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Unemployment and Quality of Labour Force in the Czech Republic, Hungary and Poland – A Comparative Report¹

Abstract

The paper undertakes the problem of labour force quality and its importance for persons in the labour market in three countries of system transformation, namely the Czech Republic, Poland and Hungary. Quality of labour force is a broad category dependent on multitude of factors. It can also be measured in various ways. In the paper an emphasis is put on two significant aspects of labour force, namely: level of education and vocational skills.

The transition process, which started in Poland, Hungary and the Czech Republic in the beginning of 1990-s, contributed to the shifts in structure of employment by sectors. In all the researched countries an increase was recorded of service sector participation compared to the beginning of the period, as well as a decrease of agriculture participation in employment.

Individuals' position in the labour market depends on the human capital stock possessed by particular persons (that is level of education, vocational skills, experience and work practice).

Introduction

In countries, where system transformation is carried out, the level of economy's competitiveness as well as its changes are crucial. In all the transformation countries the processes of economy's liberalization took place, including opening for the international competitiveness. For these reasons the level and improvements of economic competitiveness play an important role in

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shaping up a long-term development dynamics of the economies considered. Competitiveness of an economy is a very broad and multi-aspectual, as it emerges from the economic literature. One of the crucial factors determining the economy's competitiveness is the quality of labour force.

The paper undertakes the problem of labour force quality and its importance for persons in the labour market in three countries of system transformation, namely the Czech Republic, Poland and Hungary. Quality of labour force is a broad category dependent on multitude of factors. It can also be measured in various ways. In the paper an emphasis is put on two significant aspects of labour force, namely: level of education and vocational skills. The bases of this comparative analysis are three papers:

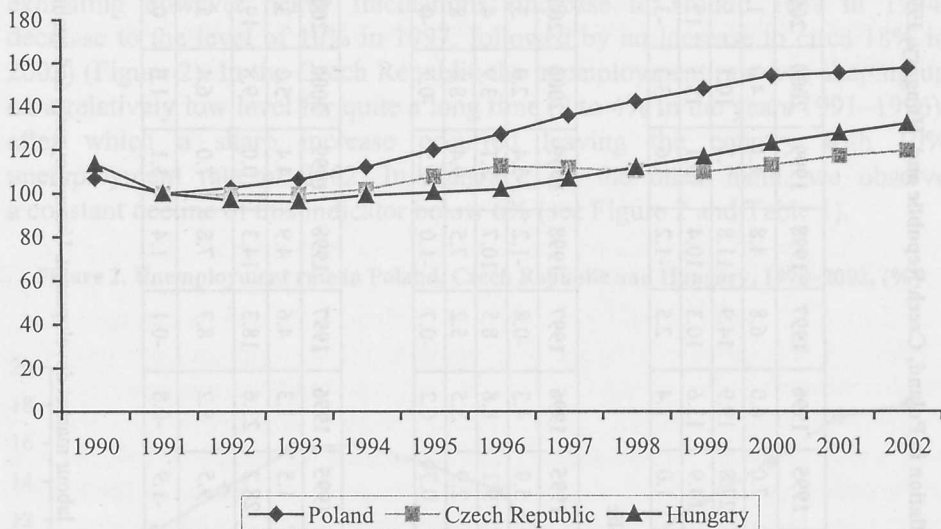
- 1) L. Filipova, J. Gottvald, M. Simek, Unemployment and Quality of Labour Force in the Czech Republic;
- 2) K. Foti, Unemployment and Quality of Labour Force – the Case of Hungary;
- 3) L. Kucharski, K. Wiaderek, Unemployment and Quality of Labour Force – the Case of Poland.

The structure of the paper is as follows. Second part undertakes a comparative analysis of macroeconomic trends and labour market developments in the Czech Republic, Hungary and in Poland. Third part is devoted to a comparative analysis of the three researched countries regarding employment and unemployment structure, particularly by education and professions. In fourth part a problem is undertaken of influence, which educational level and professions have on the persons' position in the labour market in the three analyzed countries. Part five sums up and draws major conclusions.

1. Macroeconomic and Labour Market Developments

In the three countries analyzed the processes of a system transformation started in the beginning of 1990-s were connected with liberalization processes of economies, privatization and economic stabilization. Those processes were linked however with somewhat different trends concerning some macroeconomic issues, especially GDP, inflation and employment changes.

In the three analyzed countries an increase of GDP was recorded, as soon as the whole period of transition hitherto is considered. In the years 1989–2001 real GDP in the Czech Republic went up by 6%, in Hungary by 12% and in Poland by 29% (Transition Report 2002, EBRD, 2002). Similar trend can be noticed if we adopt 1991, which ended the first transition shock, as a starting point for comparisons (Figure 1).

Figure 1. GDP dynamics in Poland, Czech Republic and Hungary, 1990–2002, 1991=100

Source: Country draft reports on impact of change in competitiveness on labour market development. Unemployment and quality of labour force, unpublished working paper, own calculations.

GDP dynamics fluctuations were somewhat different in the three analyzed countries. In Poland, after a decline in the years 1990–1991, a period of fast growth occurred (1992–1997), followed by a slowdown of GDP growth. In Hungary and the Czech Republic, an initial period of GDP decline was a bit longer, it ended in 1993. In the next years, quite intense fluctuations took place in the Czech Republic (positive rates of growth in the years 1994–1996, declines in the years 1997–1999, followed by positive growth from 2000 to 2002). In Hungary on the other hand, positive growth is recorded constantly from 1994 to 2002.

In the three countries analyzed, a major reduction of inflation processes took place. The consumer price inflation index decreased most significantly in Poland, reaching 1.9% in 2002. Similarly, a distinct decrease of inflation occurred in the Czech Republic (1.8% was reached in 2002). In Hungary, the reduction was not as strong (5.3% in 2002), however it is worth to note that inflation dynamics in the initial period of transition was significantly lower than in Poland and in the Czech Republic (see Table 1).

Table 1. GDP growth rate, unemployment rate, employment growth and inflation in Poland, Czech Republic and Hungary, 1990–2002
(% change, compared to previous year)

Poland

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GDP growth rate (%)	-11.6	-7.0	2.6	3.8	5.2	7.0	6.0	6.8	4.8	4.1	4.0	1.0	1.4
Consumer price inflation (average)	585.8	70.3	43.0	35.3	32.2	27.8	19.9	14.9	11.8	7.3	10.1	5.5	1.9
Unemployment rate (%)	6.1	11.4	13.6	15.7	16.0	14.9	13.6	10.3	10.4	13.1	15.1	17.5	18.1
Growth of employment (%)	-4.2	-4.3	-2.7	1.6	1.1	1.0	2.4	2.5	-1.2	-1.6	-3.3	-3.2	-2.0

Czech Republic

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GDP growth rate (%)	-	-11.6	-0.5	0.1	2.2	5.9	4.3	-0.8	-1.2	-0.4	2.9	3.6	2.0
Consumer price inflation (average)	-	56.6	11.1	20.8	10.0	9.1	8.8	8.5	10.7	2.1	3.9	4.7	1.8
Unemployment rate (%)	-	4.1	2.6	3.5	3.2	2.9	3.5	5.2	7.5	9.4	8.8	8.9	9.8
Growth of employment (%)	-	-	-	-	1.1	0.7	0.2	-0.7	-1.0	-2.5	-0.7	-0.1	0.8

Hungary

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
GDP growth rate (%)	3.5	-11.9	-3.1	-0.6	2.9	1.5	1.3	4.6	4.9	4.4	5.2	3.8	3.5
Consumer price inflation (average)	28.9	35.0	23.0	22.5	18.8	28.2	23.6	18.3	14.3	10.0	9.8	19.2	5.3
Annual average unemployment rate (%)*	1.5	6.8	9.3	11.3	10.2	9.5	9.2	8.7	7.8	7.0	6.4	5.7	5.8
Growth of employment (%)	-	-	-	-2.3	-2.0	-1.9	-0.8	-0.1	1.4	3.1	1.0	0.4	0.1

* - for Hungary

Source: Country draft reports on impact of change in competitiveness on labour market development. Unemployment and quality of labour force, unpublished working paper, own calculations.

Apparent differences between the analyzed countries apply to shaping up of unemployment rates in the period of transition hitherto. Firstly, during the whole researched period, highest unemployment rate was recorded in Poland, exhibiting however heavy fluctuations (increase to around 16% in 1994, decrease to the level of 10% in 1997, followed by an increase to circa 18% in 2002) (Figure 2). In the Czech Republic the unemployment rate was shaping up on a relatively low level for quite a long time (2 to 4% in the years 1991–1996), after which a sharp increase occurred leaving the country with 10% unemployment rate in 2002. In Hungary, on the other hand, we observe a constant decline of this indicator below 6% (see Figure 2 and Table 1).

Figure 2. Unemployment rate in Poland, Czech Republic and Hungary, 1990–2002, (%)



Source: as in table 1.

From the point of view of economy's competitiveness it is very useful to compare GDP changes dynamics with employment changes dynamics, since it indicates how labour productivity changes over time. In all three analyzed countries a distinctive increase of labour productivity took place contributing to the improvement in competitiveness of these economies. In Poland, only 1990 and 1991 were the years of labour productivity decrease due to the fact that GDP decline was deeper than employment decline (see Figure 1 and Table 1). In the subsequent years labour productivity in Poland was going up, since GDP growth was linked either with lower growths of employment (in the years 1993–1997) or decrease of employment (years 1998–2002). In the Czech Republic

the available data indicate an increase of labour productivity during the whole period, with only year 1997 being an exception, as GDP decline in this year was somewhat stronger than employment decline (see Table 1). Similarly, labour productivity growths was recorded in Hungary during the analyzed period, which were higher than in the case of Czech Republic, but lower than in Poland (see Table 1).

2. Employment and Unemployment Structure

The process of transition caused changes in principles of economy's way of functioning in the three analyzed countries. A shift from a centrally planned economy to a market economy contributed to changes of structure in the Polish, Czech and Hungarian economies. According to the sectoral structure theory of employment by A. Fisher and C. Clark, we can talk about positive changes in the employment structure as long as agriculture's share in labour demand decreases and, simultaneously, service sector's share increases. The share of industry and construction should increase at the cost of agriculture or decrease at the benefit of services. Balance of share changes of these two sectors should be negative in the developed regions and positive in case of developing regions.

Table 2. Sectoral structure of employment, Poland, Czech Republic and Hungary (in %)

	Poland		Czech Republic		Hungary	
	1994	2002	1996	2000	1994	2001
Agriculture	23.9	19.2	4.9	4.3	8.7	6.2
Industry and construction	30.4	26.8	34.4	34.7	30.1	32.2
Services	45.7	54.0	60.7	61.0	61.2	61.6

Source: as in table 1, own calculations.

As it appears from Table 2, the Polish economy was, in the analyzed period, characterized by a distinctively higher share of the employed in agriculture compared to Hungary and the Czech Republic. The two latter countries are moreover characterized by a significantly higher share of employment in service sector.

In the analyzed countries, the share of service sector increased, while share of agriculture sector in employment went down. These changes were beneficial, accordingly to the A. Fisher and C. Clark theory. The most apparent shifts in employment structure (under this theory) occurred in the Polish

economy (see Table 2). Share of employment in services was in 2002 higher than in 1994 by 8.3 percentage points. The increase of share of employment in services occurred at the cost of agricultural and industrial sector (share of agriculture in employment decreased by 4.7%, while share of industry and construction went down by 3.6%). Likewise, in Hungary between 1994 and 2001 a distinct decline in share of agricultural employment in total employment took place (by 2.1 percentage points).

Table 3. Structure of employment by NACE sections, Poland, Czech Republic and Hungary (in %)

	Poland		Czech Republic		Hungary	
	1994	2002	1996	2000	1994	2001
Total	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, hunting and forestry	23.9	19.2	4.9	4.3	8.7	6.2
Mining and quarrying	3.0	1.9	2.9	1.9	1.0	0.3
Manufacturing	21.2	18.7	23.0	25.5	23.7	24.8
Electricity, gas and water supply	1.6	1.9	0.9	0.7	2.9	2.1
Construction	6.2	6.2	8.5	7.3	5.4	7.1
Trade and repair	11.6	14.2	12.9	12.3	12.5	14.2
Hotels and restaurant	1.1	1.8	5.6	5.0	2.9	3.7
Transport, storage and communication	5.4	6.0	3.3	4.4	8.4	8.1
Financial intermediation	2.1	2.3	0.5	1.5	1.9	2.0
Real estate and business activities	1.7	4.9	2.7	3.0	3.3	5.7
Public administration and defence	4.6	5.8	3.2	2.6	8.5	7.5
Education	6.8	6.8	2.5	1.9	9.0	8.0
Health and social work	6.4	6.8	2.5	2.7	6.4	6.1
Other community, social and personal activities	4.2	3.3	3.3	3.3	5.3	4.2

Source: as in table 1, own calculations.

For economy's competitiveness an analysis of the employment structure by NACE sections seems crucial. As it appears from table 3, in the countries analyzed, significant changes took place in respect of employment structure by NACE sections. In the Czech Republic as well as in Hungary, the largest share of the employed was in the section "manufacturing". In Poland, on the other hand, highest share of the employed was recorded in agriculture, hunting and forestry.

In the period analyzed, in Poland and Hungary, the biggest decline of employment share occurred in agriculture, hunting and forestry. (share of these sections in total employment decreased by 4.7% percentage points, while in Hungary the decrease reached 2.5 percentage points). The highest decline of share in total employment in the Czech economy took place (during the researched period) in construction. The highest increase of share in employment in the Polish and Hungarian economies took place in real estate and business activities. In the Czech Republic, on the other hand, the highest increase of share in employment occurred in manufacturing.

Table 4. Structure of employment by educational levels, Poland, Czech Republic and Hungary (in %)

	Poland		Czech Republic		Hungary	
	1994	2002	1993	2002	1994	2001
Total	100.0	100.0	100.0	100.0	100.0	100.0
Tertiary	10.8	16.2	10.6	13.2	15.2	17.3
Secondary vocational and post-secondary	26.7	30.2	30.4	36.0	30.0	32.5
Secondary general	6.7	7.5				
Basic vocational	32.7	32.6	45.6	43.4	29.6	33.0
Primary and less	23.1	13.5	13.4	7.3	25.2	17.2

Source: as in table 1, own calculations.

At this stage we will move on to the employment structure analysis by education in Poland, Czech Republic and Hungary (see Table 4). During the researched period Hungary was characterized by a higher share of the employed holding tertiary education than it was the case in Poland and the Czech Republic. The Czech economy had, on the other hand, a distinctively higher share of the employed with vocational basic education.

In the researched countries, important changes took place regarding employment structure by education. In the three analyzed countries there was a decline (in terms of share) of the employed holding primary and less than primary education, while an increase was recorded of share of the employed with tertiary education. The highest decrease in share of the employed with primary and less than primary education occurred in Poland (share of this group in total employment decreased in 2002 compared to 1994 by 9.6 percentage points). Persons holding primary and less than primary education were benefiting, on large scale, from the opportunity of earlier retirement or

a financial pre-retirement benefit. Likewise, the highest increase in terms of share of the employed holding tertiary education occurred in the Polish economy (the share went up in 2002 compared to 1994 by 5.4 percentage points). The changes of the employment structure in Poland, Hungary and the Czech Republic contributed to an improvement of the quality of labour force.

Table 5. Structure of employment by occupational groups, Poland, Czech Republic and Hungary (in %)

	Poland		Czech Republic		Hungary	
	1994	2002	1996	2000	1994	1999
Total	100.0	100.0	100.0	100.0	100.0	100.0
Parliamentary deputies, officials, managers	6.2	5.8	6.7	6.1	7.0	6.6
Specialists	9.4	11.2	9.7	10.6	11.0	11.6
Technicians and other medium level personnel	11.2	12.6	18.2	19.1	12.4	13.5
Office workers	6.1	7.8	8.1	8.2	8.6	6.9
Personal service personnel and sales person	8.6	11.5	11.6	12.2	14.0	15.6
Farmers, gardeners, foresters and fisherman	21.9	18.0	2.3	2.0	3.6	3.7
Workers and craftsmen	19.6	16.1	21.4	20.3	23.1	22.7
Operators and assemblers of machinery and equipment	8.0	8.8	13.1	12.9	10.6	11.3
Unskilled workers	8.6	7.7	9.0	8.5	9.8	8.1

Source: as in table 1.

Shifts in the employment structure by occupation groups and specialties are another important factor for the economy's performance. The relevant data are presented in table 5. In the countries analyzed there exist some disparities in the employment structure by occupations and specialties. In Hungary and the Czech Republic the highest share in employment was represented by workers and craftsmen (group 7 in the Classification of Occupations and Specialties). In Poland, on the other hand, the highest share in employment had farmers, gardeners, foresters and fishermen (group 6 in the Classification of Occupations and Specialties). In the Czech Republic as well as in Hungary this latter group had the lowest share in total number of the employed.

Table 6. Structure of unemployment by educational levels, Poland, Czech Republic and Hungary (in %)

	Poland		Czech Republic		Hungary
	1994	2002	1993	2002	2001
Total	100.0	100.0	100.0	100.0	100.0
Tertiary	2.8	5.1	4.8	3.7	4.1
Secondary vocational and post-secondary	22.5	24.8	22.9	24.8	23.3
Secondary general	7.7	9.2			
Basic vocational	43.0	42.2	43.1	47.0	37.2
Primary and less	24.0	18.5	29.2	24.5	35.4

Source: as in table 1.

In Poland, Hungary and the Czech Republic in the researched period similar trends occurred regarding structure of employment by occupations and specialties. As it appears from table 5, in recent time a share of the employed holding highest qualifications (parliamentary deputies, officials, managers, specialists and technicians and other medium level personnel) increased. On the other hand, a share of the employed with the lowest level of qualifications (workers and craftsmen, operators and assemblers of machinery and equipment as well as unskilled workers) decreased.

Table 6 contains data revealing structures of unemployment by education in Poland, Hungary and the Czech Republic. Regrettably, we lack data regarding structure of unemployment in Hungary in the initial years of transition. In the countries analyzed, the highest share in unemployment had persons holding basic vocational education. The lowest share in unemployment was represented by the tertiary-educated. It should be emphasized that Hungary are characterized by a distinctively higher share of persons holding primary and less than primary education, compared to Poland and the Czech Republic (see Table 6).

Changes of the unemployed structure by education in Poland and the Czech Republic were proceeding into different directions. In Poland, in the analyzed period, an increase was recorded of the employed holding tertiary education (by 4.3 percentage points in 2002 compared to 1994). In the Czech Republic proportion of the tertiary-educated unemployed decreased by 1.1 percentage points, while during the same time proportion of persons with basic vocational education went up by 3.9 percentage points. The increase in share of the unemployed in Poland should be associated with an economic slump. In Poland as well as in the Czech Republic in the analyzed period a proportion of the unemployed holding primary and less than primary education decreased.

Table 7. Structure of unemployment by occupational groups, Poland and Czech Republic (in %)

	Poland*		Czech Republic	
	1994	2002	1996	2000
Parliamentary deputies, officials, managers	3.4	2.3	1.6	1.1
Specialists	3.2	2.4	2.4	3.0
Technicians and other medium level personnel	8.1	7.3	6.4	8.0
Office workers	7.5	8.3	4.8	6.5
Personal service personnel and salesperson	15.5	18.8	14.3	14.5
Farmers, gardeners, foresters and fisherman	2.9	1.8	2.0	2.0
Workers and craftsmen	33.8	30.5	13.3	15.2
Operators and assemblers of machinery and equipment	7.4	10.7	10.7	9.8
Unskilled workers	18.1	17.7	20.9	16.3
Armed forces	-	-	0.1	0.2

* - without armed forces

Source: as in table 1.

Table 7 contains data regarding structure of unemployment in Poland and the Czech Republic by professions and specialties exercised in the previous place of work. As it appears from table 7, in both these countries persons with lowest qualifications (workers and craftsmen, operators and assemblers of machinery and equipment as well as unskilled workers) dominate. The lowest share in the number of the unemployed in the analyzed years had persons working previously in professions subsumed to groups 1, 2 and 3 of Classification of Occupations and Specialties (parliamentary deputies, officials, managers, specialists and technicians and other medium level personnel). These are individuals with the highest level of qualifications. It is also worth to note that in both countries persons working in the previous place of work as farmers, gardeners, foresters and fishermen constituted for a relatively low share in the number of the unemployed (see Table 7). The low share of this group in the unemployment results from the ownership structure in agriculture. A relatively high proportion in the number of unemployed in Poland and the Czech Republic were persons, who were previously employed as personal service personnel and salesperson.

3. Education and Occupation and Labour Market Status

The situation of individuals in the labour market can be stated by a multitude of indicators, such as: level of unemployment rates, probability of loosing a job and probability of finding a job. Regrettably, for all the researched countries we have data only regarding unemployment rates by educational level.

Table 8 contains data regarding unemployment rates by education in the three analyzed countries in 1994 and 2002. From this table it turns out that in Poland, Hungary and the Czech Republic the highest level of unemployment rates during the period researched was recorded among persons with basic vocational education as well as primary and less than primary education. The lowest level of unemployment rates was observed, on the other hand, in the group of persons tertiary-educated.

Consequently, we can say that level of education exhibits a fundamental impact on the individuals' position in the labour market. Persons possessing higher levels of education were in the better position in the labour market.

In Poland and in the Czech Republic in 2002 compared to 1994 a significant increase of unemployment rates occurred within the group of persons holding basic vocational education as well as primary and less than primary education (see Table 8). Likewise, in the remaining groups of education the increase of unemployment rates was observed. This increase was a result of an economic slump.

Table 9 contains data concerning unemployment rates by occupations (exercised in the previous place of work) in Poland and Hungary in the year 1994 and 2002. Analyzing data from Table 9 we can arrive at the following conclusions. Firstly, the highest level of unemployment rates in both countries existed within the group of persons with the lowest vocational skills (workers and craftsmen, operators and assemblers of machinery and equipment as well as unskilled workers). Secondly, a relatively high level of unemployment rates in Poland occurred also in the group worked formerly as personnel service and salespersons. Thirdly, the lowest level of unemployment rates in both these countries was among persons with the highest qualifications (parliamentary deputies, officials, managers, specialists and technicians and other medium level personnel). In the period researched unemployment rates in these occupation and specialties groups decreased (with the decrease being stronger in Hungary than in Poland).

Table 8. Unemployment rates by educational levels in Poland, Czech Republic and Hungary, 1994–2002 (in %)**Poland**

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Tertiary	4.2	3.1	2.8	2.4	2.9	4.1	5.2	5.9	7.3
Secondary vocational	10.3	8.8	8.4	7.8	8.8	10.1	12.0	14.6	17.0
Post-secondary	12.7	12.1	11.0	9.8	8.7	11.7	13.8	15.7	
Secondary general	16.2	14.8	14.1	13.7	13.3	16.7	19.7	22.6	23.3
Basic vocational	18.2	16.7	15.3	13.4	12.4	16.8	19.2	22.1	24.4
Primary and less	15.0	14.3	13.8	13.7	14.0	18.4	20.9	22.8	25.6

Czech Republic

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Tertiary	1.7	1.2	1.1	1.5	2.2	3.0	2.8	2.4	2.1
Secondary education vocational without GCE	4.1	3.8	3.6	4.4	6.2	8.9	9.0	8.4	7.8
Secondary education with GCE	3.3	2.5	2.5	3.5	5.1	6.7	6.4	5.7	5.1
Basic vocational and primary and less than primary	9.4	10.8	11.2	13.5	16.1	20.9	22.3	21.6	20.8

Hungary

	1994	1995	1996	1997	1998	1999	2000	2001	2002
Tertiary	3.1	3.0	2.7	1.8	1.9	1.4	1.6	1.4	1.9
Secondary general	7.9	7.4	7.7	6.3	6.8	6.3	5.8	4.4	4.5
Other secondary	7.7	6.8	6.9	5.6	5.3	4.8	4.5	4.1	4.1
Basic vocational	12.7	12.3	11.7	10.0	8.7	8.1	7.6	6.4	6.2
Primary and less	16.3	15.9	15.7	15.1	13.2	12.5	11.3	11.1	11.7

Source: www.czso.cz and Country draft reports on impact of change in competitiveness on labour market development. Unemployment and quality of labour force, unpublished working paper.

Table 9. Unemployment rates by occupational groups in Poland and Hungary, 1994–2002, (%)

Poland

Year	Parliamentary deputies, officials, managers	Specialists	Technicians and other medium level personnel	Office workers	Personal service personnel and sales person	Farmers, gardeners, foresters and fisherman	Workers and craftsmen	Operators and assemblers of machinery and equipment	Unskilled workers
1994	6,5	4,3	8,9	14,5	19,1	1,7	16,6	13,7	21,9
1995	4,6	2,9	7,6	13,0	16,8	1,6	16,1	12,3	22,1
1996	4,1	2,8	6,4	11,5	16,5	1,9	14,3	11,3	22,6
1997	3,2	2,3	5,4	9,3	15,4	1,9	11,9	9,2	20,8
1998	3,2	1,9	5,1	8,9	13,0	1,7	11,1	8,4	19,0
1999	4,2	1,8	4,2	8,9	14,7	2,0	15,1	9,9	20,9
2000	4,4	2,5	7,0	11,9	18,0	1,9	17,6	12,1	23,1
2001	5,6	2,5	7,7	13,4	20,4	1,9	20,0	14,2	26,7
2002	6,0	3,3	8,6	14,7	21,0	1,6	23,6	16,5	27,1

Hungary

1994	4,1	2,5	5,6	8,9	8,6	10,4	11,8	11,3	15,3
1995	3,6	2,2	5,3	7,6	8,6	11,0	11,6	9,9	16,0
1996	2,7	2,1	5,7	6,9	8,6	9,5	11,0	9,1	17,2
1997	2,6	1,5	3,5	6,2	7,0	9,0	9,6	8,7	15,1
1998	1,8	1,5	3,7	6,9	5,6	6,8	7,9	7,4	14,0
1999	1,6	1,5	3,2	5,6	5,6	6,5	7,2	6,6	13,0
2000	1,5	0,8	3,1	3,8	5,7	4,9	6,6	5,7	12,2
2001	1,8	0,9	2,4	3,1	5,0	5,7	5,8	5,3	12,1
2002	1,8	1,1	2,4	3,4	5,0	5,1	5,5	5,7	12,6

Source: as in table 1.

From Tables 8 and 9 it appears that person better educated and those possessing highest qualifications were in a better situation in the labour market.

Similar conclusions can be drawn from estimations of probabilities of outflows from employment and unemployment depending on education and qualifications in Poland. We lack similar estimations related to the Czech Republic and Hungary.

Table 10. Estimations of relative risk ratios of flows from employment by educational levels in Poland, 1st quarter 2000 – 4th quarter 2000

Independent variable	To unemployment		To inactivity	
	RRR	t-Student	RRR	t-Student
Base category – basic vocational				
Tertiary	0.27	-5.11	0.71	-2.16
Post-secondary	0.72	-1.10	0.94	-0.25
Secondary general	0.99	-0.02	1.45	2.37
Secondary vocational	0.77	-2.10	0.81	-1.77
Primary and less than primary	0.96	-0.29	1.85	5.98

Number of observations: 30372

Log likelihood: -5211,76

Source: data from LFS, Poland, 1st quarter 2000 - 4th quarter 2000, own calculations.

Table 11. Estimations of relative risk ratios of flows from employment by occupational groups in Poland, 1st quarter 2000 – 4th quarter 2000

Independent variable	To unemployment		To inactivity	
	RRR	t-Student	RRR	t-Student
Base category – workmen and craftsmen				
Parliamentary deputies, officials, managers, specialists, technicians and other medium level personnel	0.26	-7.45	0.86	-1.10
Office workers, personal service personnel and salespersons	1.02	0.16	1.22	1.36
Farmers, gardeners, foresters and fishermen	0.34	-6.07	1.52	3.20
Operators and assemblers of machinery and equipment, unskilled workers	1.14	0.99	1.51	2.96

Number of observations: 30372

Log likelihood: -5180,56

Source: data from LFS, Poland, 1st quarter 2000 - 4th quarter 2000, own calculations.

Table 12. Estimations of relative risk ratios of flows from unemployment by educational levels in Poland, 1st quarter 2000 – 4th quarter 2000

Independent variable	To employment		To economic inactivity	
	RRR	t-Student	RRR	t-Student
Base category – basic vocational				
Tertiary	1.73	2.86	2.16	3.03
Post-secondary	1.36	1.28	1.17	0.42
Secondary general	0.90	-0.67	1.15	0.64
Secondary vocational	1.15	1.36	1.13	0.80
Primary and less than primary	0.78	-2.19	1.29	1.81

Number of observations: 6010
 Log likelihood: -3508,93

Source: data from LFS, Poland, 1st quarter 2000 - 4th quarter 2000, own calculations.

Table 13. Estimations of relative risk ratios of flows from unemployment by occupational groups in Poland, 1st quarter 2000 – 4th quarter 2000

Independent variable	To employment		To economic inactivity	
	RRR	t-Student	RRR	t-Student
Base category – workmen and craftsmen				
Parliamentary deputies, officials, managers, specialists, technicians and other medium level personnel	0,91	-0,60	1,23	0,83
Office workers, personal service personnel and salespersons	0,70	-2,70	0,84	-0,85
Farmers, gardeners, foresters and fishermen	0,63	-1,45	2,10	2,29
Operators and assemblers of machinery and equipment, unskilled workers	0,94	-0,50	1,08	0,42
Persons with no professional experience	0,70	-3,28	1,50	2,52

Number of observations: 6010
 Log likelihood: -3505,01

Source: data from LFS, Poland, 1st quarter 2000 - 4th quarter 2000, own calculations.

In Tables 10–13 estimation results are presented of probabilities of outflows from employment and unemployment depending on education and the level of vocational skills in Poland in the year 2000. Aiming at defining

an influence, which explanatory variables have on the probability of outflow from employment to unemployment and to economic inactivity as well as from unemployment to employment and to economic inactivity, we will use relative risk ratios – odds of flows. The ratio value greater than 1 implies that a given group is characterized by a higher risk e.g. of outflow from employment to unemployment than individuals from the base category. The ratio value lower than 1 on the other hand signifies that individuals belonging to a given group are to a lesser extent threatened by outflow from employment to unemployment compared to the base category.

Analyzing data contained in tables 10–13, we can come to the following conclusions:

- Threat of outflows from employment to unemployment is connected with level of education of the employed. In the analyzed period persons tertiary-educated and those holding secondary vocational education had smallest relative “odds” to flow from employment to unemployment, compared to persons holding basic vocational education.
- Persons holding tertiary education had worse odds to flow from employment to economic inactivity compared to persons belonging to the base category. Persons with secondary basic or primary and less than primary education had more odds to flow from employment to economic inactivity. Those low-educated persons probably availed themselves of the opportunity to early retire or to go on the pre-retirement benefit.
- Persons exercising occupations subsumed to 1st, 2nd and 3rd group of the Classification of Occupations and Specialties (parliamentary deputies, officials, managers, specialists and technicians and other medium level personnel) were to a lesser extent threatened by losing a job and flowing to unemployment compared to the base category (craftsmen and workers). Persons from these three groups of the Classification of Occupations and Specialties are characterized by the highest level of qualifications.
- Persons working as farmers, gardeners, foresters and fishermen found themselves in a distinctively better situation than workers and craftsmen. It can certainly be associated with the fact that individuals exercising these professions work in their own enterprises or farms.
- During the whole researched period persons with tertiary education had significantly better odds to flow from unemployment to employment compared to persons holding basic vocational education. This stands in accordance with the theory of human capital, which suggests that well-educated individuals have biggest odds of finding a job.

- Persons with primary and less than primary education had worse odds of finding a job compared to individuals from the base category. Individuals holding this level of education are very low skilled.
- Office workers, personal service personnel and salespersons had smaller odds to flow from unemployment to employment compared to persons from the base category. Worse situation of these occupation groups is caused probably by the type of their qualifications. They possess rather specific skills and, as it appears from the theory of human capital, such individuals have relatively worse odds of finding a job.
- Persons with no professional practice (especially graduates) had worse odds to flow from unemployment to employment but greater odds to flow to economic inactivity compared to the individuals subsumed to the base category.

4. Conclusions

The following conclusions can be drawn from the analyses carried out:

- The transition process, which started in Poland, Hungary and the Czech Republic in the beginning of 1990-s, contributed to the shifts in structure of employment by sectors. In all the researched countries an increase was recorded of service sector participation compared to the beginning of the period, as well as a decrease of agriculture participation in employment. The biggest increase of service sector took place in the Polish economy. Nevertheless, the Polish economy is still characterized by a very high proportion of employment in agriculture.
- In the period analyzed, in Poland, Hungary and the Czech Republic, we observed a lasting increase of the highest educated persons' share in employment as well as share of those holding highest levels of vocational skills. On the other hand, the share of low-educated and low-qualified individuals in employment was decreasing. These changes signify an improvement of the labour force quality and ipso facto give evidence of improvements of economies in these countries.
- Individuals' position in the labour market depends on the human capital stock possessed by particular persons (that is level of education, vocational skills, experience and work practice). Persons tertiary-educated and those with highest qualifications were, in all the countries researched, in a better situation in the labour market. Persons well-educated with highest levels of

vocational skills do not make perfect substitution for the low-educated and low-qualified individuals. In case of troubles within a company, the latter group is usually considered for lay offs in the first order. On contrary, in case of hiring new employees, persons well-educated, possessing high vocational skills (that is with high stock of human capital) are considered first.

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