average monthly gross wage was higher than the voivodship's average. It is worth underlining that the medical biotechnology sector had the highest wages.

Table 4. Average monthly gross wages in selected economy sectors in Małopolskie voivodship in the years 2005 - 2008

Average monthly gross wages in enterprises	Business services sector	Engineering sector	Electronics sector	Automotive sector	Medical biotechnology sector	Aviation sector	Enterprises in the region - total
I-XII 2005	2338.03	2342.80	2329.66	2625.69	2934.03	.	2236.09
I-XII 2006	2553.38	2440.67	2355.25	2801.74	3231.87	.	2374.85
I-XII 2007	2878.82	2663.99	2566.97	3011.82	3467.53	.	2631.31
I-VI 2008	3212.05	2963.72	2850.42	3131.58	3792.46	.	2838.27
Dynamics of change 2005 - 2007	123.1	113.7	110.2	114.7	118.2	x	117.7

Source: CSO data.

According to the survey of the Enterprise Institute - average monthly wages of the management reached ca. 5000 PLN, remuneration for the personnel was in the range 2001 - 3000 PLN. It is worth mentioning that in the region wages for the management in electronics sector were the highest in Poland.

In 2007 the economy of Małopolskie was one of the country's three regional economies with the lowest unit labour costs, however this positive phenomenon did not occur in any of the analysed sectors.

Differences in wages depend to a great extent on the position. The highest wages in Małopolskie were being paid to production directors (19 518 PLN); the following places were occupied by: managers (7390 PLN), engineers (5326 PLN), technical specialists (4783 PLN), programmers (4777 PLN), and marketing specialists (4692 PLN) ⁷.

Survey conducted by Enterprise Institute shows that wages expected by employees in Małopolskie region were usually higher than those offered by employers.

Conclusions

On the basis of the analysis one may indicate a few factors that decide about Małopolskie's attractiveness for companies of the selected sectors. The factors are:

- surplus of occupations preferred by the sectors,
- high number of students and graduates of preferred faculties,
- presence of research and development institutions stimulating the development of the sectors,
- large number of research fellows,

⁷ Based on *Remuneration Report Advisory Group TEST Human Resources - Spring 2008 edition, status as of January 2008*.

